UIC - I - __011__

SWD-1629
(WDW-2)

2016

Administrative Order SWD-1629
June 1, 2016

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Pursuant to the provisions of Division rule 19.15.26.8(B) NMAC, Western Refining Southwest, Inc. (the "operator") seeks an administrative order for its Waste Disposal Well No.2 with a surface location 2028 feet from the North line and 111 feet from the East line, Unit letter H of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico, for the purpose of produced and other associated water disposal at the Bloomfield Terminal facility. This administrative order is being issued concurrently with the Class I (Non-hazardous) Well Discharge Permit No. UICI-011.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of Division Rule 19.15.26.8(B) NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objection was received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in Rule 19.15.26.8 NMAC have been met and the operator is in compliance with Rule 19.15.5.9 NMAC with financial assurance as provided under terms of the Class I (Non-hazardous) Well Discharge Permit No. UICI-011.

IT IS THEREFORE ORDERED THAT:

The applicant, Western Refining Southwest, Inc. (OGRID 267595), is hereby authorized to utilize its Waste Disposal Well No. 2 (API 30-045-35747) with a surface location 2028 feet from the North line and 111 feet from the East line, Unit letter H of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, for disposal of oil field produced water in the Entrada formation through perforations from 7314 feet below surface to 7483 feet below surface. Injection will occur through internally-coated, 4½-inch or smaller tubing and a packer set within 100 feet of the uppermost perforation.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the approved disposal interval and is not permitted to escape to other formations or onto the surface. This includes the completion and construction of the well as proposed in the application and, if necessary, as modified by the District Supervisor.

As a requirement of this order, the operator is responsible for complying with terms of the Application for Permit to Drill, Re-enter, Deepen, Plugback or Add a Zone (including Conditions of Approval) approved by Division's District III office and the terms and provisions of Division's Class I (Non-hazardous) Well Discharge Permit No. UICI-011.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT procedures and schedules shall follow the requirements in Division Rule 19.15.26.11(A) NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

The wellhead injection pressure on the well shall be limited to **no more than 1463 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

The operator shall notify the supervisor of the Division's District III office of the date and time of the installation of disposal equipment and of any MIT so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's District III office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.24 NMAC.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's District III office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

The injection authority granted under this order is not transferable except upon Division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The Division may revoke this injection order after notice and hearing if the operator is in violation of Rule 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate two (2) years after the effective date of this Order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Compliance with this Order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.

David R. Catanach

DAVID R. CATANACH
Director

DRC/prg

cc: Oil Conservation Division – Aztec District Office

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
03/04/16	03/07/16	PRG	03/07/16	SWD	pPRG1615235401

ABOVE THIS LINE FOR DIVISION USE ONLY

Class I

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

Assigned API
30-045-35747

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Amended Application — Notice Provided in Original Application PMAM 1600432778 [Included in this package BJ]

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify Class I Non-hazardous Injection Well

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Bruce D. Davis	Bruce D. Davis	Director	3-2-16
Print or Type Name	Signature	Title	Date

bruce.davis@WNR.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___X___Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: Western Refining Southwest, Inc. [248440] - Western Refining Southwest LP / Transporter
(OGRID # 267595)

ADDRESS: #50 County Road 4990 (PO Box 159), Bloomfield, NM 87413

CONTACT PARTY: Ron Weaver PHONE: 505-632-8013

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ___X___No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Bruce D. Davis TITLE: Director

SIGNATURE: B D R DATE: 3-2-16

E-MAIL ADDRESS: bruce.davis@WNR.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days *from the date this application was mailed to them.*

Side 1

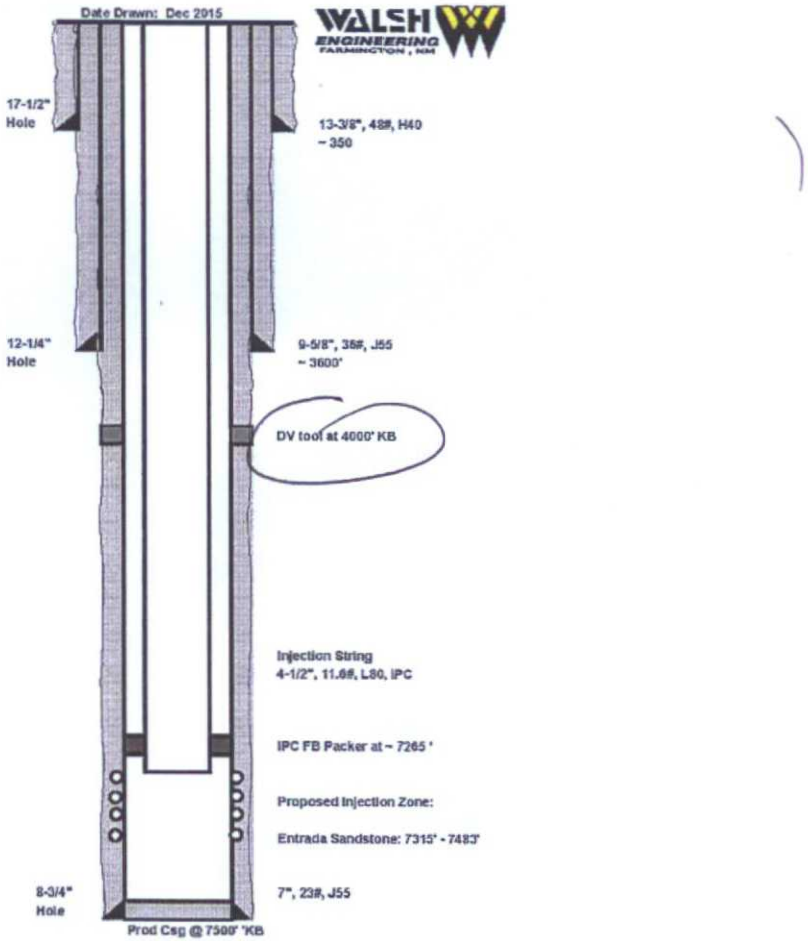
INJECTION WELL DATA SHEET

OPERATOR: Western Refining Southwest, Inc.

WELL NAME & NUMBER: Waste Disposal Well (WDW) #2

WELL LOCATION: 2028' FNL & 111' FEL (FOOTAGE LOCATION) | H (UNIT LETTER) | 27 (SECTION) | T29N (TOWNSHIP) | R11W (RANGE)

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8, 48 ppf, H40

Cemented with: 394 sx. *or* 548 ft^3

Top of Cement: Surface Method Determined: _____

Intermediate Casing

Hole Size: 12-1/4" Casing Size: 9-5/8", 36#, J55

Cemented with: 857 sx *or* 1693 ft^3

Top of Cement: Surface Method Determined: _____

Production Casing

Hole Size: 8-3/4" Casing Size: 7", 26 ppf, L80

Cemented with: 868 sx. *or* 1692 ft^3

Top of Cement: Surface Method Determined: _____

Total Depth: ~ 7500'

Injection Interval (Proposed)

7315' feet to 7483' (perforated 4 spf)

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 4-1/2", 10.5 ppf Lining Material: Plastic Lined

Type of Packer: 7" Baker "FAB-1" (or similar model"

Packer Setting Depth: ~ 7265'

Other Type of Tubing/Casing Seal (if applicable): Baker Model "KBH-22" Anchor tubing seal assembly, landed in packer

Additional Data

1. Is this a new well drilled for injection? X Yes _____ No

   If no, for what purpose was the well originally drilled? _____

2. Name of the Injection Formation: Entrada

3. Name of Field or Pool (if applicable): _____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota

Western Refining Southwest, Inc.

Waste Disposal Well (WDW) #2

C-108 Data Sheet

V. Maps identifying all wells within 2 ½ miles of proposed injection well and Area of Review (AOR) of 1-mile radius.

The maps are below.

VI. Tabulation of data of all wells of public record within the AOR which penetrate the proposed injection zone.

The only well that penetrates the proposed injection zone is the Ashcroft SWD #1 (API# 30-045-30788) located approximately 3/4 miles to the east. The Ashcroft is a SWD well operated by XTO Energy Resources and is completed in the Entrada and Bluff formations. Noticed

Tabulation of wells within the 1-mile AOR is below.

VII. Operation Data

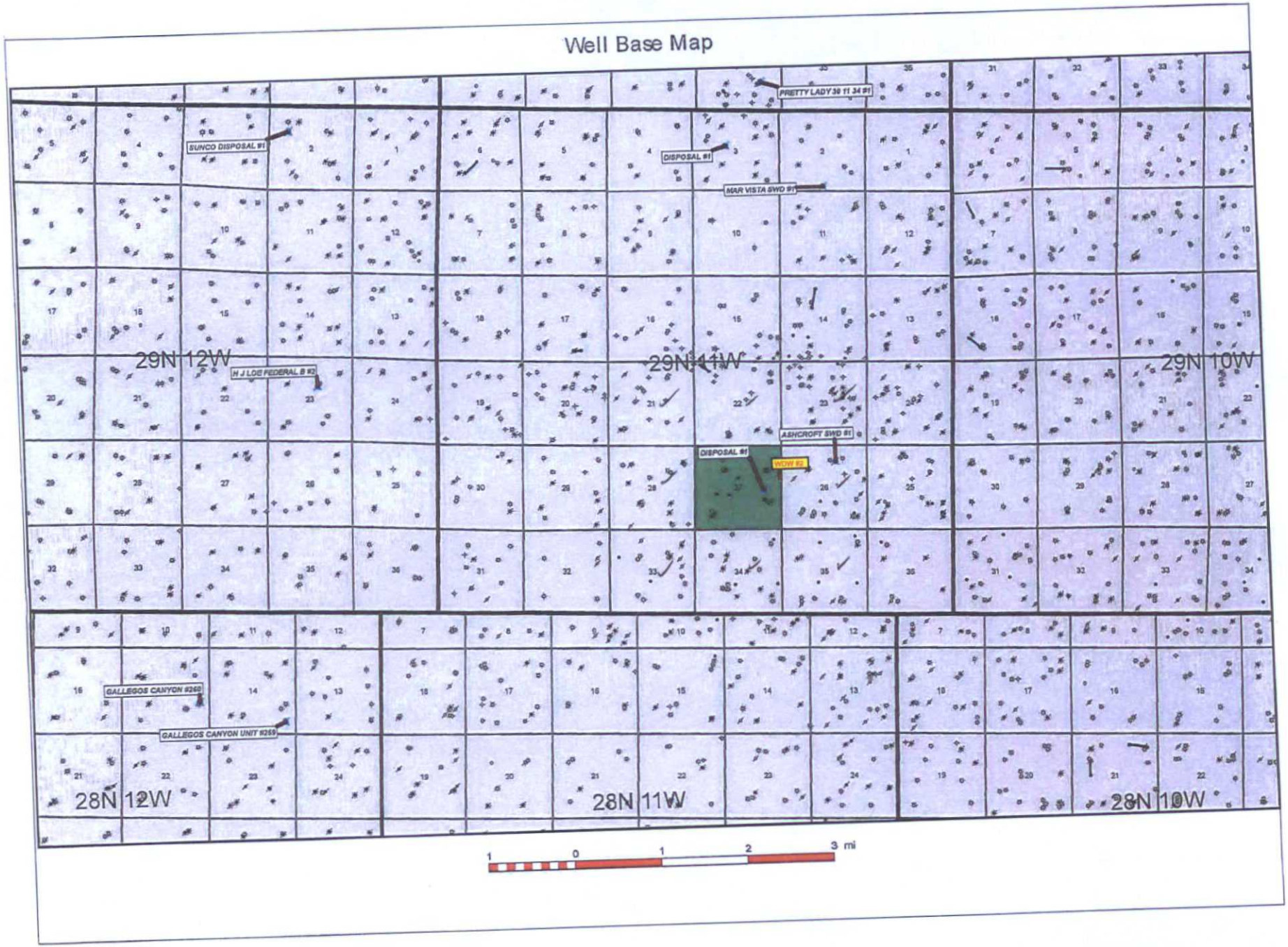
1. A. Average Daily Injection Rate = 3,500 bbls.
   B. Maximum Daily Injection Rate = 8,500 bbls.

2. The system is closed (water will be collected onsite as part of the Bloomfield Terminal's process and pumped over to the injection well).

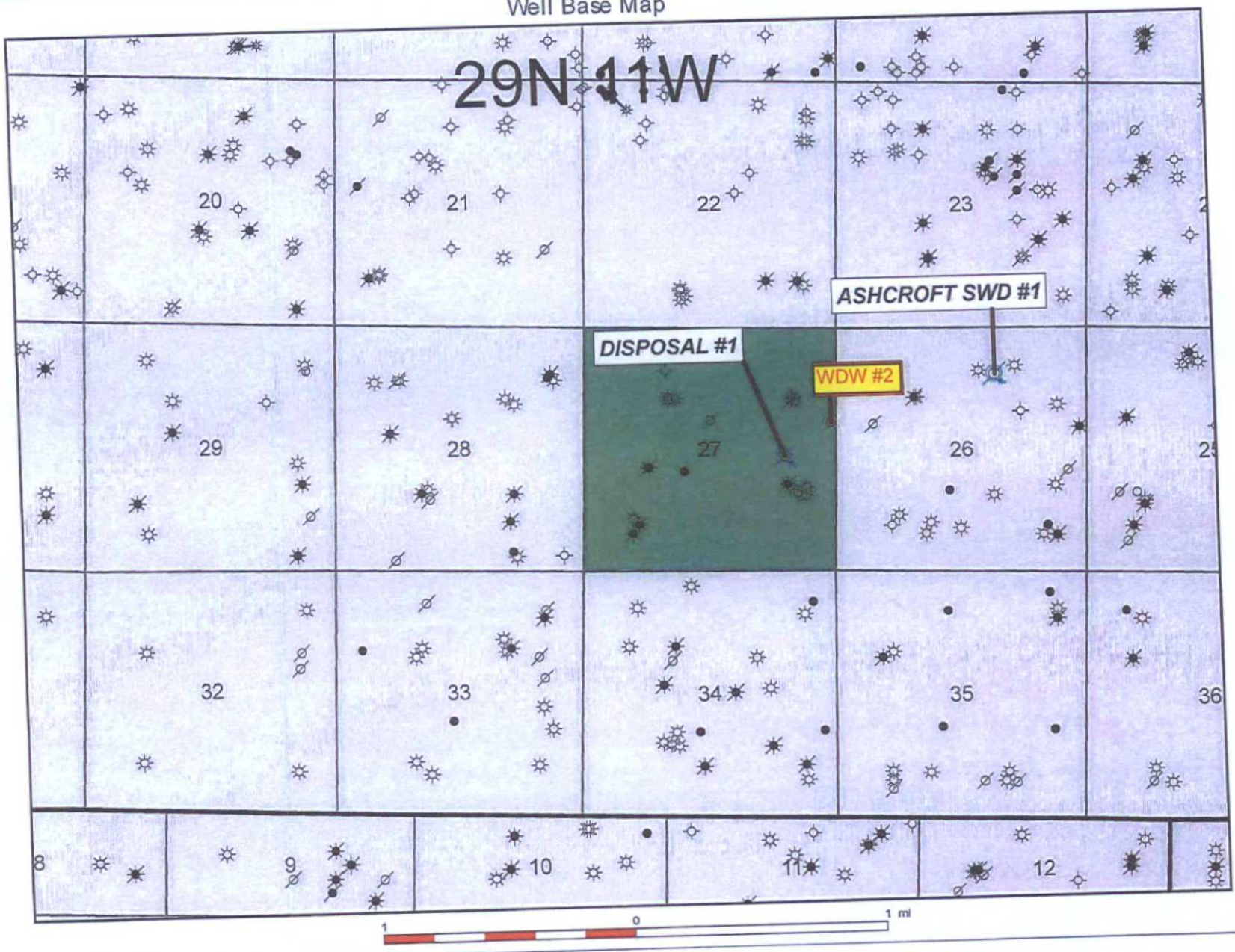
3. Proposed pressures
   A. The average and maximum injection pressures will be determined from a step rate test run after the well is completed. The anticipated injection pressures are ~ 2000 psi.

4. The fluid to be disposed in the proposed injection well will be Waste Water Treatment System effluent, Evaporation Ponds contact storm water and Injection Well Stimulation and Maintenance fluids. Table 1 contains information about the injection fluid including source, waste type, frequency and discharge volume. Table 2 contains information about the sources on Waste Water Treatment Plant influent. An Analytical Summary of the fluids disposed in Disposal #1 2014 Annual report is presented in Table 3. This summary best characterizes the fluid to be disposed.

Well Base Map

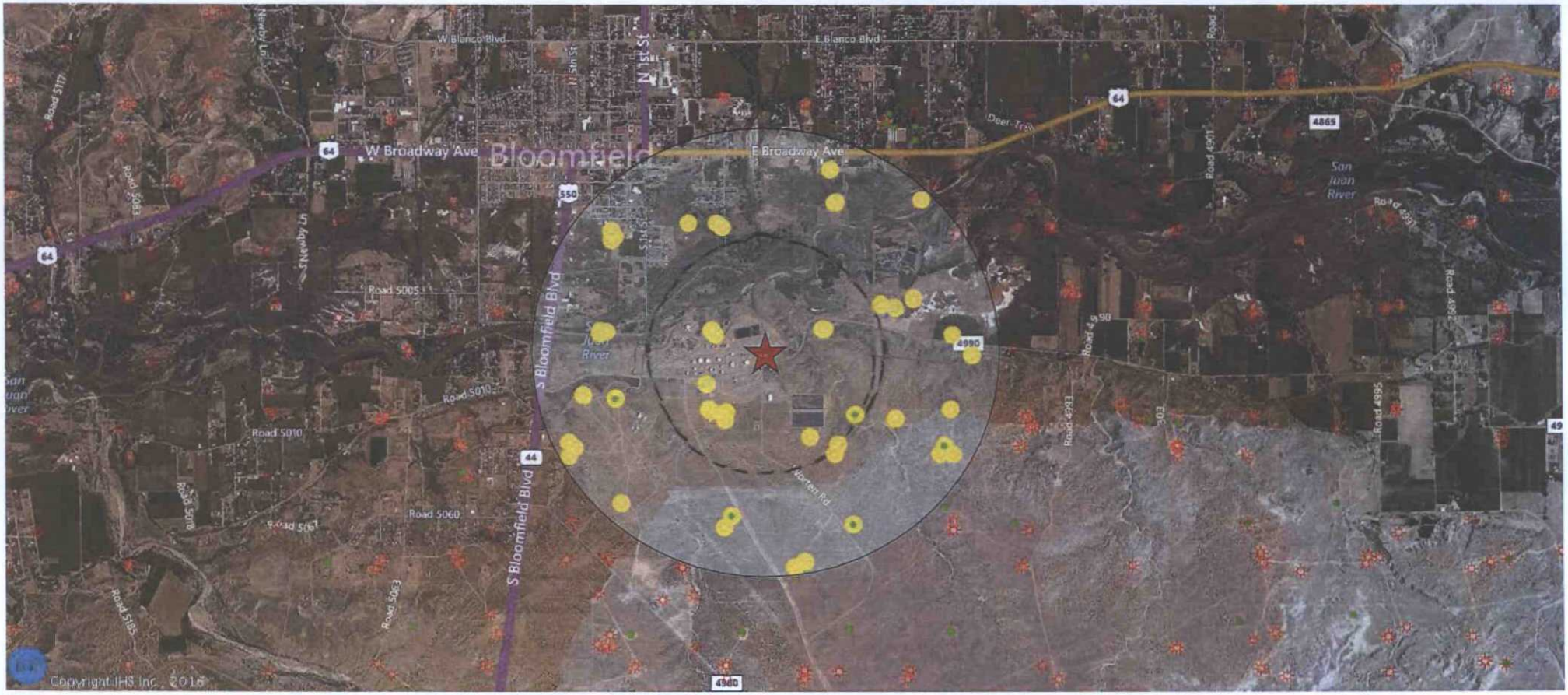


Well Base Map



Western Refining Southwest Inc.

Area of Review 1 mile radius



◌ ½-mile AOR – Penetrating Wells – 0

1-mile AOR – Penetrating Wells – 1

Enerdeq Browser Date: Jan 29, 2016 Author: JOHN THOMPSON

Data Not Reviewed By Applicant - redundant well count

DHC & plugged zones - not edited
P&A wells not included - attached OCD compiled list

SWD-812 Entrada
SWD-812-A Morrison & Entrada
SWD-812 B Bluff & Entrada

Proposed Top of Interval 7315'

Western Refining Southwest, Inc.

Bloomfield Terminal

Waste Disposal Well (WDW) #2

Well List for 1-Mile Area of Review (AOR)

Map Symbol	Production ID	Primary API	Lease Name	Well Num	Operator Name	Location	Latitude	Longitude	Field Name	County Name	Status Name	Prod Zone Name	Lease Code	Oil Cum	Gas Cum	Wtr Cum	TD
O	1300430452519502290	30045251950000	CALVIN	2	BURLINGTON RESOURCES O&G CO LP	29N 11W 26P NW SE SE	36.69244745	-107.9548384	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	006883	56,157	714,731	1,291	5,950
O	1300430452561202290	30045256120000	CALVIN	3	BURLINGTON RESOURCES O&G CO LP	29N 11W 26K SE NE SW	36.69445794	-107.9618893	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	006883	65,478	602,470	1,472	5,970
O	1300430452565702290	30045256570000	CONGRESS	16	BURLINGTON RESOURCES O&G CO LP	29N 11W 34A C NE NE	36.68790014	-107.9716743	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	006918	36,820	464,380	1,283	6,200
O	1300430452567302290	30045256730000	CONGRESS	18	BURLINGTON RESOURCES O&G CO LP	29N 11W 27K NW NE SW	36.69549308	-107.9808835	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	006918	63,095	318,931	1,964	6,150
~~O~~	~~[illegible]~~	~~30045256730001~~	~~CONGRESS~~	~~18~~	~~BURLINGTON RESOURCES O&G CO LP~~	~~29N 11W 27K NW NE SW~~	~~36.69549308~~	~~-107.9808835~~	~~FULCHER KUTZ~~	~~SAN JUAN~~	~~ACTIVE~~	~~PICTURED CLIFFS~~			~~35,178~~	~~1,056~~	
O	1300430452567502290	30045256750000	CONGRESS	15	BURLINGTON RESOURCES O&G CO LP	29N 11W 35C SE NE NW	36.6874019	-107.9620229	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	006918	7,534	255,800	1,172	6,030
I	1300430452900296160	30045290020000	DISPOSAL	1	SAN JUAN REFINING COMPANY	29N 11W 27I NW NE SE	36.69640689	-107.9736785	SWD	SAN JUAN	ACTIVE	MESAVERDE					
~~I~~	~~[illegible]~~	~~30045307880000~~	~~ASHCROFT SWD~~	~~1~~	~~XTO ENERGY INCORPORATED~~	~~29N 11W 26B SW NW NE~~	~~36.70129353~~	~~-107.9586722~~	~~SWD~~	~~SAN JUAN~~	~~ACTIVE~~	~~MORROW~~					
G	2300430450773371599	30045077330000	SULLIVAN GAS COM D	1	XTO ENERGY INCORPORATED	29N 11W 26B SW NW NE	36.70149705	-107.9598182	BASIN	SAN JUAN	ACTIVE	DAKOTA	022839	22,497	2,820,296	4,546	6,260
G	2300430450782571599	30045078250000	DAVIS GAS COM F	1	BP AMERICA PRODUCTION COMPANY	29N 11W 27I SW NE SE	36.69478221	-107.9734791	BASIN	SAN JUAN	INACTIVE	DAKOTA	000410	16,714	2,573,971	211	6,365
G	2300430450783571599	30045078350000	MANGUM	1	BURLINGTON RESOURCES O&G CO LP	29N 11W 27L NE NW SW	36.69567609	-107.9834612	BASIN	SAN JUAN	INACTIVE	DAKOTA	007282	15,187	2,646,060		6,350
~~G~~	~~[illegible]~~	~~30045078350001~~	~~MANGUM~~	~~1~~	~~BURLINGTON RESOURCES O&G CO LP~~	~~29N 11W 27L NE NW SW~~	~~36.69567609~~	~~-107.9834612~~	~~BASIN~~	~~SAN JUAN~~	~~ACTIVE~~	~~FRUITLAND COAL~~			~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
G	2300430450786871200	30045078680000	SULLIVAN	2	HOLCOMB OIL & GAS INCORPORATED	29N 11W 26H NW SE NE	36.69953096	-107.9541735	AZTEC	SAN JUAN	INACTIVE	FRUITLAND	015829		368,487	716	1,487
G	2300430450790377200	30045079030000	GARLAND B	1	SOUTHERN UNION PRODUCTION COMPANY	29N 11W 27M NE SW SW	36.69234828	-107.9841029	FULCHER KUTZ	SAN JUAN	INACTIVE	PICTURED CLIFFS	251550	10	355,978		1,747
G	2300430450794071599	30045079400000	COOK	1	MANANA GAS INCORPORATED	29N 11W 22N SW SE SW	36.70608404	-107.9811406	BASIN	SAN JUAN	ACTIVE	DAKOTA	006258	41,071	4,343,480	6,176	6,314
G	2300430450795971200	30045079590000	GRACE PEARCE	1	PICKETT JOHN C	29N 11W 22O NE SW SE	36.70664386	-107.9750193	AZTEC	SAN JUAN	INACTIVE	FRUITLAND	009267		804,069		1,620
G	2300430450796171599	30045079610000	HARTMAN	1	MANANA GAS INCORPORATED	29N 11W 22P SE SE	36.70664763	-107.972768	BASIN	SAN JUAN	INACTIVE	DAKOTA	006262	45,556	5,456,777	9,059	6,309
G	2300430450798571200	30045080090000	PAN AMERICAN STATE COM	1	COOK ROY L	29N 11W 23K NE SW	36.71005755	-107.9637286	AZTEC	SAN JUAN	INACTIVE	FRUITLAND	570540		31,853		1,523
G	2300430450798571599	30045079850000	PEARCE GAS COM	1	BP AMERICA PRODUCTION COMPANY	29N 11W 23K NE SW	36.70802867	-107.9633365	BASIN	SAN JUAN	INACTIVE	DAKOTA	000949	12,630	1,695,598	2,187	6,274
G	2300430451200371599	30045120030000	CALVIN	1	BURLINGTON RESOURCES O&G CO LP	29N 11W 26M SW SW	36.6929968	-107.9655043	BASIN	SAN JUAN	ACTIVE	DAKOTA	006883	25,759	3,648,517	7,941	6,450
G	2300430451308971200	30045130890000	COOK	2	MANANA GAS INCORPORATED	29N 11W 22N SE SW	36.70619366	-107.981141	AZTEC	SAN JUAN	ACTIVE	FRUITLAND	006258		845,491	650	1,440
G	2300430452075277200	30045207520000	LEA ANN	1	CHAPARRAL OIL & GAS COMPANY	29N 11W 35E NE SW NW	36.68464683	-107.9667053	FULCHER KUTZ	SAN JUAN	INACTIVE	PICTURED CLIFFS	002529		266,925		1,900
G	2300430452145782329	30045214570000	DELO	10	SOUTHLAND ROYALTY COMPANY LLC	29N 11W 26I SW NE SE	36.69480938	-107.9543218	OTERO	SAN JUAN	ACTIVE	CHACRA	021202		966,707	80	[illegible]
G	2300430452173277200	30045217320000	GARLAND B	1R	BURLINGTON RESOURCES O&G CO LP	29N 11W 27M NE SW SW	36.69179563	-107.9845498	FULCHER KUTZ	SAN JUAN	INACTIVE	PICTURED CLIFFS	007039	10	863,208	853	
G	2300430452263966627	30045226390000	DELO	11	GENERAL MINERALS CORPORATION	29N 11W 26P NW SE SE	36.69189786	-107.954158	UNDESIGNATED	SAN JUAN	INACTIVE	FARMINGTON	004502	162	124	110	[illegible]
G	2300430452316382329	30045231630000	EARL B SULLIVAN	1	XTO ENERGY INCORPORATED	29N 11W 26B SE NW NE	36.70182344	-107.9572261	OTERO	SAN JUAN	ACTIVE	CHACRA	022841		745,746	966	2,861
G	2300430452355071629	30045235500001	STATE GAS COM BS	1	HOLCOMB OIL & GAS INCORPORATED	29N 11W 23K SW NE SW	36.7079731	-107.9634048	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			672,850	2,934	2,954
~~G~~	~~[illegible]~~	~~30045235500000~~	~~STATE GAS COM BS~~	~~1~~	~~HOLCOMB OIL & GAS INCORPORATED~~	~~29N 11W 23K SW NE SW~~	~~36.7079731~~	~~-107.9634048~~	~~OTERO~~	~~SAN JUAN~~	~~INACTIVE~~	~~CHACRA~~	~~022826~~	~~309~~	~~[illegible]~~	~~3,926~~	~~2,954~~
G	2300430452355482329	30045235540000	DAVIS GAS COM G	1	XTO ENERGY INCORPORATED	29N 11W 27I SW NE SE	36.69465987	-107.9732919	OTERO	SAN JUAN	INACTIVE	CHACRA	022685		337,989	747	2,951
G	2300430452408271599	30045240820000	PEARCE GAS COM	1E	XTO ENERGY INCORPORATED	29N 11W 23J SE NW SE	36.70815961	-107.9565825	BASIN	SAN JUAN	ACTIVE	DAKOTA	022629	3,328	474,351	5,412	6,365
G	2300430452408371599	30045240830000	SULLIVAN GAS COM D	1E	XTO ENERGY INCORPORATED	29N 11W 26F NW SE NW	36.69993082	-107.9642882	BASIN	SAN JUAN	ACTIVE	DAKOTA	022839	6,902	1,458,755	7,940	6,329
G	2300430452408471599	30045240840000	DAVIS GAS COM F	1E	XTO ENERGY INCORPORATED	29N 11W 27H NW SE NE	36.69983513	-107.9731903	BASIN	SAN JUAN	ACTIVE	DAKOTA	023416	4,262	905,546	8,033	6,386
~~G~~	~~[illegible]~~	~~30045240840000~~	~~DAVIS GAS COM F~~	~~1E~~	~~XTO ENERGY INCORPORATED~~	~~29N 11W 27H NW SE NE~~	~~36.69983513~~	~~-107.9731903~~	~~OTERO~~	~~SAN JUAN~~	~~ACTIVE~~	~~CHACRA~~	~~023416~~		~~451,277~~	~~2,457~~	~~6,386~~
G	2300430452457282329	30045245720000	CONGRESS	9	SOUTHLAND ROYALTY COMPANY LLC	29N 11W 26N NW SE SW	36.69192545	-107.9635484	OTERO	SAN JUAN	ACTIVE	CHACRA	021193		233,679	1,485	2,962
G	2300430452457382329	30045245730000	GARLAND	3	SOUTHLAND ROYALTY COMPANY LLC	29N 11W 27M NE SW SW	36.69270239	-107.9844958	OTERO	SAN JUAN	ACTIVE	CHACRA	021914		305,435	1,140	2,905
G	2300430452457482329	30045245740000	SUMMIT	9	BURLINGTON RESOURCES O&G CO LP	29N 11W 34A SW NE NE	36.687182	-107.9722658	OTERO	SAN JUAN	ACTIVE	CHACRA	007557		350,082	1,220	2,992
G	2300430452467371599	30045246730000	MANGUM	1E	BURLINGTON RESOURCES O&G CO LP	29N 11W 27F NW SE NW	36.69973724	-107.9815395	BASIN	SAN JUAN	ACTIVE	DAKOTA	007282	4,630	474,439	2,506	6,240
G	2300430452477271599	30045247720000	CALVIN	1E	BURLINGTON RESOURCES O&G CO LP	29N 11W 26P NW SE SE	36.69192559	-107.9551454	BASIN	SAN JUAN	ACTIVE	DAKOTA	006883	2,986	1,085,534	8,346	6,502
G	2300430452483771599	30045248370000	CONGRESS	4E	BURLINGTON RESOURCES O&G CO LP	29N 11W 35E NE SW NW	36.6849902	-107.9659406	BASIN	SAN JUAN	ACTIVE	DAKOTA	006918	370	160,434	1,661	6,508
~~G~~	~~[illegible]~~	~~30045248370000~~	~~CONGRESS~~	~~4E~~	~~BURLINGTON RESOURCES O&G CO LP~~	~~29N 11W 35E NE SW NW~~	~~36.6849902~~	~~-107.9659406~~	~~OTERO~~	~~SAN JUAN~~	~~ACTIVE~~	~~CHACRA~~	~~006918~~		~~152,025~~	~~2,536~~	~~6,508~~
G	2300430452532971629	30045253290000	DAVIS GAS COM J	1	HOLCOMB OIL & GAS INCORPORATED	29N 11W 26F NW SE NW	36.69991548	-107.9644588	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			330,236	27,028	[illegible]
~~G~~	~~[illegible]~~	~~30045253290000~~	~~DAVIS GAS COM J~~	~~1~~	~~BP AMERICA PRODUCTION COMPANY~~	~~29N 11W 26F NW SE NW~~	~~36.69991548~~	~~-107.9644588~~	~~BLANCO~~	~~SAN JUAN~~	~~INACTIVE~~	~~MESAVERDE~~	~~000412~~	~~150~~	~~619~~	~~[illegible]~~	~~[illegible]~~
~~G~~	~~[illegible]~~	~~30045253290000~~	~~DAVIS GAS COM J~~	~~1~~	~~XTO ENERGY INCORPORATED~~	~~29N 11W 26F NW SE NW~~	~~36.69991548~~	~~-107.9644588~~	~~OTERO~~	~~SAN JUAN~~	~~INACTIVE~~	~~CHACRA~~	~~[illegible]~~		~~181,592~~	~~[illegible]~~	~~[illegible]~~
G	2300430452562102290	30045256210000	EARL B SULLIVAN	2	HOLCOMB OIL & GAS INCORPORATED	29N 11W 26H SE SE NE	36.69824062	-107.9525892	ARMENTA	SAN JUAN	INACTIVE	GALLUP /SD/	022841	2,426	73,691	657	5,760
~~G~~	~~[illegible]~~	~~30045256210001~~	~~EARL B SULLIVAN~~	~~2~~	~~HOLCOMB OIL & GAS INCORPORATED~~	~~29N 11W 26H SE SE NE~~	~~36.69824062~~	~~-107.9525892~~	~~BASIN~~	~~SAN JUAN~~	~~ACTIVE~~	~~FRUITLAND COAL~~			~~[illegible]~~	~~[illegible]~~	
G	2300430452570702290	30045257070000	SUMMIT	15	SOUTHLAND ROYALTY COMPANY LLC	29N 11W 34C NE NE NW	36.68874761	-107.9804042	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/	021407	5,765	142,149	1,247	6,216
G	2300430452672182329	30045267210000	NANCY HARTMAN	2	MANANA GAS INCORPORATED	29N 11W 22P NW SE SE	36.70637919	-107.9723245	OTERO	SAN JUAN	ACTIVE	CHACRA	006264		325,500	1,244	2,830
G	2300430452673182329	30045267310000	MARY JANE	1	MANANA GAS INCORPORATED	29N 11W 22N SW SE SW	36.70553482	-107.9810701	OTERO	SAN JUAN	ACTIVE	CHACRA	006270		434,028	1,556	2,850
G	2300430452736171200	30045273610000	LAUREN KELLY	1	MANANA GAS INCORPORATED	29N 11W 27F NW SE NW	36.69985569	-107.9820557	AZTEC	SAN JUAN	ACTIVE	FRUITLAND	006268		151,744	1,120	1,500
G	2300430452736582329	30045273650000	MARIAN S	1	MANANA GAS INCORPORATED	29N 11W 27F NW SE NW	36.69966343	-107.9820563	OTERO	SAN JUAN	ACTIVE	CHACRA	006269		166,541	1,900	2,840
I	2300430453078896436	30045307880000	ASHCROFT SWD	1	XTO ENERGY INCORPORATED	29N 11W 26B SW NW NE	36.70129353	-107.9586722	SWD	SAN JUAN	ACTIVE	ENTRADA					
G	2300430453083302290	30045308330001	DAVIS GAS COM F	1R	XTO ENERGY INCORPORATED	29N 11W 27I SW NE SE	36.69461272	-107.9721325	ARMENTA	SAN JUAN	ACTIVE	GALLUP /SD/		3,866	46,691	[illegible]	
~~G~~	~~[illegible]~~	~~[illegible]~~	~~DAVIS GAS COM F~~	~~1R~~	~~XTO ENERGY INCORPORATED~~	~~29N 11W 27I SW NE SE~~	~~36.69461272~~	~~-107.9721325~~	~~BASIN~~	~~SAN JUAN~~	~~ACTIVE~~	~~DAKOTA~~		~~823~~	~~[illegible]~~	~~[illegible]~~	
G	2300430453111871629	30045311180000	CALVIN	100	BURLINGTON RESOURCES O&G CO LP	29N 11W 26N NW SE SW	36.69257114	-107.9632207	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			200,914	9,116	
G	2300430453309371599	30045330930000	CALVIN	1F	BURLINGTON RESOURCES O&G CO LP	29N 11W 26J SW NW SE	36.6942192	-107.9587095	BASIN	SAN JUAN	ACTIVE	DAKOTA		2,529	300,103	15,362	[illegible]
G	2300430453431271629	30045343120000	ROYAL FLUSH	1	MANANA GAS INCORPORATED	29N 11W 22N W2 SE SW	36.70572753	-107.9808151	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			116,412	6,720	1,810
G	2300430453440971629	30045344090000	JACQUE	2	HOLCOMB OIL & GAS INCORPORATED	29N 11W 27H NW SE NE	36.69957456	-107.9729694	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			62,853	3,225	1,897
G	2300430453446371629	30045344630000	JACQUE	1	HOLCOMB OIL & GAS INCORPORATED	29N 11W 27L	36.69410423	-107.9721853	BASIN	SAN JUAN	ACTIVE	FRUITLAND COAL			75,123	8,922	1,890

TO BE P&A'd

other SWD IN 1-mile AOR

Penetrations - 1 mile SWD (1)

Bloomfield Terminal
Western Refining Southwest, Inc.
Proposed Waste Disposal Well (WDW) #2
Sources of Injection Fluids
Table 1

Waste Water Source	Description	Waste Type	Frequency	Discharge Volume
Waste Water Treatment System Effluent	The waste water treatment system processes waste water from terminal. The system consists of three stages : an API Separator, Benzene Strippers and Aeration Lagoons (aka. Aggressive Biological Treatment).[1,2]	Non-Exempt	Routine	October to April - 20 to 50 GPM April to October - 50 to 100 GPM
Contact Storm Water - Evaporation Ponds	Precipitation (storm water) that falls into the evaporation ponds is contained and discharged directly to the WDW #2 injection well.	Non-Exempt	Non-Routine	Dependent on Precipitation
Injection Well Stimulation and Maintenance	Fluids produced from the injection well during stimulation and maintenance operations.	Non-Exempt	Non-Routine	Dependent on scope of work

1. Final waste water treatment consists of Aggressive Biological Treatment (ABT).

2. Process Sewer System conveys waste water from various collection points to the waste water treatment system.

Bloomfield Terminal
Western Refining Southwest, Inc.
Proposed Waste Disposal Well (WDW) #2
Waste Water Treatment Plant Influent
Table 2

Waste Water Source	Description	Waste Type	Frequency	Discharge Volume
Recovered Ground Water	Ground water remediation efforts includes pump and treat remedies. Hydrocarbon impacted water is recovered from multiple recovery wells and the Hammond Ditch French Drain Recovery System. Recovered water containing trace hydrocarbons is discharged to the process sewer system.[1,2]	Non-Exempt	Routine	October to April - 15 to 45 GPM April to October - 30 to 90 GPM
Boiler	Boiler blowdown waste water containing dissolved solids is discharged to the terminal process sewer system.	Non-Exempt	Routine	1,200 gallons per day
Heater Treater at Terminals	Steam is used to separate water from crude oil. Waste water containing trace hydrocarbons and dissolved solids is discharged to process sewer system.	Non-Exempt[3]	Routine	150 gallons per day
Boiler Feed Water Treatment System	Raw water is treated by this system to remove impurities before being supplied as feed water to the boiler system. Waste water from water softening units containing dissolved solids is routinely discharged to the process sewer system.[1]	Non-Exempt	Routine	280 gallons per day
Storage Tanks	Crude and product storage tanks are occasionally drained of bottom/decanted water. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system.	Non-Exempt[3]	Non-Routine	Dependent on Crude/Product Quality
Recoverable Material	The recoverable material is processed by the API Separator to recover the oil from water.	Non-Exempt[3]	Non-Routine	Dependent of Water Fraction
Process Equipment Cleaning	Wash water used in maintenance of process equipment. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system.	Non-Exempt	Non-Routine	Dependent on Maintenance Scope and Schedule
Hydrotest Water	Water used for Mechanical Integrity Testing (MIT) of equipment such as Tanks, piping, etc. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system.	Non-Exempt[3]	Non-Routine	Dependent of MIT Scope and Schedule
Contact Storm Water	Storm water exposed to contaminants by contact with process equipment is contained and discharged to the process sewer system. Contact storm water may contain trace hydrocarbons and dissolved solids.	Non-Exempt	Non-Routine	Dependent on Precipitation

1. Process Sewer System conveys waste water from various collection points to the waste water treatment system.

2. The River Terrace recovered groundwater is treated using a Granular Activated Carbon (GAC) System. The GAC effluent is recycled in the terminal process water system.

3. Bloomfield Terminal is a transportation facility. The exemption of oil and gas exploration and production wastes does not apply to transportation facilities.

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Volatile Organic Compounds *(ug/L)*		1/23/2014		7/28/2014	10/1/2014
1,1,1,2-Tetrachloroethane		< 10	na	< 2.0	< 5.0
1,1,1-Trichloroethane		< 10	na	< 2.0	< 5.0
1,1,2,2-Tetrachloroethane		< 20	na	< 4.0	< 10
1,1,2-Trichloroethane		< 10	na	< 2.0	< 5.0
1,1-Dichloroethane		< 10	na	< 2.0	< 5.0
1,1-Dichloroethene		< 10	na	< 2.0	< 5.0
1,1-Dichloropropene		< 10	na	< 2.0	< 5.0
1,2,3-Trichlorobenzene		< 10	na	< 2.0	< 5.0
1,2,3-Trichloropropane		< 20	na	< 4.0	< 10
1,2,4-Trichlorobenzene		< 10	na	< 2.0	< 5.0
1,2,4-Trimethylbenzene		< 10	na	< 2.0	< 5.0
1,2-Dibromo-3-chloropropane		< 20	na	< 4.0	< 10
1,2-Dibromoethane (EDB)		< 10	na	< 2.0	< 5.0
1,2-Dichlorobenzene		< 10	na	< 2.0	< 5.0
1,2-Dichloroethane (EDC)	500	< 10	na	< 2.0	< 5.0
1,2-Dichloropropane		< 10	na	< 2.0	< 5.0
1,3,5-Trimethylbenzene		< 10	na	< 2.0	< 5.0
1,3-Dichlorobenzene		< 10	na	< 2.0	< 5.0
1,3-Dichloropropane		< 10	na	< 2.0	< 5.0
1,4-Dichlorobenzene	7500	< 10	na	< 2.0	< 5.0
1-Methylnaphthalene		< 40	na	< 8.0	< 20
2,2-Dichloropropane		< 20	na	< 4.0	< 10
2-Butanone		200	na	< 20	< 50
2-Chlorotoluene		< 10	na	< 2.0	< 5.0
2-Hexanone		< 100	na	< 20	< 50
2-Methylnaphthalene		< 40	na	< 8.0	< 20
4-Chlorotoluene		< 10	na	< 2.0	< 5.0
4-Isopropyltoluene		< 10	na	< 2.0	< 5.0
4-Methyl-2-pentanone		< 100	na	< 20	< 50
Acetone		1400	na	85	120
Benzene	500	< 10	na	< 2.0	< 5.0
Bromobenzene		< 10	na	< 2.0	< 5.0
Bromodichloromethane		< 10	na	< 2.0	< 5.0
Bromoform		< 10	na	< 2.0	< 5.0
Bromomethane		< 30	na	< 6.0	< 15
Carbon disulfide		< 100	na	< 20	< 50
Carbon Tetrachloride	500	< 10	na	< 2.0	< 5.0
Chlorobenzene	100000	< 10	na	< 2.0	< 5.0
Chloroethane		< 20	na	< 4.0	< 10
Chloroform	6000	< 10	na	< 2.0	< 5.0
Chloromethane		< 30	na	< 6.0	< 15
cis-1,2-DCE		< 10	na	< 2.0	< 5.0
cis-1,3-Dichloropropene		< 10	na	< 2.0	< 5.0
Dibromochloromethane		< 10	na	< 2.0	< 5.0
Dibromomethane		< 10	na	< 2.0	< 5.0
Dichlorodifluoromethane		< 10	na	< 2.0	< 5.0
Ethylbenzene		< 10	na	< 2.0	< 5.0
Hexachlorobutadiene	500	< 10	na	< 2.0	< 5.0
Isopropylbenzene		< 10	na	< 2.0	< 5.0
Methyl tert-butyl ether (MTBE)		< 10	na	< 2.0	< 5.0
Methylene Chloride		< 30	na	< 6.0	< 15
Naphthalene		< 30	na	< 4.0	< 10
n-Butylbenzene		< 10	na	< 6.0	< 15
n-Propylbenzene		< 20	na	< 2.0	< 5.0
sec-Butylbenzene		< 10	na	< 2.0	< 5.0
Styrene		< 10	na	< 2.0	< 5.0
tert-Butylbenzene		< 10	na	< 2.0	< 5.0
Tetrachloroethene (PCE)		< 10	na	< 2.0	< 5.0
Toluene		< 10	na	< 2.0	< 5.0
trans-1,2-DCE		< 10	na	< 2.0	< 5.0
trans-1,3-Dichloropropene		< 10	na	< 2.0	< 5.0
Trichloroethene (TCE)		< 10	na	< 2.0	< 5.0
Trichlorofluoromethane		< 10	na	< 2.0	< 5.0
Vinyl chloride	200	< 10	na	< 2.0	< 5.0
Xylenes, Total		< 15	na	< 3.0	< 7.5

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Semi-Volatile Organic Compounds *(ug/L)*					
1,2,4-Trichlorobenzene		< 50	na	< 100	< 10
1,2-Dichlorobenzene		< 50	na	< 100	< 10
1,3-Dichlorobenzene		< 50	na	< 100	< 10
1,4-Dichlorobenzene	7500	< 50	na	< 100	< 10
1-Methylnaphthalene		< 50	na	< 100	< 10
2,4,5-Trichlorophenol		< 50	na	< 100	< 10
2,4,6-Trichlorophenol	2000	< 50	na	< 100	< 10
2,4-Dichlorophenol		< 100	na	< 200	< 20
2,4-Dimethylphenol		< 50	na	< 100	< 10
2,4-Dinitrophenol		< 100	na	< 200	< 20
2,4-Dinitrotoluene	130	< 50	na	< 100	< 10
2,6-Dinitrotoluene		< 50	na	< 100	< 10
2-Chloronaphthalene		< 50	na	< 100	< 10
2-Chlorophenol		< 50	na	< 100	< 10
2-Methylnaphthalene		< 50	na	< 100	< 10
2-Methylphenol		< 50	na	< 200	< 20
2-Nitroaniline		< 50	na	< 100	< 10
2-Nitrophenol		< 50	na	< 100	< 10
3,3'-Dichlorobenzidine		< 50	na	210	< 10
3+4-Methylphenol		< 50	na	< 100	< 10
3-Nitroaniline		< 50	na	< 100	< 10
4,6-Dinitro-2-methylphenol		< 100	na	< 200	< 20
4-Bromophenyl phenyl ether		< 50	na	< 100	< 10
4-Chloro-3-methylphenol		< 50	na	< 100	< 10
4-Chloroaniline		< 50	na	< 100	< 10
4-Chlorophenyl phenyl ether		< 50	na	< 100	< 10
4-Nitroaniline		< 50	na	< 100	< 10
4-Nitrophenol		< 50	na	< 100	< 10
Acenaphthene		< 50	na	< 100	< 10
Acenaphthylene		< 50	na	< 100	< 10
Aniline		< 50	na	< 100	< 10
Anthracene		< 50	na	< 100	< 10
Azobenzene		< 50	na	< 100	< 10
Benz(a)anthracene		< 50	na	< 100	< 10
Benzo(a)pyrene		< 50	na	< 100	< 10
Benzo(b)fluoranthene		< 50	na	< 100	< 10
Benzo(g,h,i)perylene		< 50	na	< 100	< 10
Benzo(k)fluoranthene		< 50	na	< 100	< 10
Benzoic acid		< 100	na	< 200	< 40
Benzyl alcohol		< 50	na	< 100	< 10
Bis(2-chloroethoxy)methane		< 50	na	< 100	< 10
Bis(2-chloroethyl)ether		< 50	na	< 100	< 10
Bis(2-chloroisopropyl)ether		< 50	na	< 100	< 10
Bis(2-ethylhexyl)phthalate		< 50	na	< 100	< 10
Butyl benzyl phthalate		< 50	na	< 100	< 10
Carbazole		< 50	na	< 100	< 10
Chrysene		< 50	na	< 100	< 10
Dibenz(a,h)anthracene		< 50	na	< 100	< 10
Dibenzofuran		< 50	na	< 100	< 10
Diethyl phthalate		< 50	na	< 100	< 10
Dimethyl phthalate		< 50	na	< 100	< 10
Di-n-butyl phthalate		< 50	na	< 100	< 10
Di-n-octyl phthalate		< 50	na	< 100	< 20
Fluoranthene		< 50	na	< 100	< 10
Fluorene		< 50	na	< 100	< 10
Hexachlorobenzene	130	< 50	na	< 100	< 10
Hexachlorobutadiene	500	< 50	na	< 100	< 10
Hexachlorocyclopentadiene		< 50	na	< 100	< 10
Hexachloroethane	3000	< 50	na	< 100	< 10
Indeno(1,2,3-cd)pyrene		< 50	na	< 100	< 10
Isophorone		< 50	na	< 100	< 10
Naphthalene		< 50	na	< 100	< 10
Nitrobenzene	2000	< 50	na	< 100	< 10
N-Nitrosodimethylamine		< 50	na	< 100	< 10
N-Nitrosodi-n-propylamine		< 50	na	< 100	< 10
N-Nitrosodiphenylamine		< 50	na	< 100	< 10
Pentachlorophenol	100000	< 100	na	< 200	< 20
Phenanthrene		< 50	na	< 100	< 10
Phenol		< 50	na	< 100	< 10
Pyrene		< 50	na	< 100	< 10
Pyridine	5000	< 50	na	< 100	< 10

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
General Chemistry *(mg/L unless otherwise stated)*					
Specific Conductance *(umhos/cm)*		7100	na	1900	1100
Chloride		2400	na	510	220
Sulfate		35	na	41	26
Total Dissolved Solids		5240	na	1380	742
pH *(pH Units)*		6.25	na	7.10	7.08
Bicarbonate (As CaCO3)		380	na	220	150
Carbonate (As CaCO3)		<2.0	na	<2.0	<2.0
Calcium		490	na	480	110
Magnesium		75	na	99	23
Potassium		37	na	36	8.2
Sodium		1000	na	1100	220
Total Alkalinity (as CaCO3)		380	na	220	150
Total Metals *(mg/L)*					
Arsenic	5.0	< 0.020	na	< 0.020	< 0.020
Barium	*100.0*	*0.56*	*na*	*0.63*	*0.20*
Cadmium	1.0	< 0.0020	na	< 0.0020	< 0.0020
Chromium	5.0	< 0.0060	na	< 0.0060	< 0.0060
Lead	5	< 0.0050	na	< 0.0050	< 0.0050
Selenium	1	< 0.050	na	< 0.050	< 0.050
Silver	5	< 0.0050	na	< 0.0050	< 0.0050
Mercury	0.2	< 0.0010	na	< 0.00020	< 0.00020
Ignitability, Corrosivity, and Reactivity					
Reactive Cyanide *(mg/L)*		<1.0	na	<1.0	<1.0
Reactive Sulfide *(mg/kg)*		1.6	na	<1.0	3.0
Ignitability *(° F)*	< 140° F	>200	na	>200	>200
Corrosivity (ph Units)	≤ 2 or ≥ 12.5	6.25	na	7.44	6.82

Notes:

na = A water sample was not collected during the 2nd quarter of 2014 because the well was not operational.

5. A water sample and corresponding water analysis will be provided once the well is perforated and a water sample can be obtained. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately 3/4 miles to the east. The Ashcroft is a SWD well operated by XTO Energy Resources and is completed in the Entrada and Bluff formations. The NMOCD records did not containing any data regarding the in-situ water quality found in the Ashcroft SWD #1 prior to injection.

VIII. Geology

Underground Drinking Water Sources

The known fresh water zones for the immediate area of the injection well are the Nacimiento and Ojo Alamo Formations of the Tertiary Age. The Nacimiento occurs at the surface and is about 570 feet thick in the immediate area. The Ojo Alamo is about 165 feet thick at an approximate depth of 569 to 734 feet.

Most of the water wells in the surrounding area are concentrated along the San Juan River flood plain and terraces north of the river and Bloomfield Terminal. These wells are completed in the Quaternary sand and gravels at depth of approximately 25 to 75 feet. These sand and gravels rest upon the Nacimiento.

One well (POD# SJ 02148) in the SE quarter of Section 27, T29N, R11W was drilled to a depth of 305 feet intersecting a water bearing sand within the Nacimiento at 225 to 285 feet with an estimated yield of 10gpm. The surface elevation is approximately 20 feet above the surface at proposed injection well location. The total depth of the well is at an approximate elevation of 5,250 feet. This is the deepest water well drilled in the study area according to the NM State Engineer's Office online records. The Point of Diversion Summary for the well is included (below).

Ojo Alamo fm also identified as protectable waters – Sources: Stone & OFR 566

New Mexico Office of the State Engineer
Point of Diversion Summary

POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
SJ 02148	2	4		27	29N	11W	234448	4065184*

Driller License: 847
Driller Name: SAVAGE, BOB

Drill Start Date:	10/20/1987	**Drill Finish Date:**	11/16/1987	**Plug Date:**	
Log File Date:	11/19/1987	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	10 GPM
Casing Size:	7.00	**Depth Well:**	305 feet	**Depth Water:**	186 feet

Water Bearing Stratifications:	Top	Bottom	Description
	225	285	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	266	305

No sample available - on record as part of remediation project for facility

*UTM location was derived from PLSS - see Help

Injection Zone

The Entrada Sandstone formation is Jurassic in age and is described as a wind blown deposit with fine to coarse-grained sandstone particles, clean and well sorted. Generally, the Entrada Sandstone formation is 200 to 280 ft thick throughout the San Juan Basin. Natural fractures are few to nonexistent. The overlaying formation is the Todilto Limestone. Cores from the oil bearing portion of the Entrada formation indicate high porosities and permeability's with averages ranging from 22 – 26 percent and 150 – 450 millidarcies respectively.

The Bluff Sandstone maybe considered as a future injection zone and is not part of this application.

The geologic prognosis and a cross section showing the regional thickness and log characteristics are included (below).

Waste Disposal Well (WDW) #2

Geologic Prognosis — Entrada & Bluff WDW, San Juan County

Header

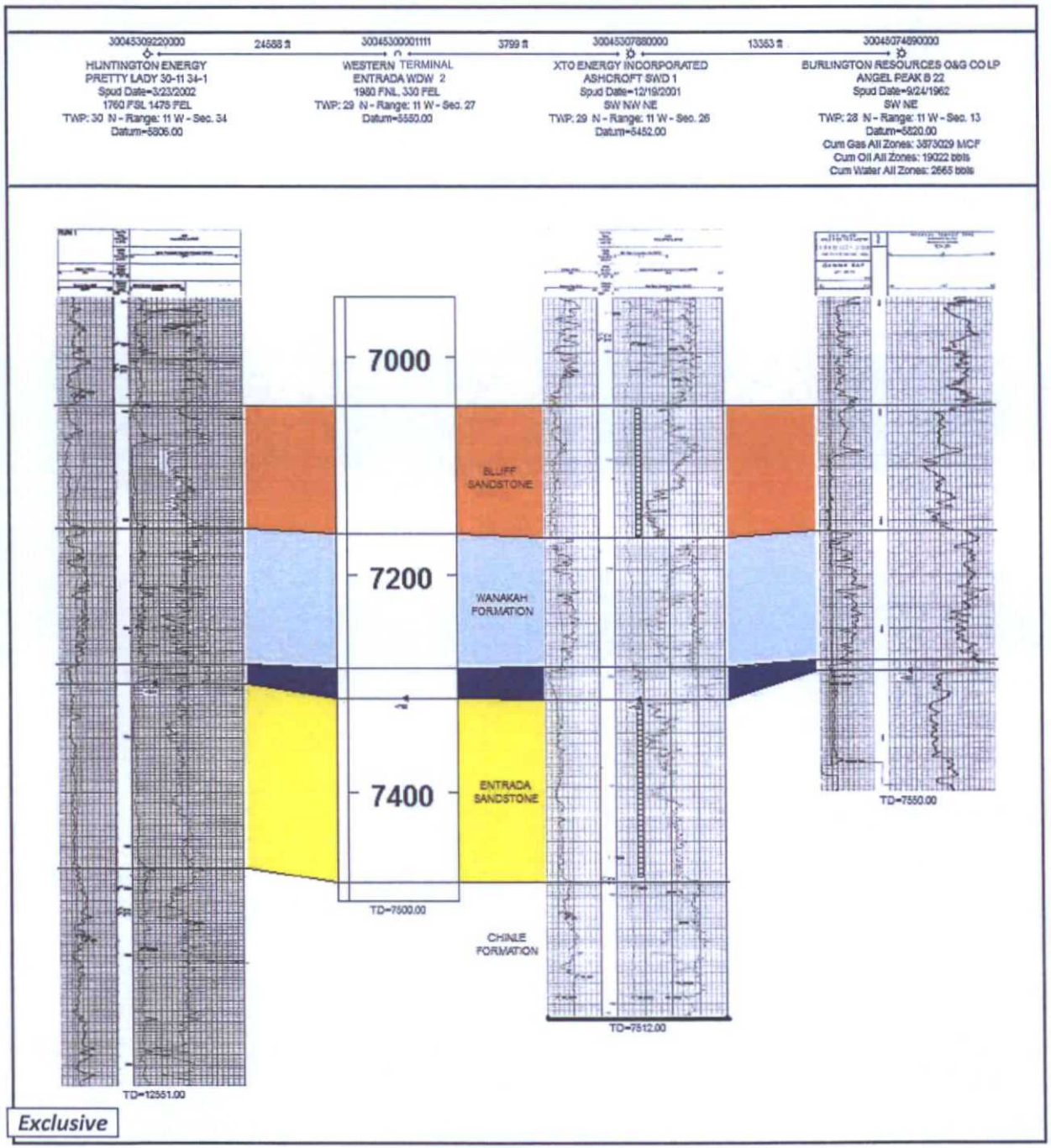
Well Name & Number: Waste Disposal Well (WDW) #2
API: Pending Latitude (NAD 83): 36.698499 Objective: Entrada & Bluff FM Water Disposal Longitude (NAD 83): -107.971156 Location: TWP: 29 N - Range: 11 W - Sec. 27 Field: Basin
Surface Location Footage: 1980 FNL, 330 FEL County: San Juan
Bottom Hole Location Footage: Same as Surface State: New Mexico Lease: GL Elevation: 5538
Surface Owner: KB Elevation: 5550
Type: Proposed TD: 7500 November 25, 2015
Expiration Date: Proposed Plugback: Geologist: Peter Kondrat Depth:

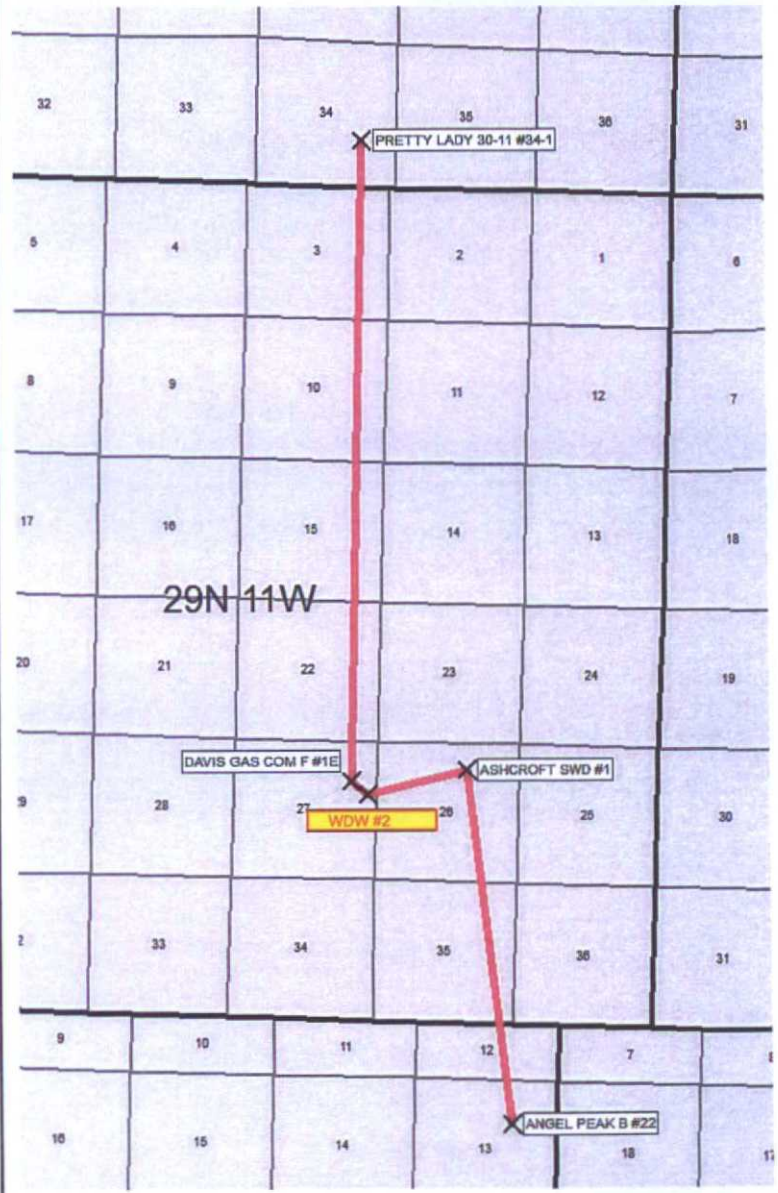
Formation Tops	Top MD (KB)	Top Subsea (KB)	Thickness (FT)	Rock Type	Drilling Notes	Depositional Environment
Quaternary Alluvium	0	5550	10	Unconsolidated Gravels	Boulders, water, lost circulation	Continental Rivers
Naclemento FM	10	5540	505	Shale & Sandstone	Water, gas	Continental Rivers
Ojo Alamo Sandstone	515	5035	110	Sandstone & Shale	Water, gas	Continental Rivers
Kirtland Shale	625	4925	578	Interbeddded Shale, sandstone	Water, gas	Coastal to Alluvial Plain
Fruitland FM	1203	4347	515	Interbeddded Shale, sandstone & coal	Coalbed methane	Coastal Plain
Pictured Cliffs Sandstone	1718	3832	162	Sandstone	Gas, water	Regressive Marine Beach
Lewis Shale	1880	3670	780	Shale, thin limestones	Gas	Offshore Marine
Huerfanito Bentonite Bed	2660	2890	28	Alterted volcanic ash, bentonite bed	Swelling clay	Volcanic Ash Layers
Chacra FM	2688	2862	189	Sandstone, siltstone	Gas, Water	Offshore Marine Sands
Lower Lewis Shale	*2877*	*2673*	458	*Shale, thin limestones*	*Gas, Water*	*Offshore Marine*
Cliff House Sandstone	3335	2215	59	Sandstone	Gas, Water, Oil	Transgressive Marine Beach
Menefee Member	3394	2156	643	Interbeddded Shale, sandstone & coal	Gas, Water, Oil	Coastal Plain
Point Lookout Sandstone	4037	1513	386	Sandstone	Gas, Water, Oil	Regressive Marine Beach
Mancos Shale	4423	1127	869	Shale, thin sandstones & siltstones	Gas, Water, Oil	Offshore Marine
Niobrara A	5292	258	102	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Niobrara B	5394	156	123	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Niobrara C	5517	33	82	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Gallup FM	5599	-49	243	Interbeddded Shale, sandstone	Oil, Gas, Water	Regressive Marine to Coastal Deposit
Juana Lopez FM	5842	-292	123	Shale, thin limestones	Oil, Gas, Water	Offshore Marine
Carlile Shale	5965	-415	95	Shale, thin limestones	Oil, Gas, Water	Offshore Marine
Greenhorn Limestone	6060	-510	56	Limestone	Oil, Gas, Water	Offshore Marine
Graneros Shale	6116	-566	33	Shale	Oil, Gas, Water	Offshore Marine
Dakota FM	6149	-599	216	Sandstone, shale & coals	Oil, Gas, Water	Transgressive Coastal Plain to Marine
Burro Canyon FM	6365	-815	46	Sandstones, some conglomerate & mudstone	Oil, Gas, Water	Braided Fluvial Fill
Morrison FM	6411	-861	635	Mudstones, sandstone	Oil, Gas, Water	Continental Rivers
Bluff Sandstone (aka Junction Creek Sandstone), Morrison FM Member	7046	-1496	118	Sandstone	Oil, Gas, Water	Alluvial Plain and Eolian
Wanakah FM	7164	-1614	123	Siltstone, Sandstone	Oil, Gas, Water	Alluvial Plain and Eolian
Todilto Limestone & Anhydrite	7287	-1737	28	Interbedded Limestone & Anhydrite	Oil, Gas, Water, Anyhydrite	Alluvial Plain and Eolian
Entrada Sandstone	7315	-1765	168	Sandstone	Oil, Gas, Water	Eolian Sand Dunes
Chinle FM	7483	-1933	17	Interbeddded Shale, sandstone	Oil, Gas, Water	Continental Rivers
Proposed TD	*7500*	*-1950*		*TD designed for complete log coverage over Entrada Sandstone.*		

Notes: Any significant flow rates, abnormal pressures, lost circulation, sticking, fluid loss or gain immediately notify company man, drilling superintendent and/or drilling engineer.

Regional Bluff & Entrada Sandstones Cross-Section

Western Refining





Exclusive

K4

IX. After the well is drilled, cased and perforated an injectivity test will be performed. If the injection rate is less than 6 BPM prior to parting pressure, the well will be stimulated w/ approximately 222,000 lbs of 20/40 white sand in 110,000 gals of 30# cross linked gel at 50 bpm. Note: actual job design (if needed) will be based on actual results of the injectivity test.

X. All open hole and cased hole logs will be filed with NMOCD once the well is drilled and completed.

XII. Available geologic and engineering data has been examined and no evidence of open faults or any other hydrological connection between the disposal zone, the Entrada Formation, and any underground sources of drinking water, the Nacimiento Formation.

XIII. Based on the information available online as well as information from the "Four Corners Geological Society" there are no known faults located in the area of the proposed well. Natural fractures are few to nonexistent in the Entrada formation. The overlaying formation is the relatively impermeable Todilto Limestone. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately ¾ of mile to the east of the proposed injection well. The Ashcroft SWD #1 is a SWD well operated by XTO Energy and is completed in the Bluff and Entrada formations and has no evidence of water migrating out of the injection zones.

Compiled & prepared by Allen Haines - Western

XIII. Public Notice will follow NMOCD review of this application.] for Class I (NH)

Class II provide in initial application in 12/2016.

AFFIDAVIT OF PUBLICATION

Ad No. 72205

STATE OF NEW MEXICO
County of San Juan:

SAMMY LOPEZ, being duly sworn says: That he IS the PUBLISHER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Monday, December 14, 2015

And the cost of the publication is $60.13

ON 12/15/15 SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Christine Sellers

OFFICIAL SEAL
CHRISTINE SELLERS
Notary Public
State of New Mexico
My Comm. Expires 11/05/19

COPY OF PUBLICATION

Western Refining Southwest, Inc., represented by John Thompson (505) 327-4892, has applied to the New Mexico Oil Conservation Division for administrative approval to be authorized to inject non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the proposed Class I (non-hazardous) disposal well. The proposed SWD #2, will be located 2019' FNL & 110' FEL, Section 27, T29N, R11W, San Juan County, New Mexico.

The proposed injection zone is the Entrada formation. The estimated injection depths are 7315' to 7,483' and the maximum anticipated injection rate is 8000 BPD. The maximum injection pressure will be determined from a step rate test. Interested parties can make comments to this application to the NM Oil Conservation Division, 1220 St. Francis Dr., Santa Fe, NM 87505. Comments must be received within 15 days of the date of this publication.

Legal No. 72205 published in The Daily Times on Dec 14, 2015

December 10, 2015

VIA CERTIFIED MAIL

Attn: Crystal Walker (Regulatory
Coordinator)
Burlington Resources Oil & Gas Company LP
3401 E. 30th Street
Farmington, NM 87402

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Ms. Walker,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator (the Calvin #1 is within a half mile of the proposed SWD #2) you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

VIA CERTIFIED MAIL

Attn: Diane Montano (Regulatory
Compliance Mgr.)
XTO Energy, Inc.
382 Road 3100
Aztec, NM 87410

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Ms. Montano,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Sullivan Gas Com D #1E, Davis Gas Com F #1E, Davis Gas Com F #1R, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

VIA CERTIFIED MAIL

Attn: Regulatory Coordinator
Holcomb Oil & Gas Inc.
512 W. Arrington
Farmington, NM 87402

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Mr. Holcomb,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Davis Com J#1, Jacque #1, Jacque #2, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Burlington Resources Oil & Gas
Attn: Crystal Walker
3401 E. 30th St.
Farmington, NM 87401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Judith Dee ☒ Agent ☐ Addressee

B. Received by (Printed Name) Judith Dee
C. Date of Delivery 12-17-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4465

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

XTO Energy, Inc
Attn: Diane Montano
382 Rd. 3100
Aztec, NM 87410

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Reuel S. Mendias ☐ Agent ☐ Addressee

B. Received by (Printed Name) Reuel S. Mendias
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

DEC 17 2015

3. Service Type
☐ Certified Mail ☐ Express Mail
☒ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4441

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Holcomb Oil & Gas Inc
Attn: Regulatory Coordinator
512 W. Arrington
Farmington NM 87401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

FARMINGTON NM
DEC 17 2015
07:31

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7011 1570 0001 0594 4458

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Appendix C
Injection Fluid Analytical

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Volatile Organic Compounds *(ug/L)*		1/23/2014		7/28/2014	10/1/2014
1,1,1,2-Tetrachloroethane		< 10	na	< 2.0	< 5.0
1,1,1-Trichloroethane		< 10	na	< 2.0	< 5.0
1,1,2,2-Tetrachloroethane		< 20	na	< 4.0	< 10
1,1,2-Trichloroethane		< 10	na	< 2.0	< 5.0
1,1-Dichloroethane		< 10	na	< 2.0	< 5.0
1,1-Dichloroethene		< 10	na	< 2.0	< 5.0
1,1-Dichloropropene		< 10	na	< 2.0	< 5.0
1,2,3-Trichlorobenzene		< 10	na	< 2.0	< 5.0
1,2,3-Trichloropropane		< 20	na	< 4.0	< 10
1,2,4-Trichlorobenzene		< 10	na	< 2.0	< 5.0
1,2,4-Trimethylbenzene		< 10	na	< 2.0	< 5.0
1,2-Dibromo-3-chloropropane		< 20	na	< 4.0	< 10
1,2-Dibromoethane (EDB)		< 10	na	< 2.0	< 5.0
1,2-Dichlorobenzene		< 10	na	< 2.0	< 5.0
1,2-Dichloroethane (EDC)	500	< 10	na	< 2.0	< 5.0
1,2-Dichloropropane		< 10	na	< 2.0	< 5.0
1,3,5-Trimethylbenzene		< 10	na	< 2.0	< 5.0
1,3-Dichlorobenzene		< 10	na	< 2.0	< 5.0
1,3-Dichloropropane		< 10	na	< 2.0	< 5.0
1,4-Dichlorobenzene	7500	< 10	na	< 2.0	< 5.0
1-Methylnaphthalene		< 40	na	< 8.0	< 20
2,2-Dichloropropane		< 20	na	< 4.0	< 10
2-Butanone		200	na	< 20	< 50
2-Chlorotoluene		< 10	na	< 2.0	< 5.0
2-Hexanone		< 100	na	< 20	< 50
2-Methylnaphthalene		< 40	na	< 8.0	< 20
4-Chlorotoluene		< 10	na	< 2.0	< 5.0
4-Isopropyltoluene		< 10	na	< 2.0	< 5.0
4-Methyl-2-pentanone		< 100	na	< 20	< 50
Acetone		1400	na	85	120
Benzene	500	< 10	na	< 2.0	< 5.0
Bromobenzene		< 10	na	< 2.0	< 5.0
Bromodichloromethane		< 10	na	< 2.0	< 5.0
Bromoform		< 10	na	< 2.0	< 5.0
Bromomethane		< 30	na	< 6.0	< 15
Carbon disulfide		< 100	na	< 20	< 50
Carbon Tetrachloride	500	< 10	na	< 2.0	< 5.0
Chlorobenzene	100000	< 10	na	< 2.0	< 5.0
Chloroethane		< 20	na	< 4.0	< 10
Chloroform	6000	< 10	na	< 2.0	< 5.0
Chloromethane		< 30	na	< 6.0	< 15
cis-1,2-DCE		< 10	na	< 2.0	< 5.0
cis-1,3-Dichloropropene		< 10	na	< 2.0	< 5.0
Dibromochloromethane		< 10	na	< 2.0	< 5.0
Dibromomethane		< 10	na	< 2.0	< 5.0
Dichlorodifluoromethane		< 10	na	< 2.0	< 5.0
Ethylbenzene		< 10	na	< 2.0	< 5.0
Hexachlorobutadiene	500	< 10	na	< 2.0	< 5.0
Isopropylbenzene		< 10	na	< 2.0	< 5.0
Methyl tert-butyl ether (MTBE)		< 10	na	< 2.0	< 5.0
Methylene Chloride		< 30	na	< 6.0	< 15
Naphthalene		< 30	na	< 4.0	< 10
n-Butylbenzene		< 10	na	< 6.0	< 15
n-Propylbenzene		< 20	na	< 2.0	< 5.0
sec-Butylbenzene		< 10	na	< 2.0	< 5.0
Styrene		< 10	na	< 2.0	< 5.0
tert-Butylbenzene		< 10	na	< 2.0	< 5.0
Tetrachloroethene (PCE)		< 10	na	< 2.0	< 5.0
Toluene		< 10	na	< 2.0	< 5.0
trans-1,2-DCE		< 10	na	< 2.0	< 5.0
trans-1,3-Dichloropropene		< 10	na	< 2.0	< 5.0
Trichloroethene (TCE)		< 10	na	< 2.0	< 5.0
Trichlorofluoromethane		< 10	na	< 2.0	< 5.0
Vinyl chloride	200	< 10	na	< 2.0	< 5.0
Xylenes, Total		< 15	na	< 3.0	< 7.5

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Semi-Volatile Organic Compounds *(ug/L)*					
1,2,4-Trichlorobenzene		< 50	na	< 100	< 10
1,2-Dichlorobenzene		< 50	na	< 100	< 10
1,3-Dichlorobenzene		< 50	na	< 100	< 10
1,4-Dichlorobenzene	7500	< 50	na	< 100	< 10
1-Methylnaphthalene		< 50	na	< 100	< 10
2,4,5-Trichlorophenol		< 50	na	< 100	< 10
2,4,6-Trichlorophenol	2000	< 50	na	< 100	< 10
2,4-Dichlorophenol		< 100	na	< 200	< 20
2,4-Dimethylphenol		< 50	na	< 100	< 10
2,4-Dinitrophenol		< 100	na	< 200	< 20
2,4-Dinitrotoluene	130	< 50	na	< 100	< 10
2,6-Dinitrotoluene		< 50	na	< 100	< 10
2-Chloronaphthalene		< 50	na	< 100	< 10
2-Chlorophenol		< 50	na	< 100	< 10
2-Methylnaphthalene		< 50	na	< 100	< 10
2-Methylphenol		< 50	na	< 200	< 20
2-Nitroaniline		< 50	na	< 100	< 10
2-Nitrophenol		< 50	na	< 100	< 10
3,3'-Dichlorobenzidine		< 50	na	210	< 10
3+4-Methylphenol		< 50	na	< 100	< 10
3-Nitroaniline		< 50	na	< 100	< 10
4,6-Dinitro-2-methylphenol		< 100	na	< 200	< 20
4-Bromophenyl phenyl ether		< 50	na	< 100	< 10
4-Chloro-3-methylphenol		< 50	na	< 100	< 10
4-Chloroaniline		< 50	na	< 100	< 10
4-Chlorophenyl phenyl ether		< 50	na	< 100	< 10
4-Nitroaniline		< 50	na	< 100	< 10
4-Nitrophenol		< 50	na	< 100	< 10
Acenaphthene		< 50	na	< 100	< 10
Acenaphthylene		< 50	na	< 100	< 10
Aniline		< 50	na	< 100	< 10
Anthracene		< 50	na	< 100	< 10
Azobenzene		< 50	na	< 100	< 10
Benz(a)anthracene		< 50	na	< 100	< 10
Benzo(a)pyrene		< 50	na	< 100	< 10
Benzo(b)fluoranthene		< 50	na	< 100	< 10
Benzo(g,h,i)perylene		< 50	na	< 100	< 10
Benzo(k)fluoranthene		< 50	na	< 100	< 10
Benzoic acid		< 100	na	< 200	< 40
Benzyl alcohol		< 50	na	< 100	< 10
Bis(2-chloroethoxy)methane		< 50	na	< 100	< 10
Bis(2-chloroethyl)ether		< 50	na	< 100	< 10
Bis(2-chloroisopropyl)ether		< 50	na	< 100	< 10
Bis(2-ethylhexyl)phthalate		< 50	na	< 100	< 10
Butyl benzyl phthalate		< 50	na	< 100	< 10
Carbazole		< 50	na	< 100	< 10
Chrysene		< 50	na	< 100	< 10
Dibenz(a,h)anthracene		< 50	na	< 100	< 10
Dibenzofuran		< 50	na	< 100	< 10
Diethyl phthalate		< 50	na	< 100	< 10
Dimethyl phthalate		< 50	na	< 100	< 10
Di-n-butyl phthalate		< 50	na	< 100	< 10
Di-n-octyl phthalate		< 50	na	< 100	< 20
Fluoranthene		< 50	na	< 100	< 10
Fluorene		< 50	na	< 100	< 10
Hexachlorobenzene	*130*	*< 50*	*na*	*< 100*	*< 10*
Hexachlorobutadiene	500	< 50	na	< 100	< 10
Hexachlorocyclopentadiene		< 50	na	< 100	< 10
Hexachloroethane	3000	< 50	na	< 100	< 10
Indeno(1,2,3-cd)pyrene		< 50	na	< 100	< 10
Isophorone		< 50	na	< 100	< 10
Naphthalene		*< 50*	*na*	*< 100*	*< 10*
Nitrobenzene	2000	< 50	na	< 100	< 10
N-Nitrosodimethylamine		< 50	na	< 100	< 10
N-Nitrosodi-n-propylamine		< 50	na	< 100	< 10
N-Nitrosodiphenylamine		< 50	na	< 100	< 10
Pentachlorophenol	100000	< 100	na	< 200	< 20
Phenanthrene		*< 50*	*na*	*< 100*	*< 10*
Phenol		< 50	na	< 100	< 10
Pyrene		< 50	na	< 100	< 10
Pyridine	5000	< 50	na	< 100	< 10

Table 3

Injection Well
2014 Quarterly Analytical Summary

	Toxicity Characteristics	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
General Chemistry *(mg/L unless otherwise stated)*					
Specific Conductance (umhos/cm)		7100	*na*	1900	1100
Chloride		2400	na	510	220
Sulfate		35	na	41	26
Total Dissolved Solids		5240	na	1380	742
pH *(pH Units)*		6.25	na	7.10	7.08
Bicarbonate (As CaCO3)		380	na	220	150
Carbonate (As CaCO3)		<2.0	na	<2.0	<2.0
Calcium		490	na	480	110
Magnesium		75	na	99	23
Potassium		37	*na*	36	8.2
Sodium		1000	na	1100	220
Total Alkalinity (as CaCO3)		380	na	220	150
Total Metals *(mg/L)*					
Arsenic	5.0	< 0.020	na	< 0.020	< 0.020
Barium	100.0	0.56	na	0.63	0.20
Cadmium	1.0	< 0.0020	na	< 0.0020	< 0.0020
Chromium	5.0	< 0.0060	na	< 0.0060	< 0.0060
Lead	5	< 0.0050	na	< 0.0050	< 0.0050
Selenium	1	*< 0.050*	*na*	*< 0.050*	*< 0.050*
Silver	5	< 0.0050	na	< 0.0050	< 0.0050
Mercury	0.2	< 0.0010	na	< 0.00020	< 0.00020
Ignitability, Corrosivity, and Reactivity					
Reactive Cyanide *(mg/L)*		<1.0	na	<1.0	<1.0
Reactive Sulfide *(mg/kg)*		1.6	na	<1.0	3.0
Ignitability *(° f)*	< 140° F	>200	na	>200	>200
Corrosivity (ph Units)	≤ 2 or ≥ 12.5	6.25	na	7.44	6.82

Notes:

na = A water sample was not collected during the 2nd quarter of 2014 because the well was not operational.

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

February 13, 2014

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Injection Well 1-23-2014 OrderNo.: 1401A07

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/24/2014 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 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 qualifers 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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
Lab ID: 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	2400	100		mg/L	200	1/27/2014 7:14:18 PM	R16337
Sulfate	35	5.0		mg/L	10	1/24/2014 8:01:43 PM	R16313
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.0010		mg/L	5	1/30/2014 1:52:43 PM	11463
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	1/29/2014 11:20:46 AM	11432
Barium	0.56	0.020		mg/L	1	1/29/2014 11:20:46 AM	11432
Cadmium	ND	0.0020		mg/L	1	1/29/2014 11:20:46 AM	11432
Calcium	490	5.0		mg/L	5	1/29/2014 11:22:17 AM	11432
Chromium	ND	0.0060		mg/L	1	1/29/2014 11:20:46 AM	11432
Lead	ND	0.0050		mg/L	1	1/29/2014 11:20:46 AM	11432
Magnesium	75	1.0		mg/L	1	1/29/2014 11:20:46 AM	11432
Potassium	37	1.0		mg/L	1	1/29/2014 11:20:46 AM	11432
Selenium	ND	0.050		mg/L	1	1/29/2014 11:20:46 AM	11432
Silver	ND	0.0050		mg/L	1	1/29/2014 11:20:46 AM	11432
Sodium	1000	20		mg/L	20	1/29/2014 11:50:27 AM	11432
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Acenaphthylene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Aniline	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Anthracene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Azobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benz(a)anthracene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzo(a)pyrene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzo(b)fluoranthene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzo(g,h,i)perylene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzo(k)fluoranthene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzoic acid	ND	100		µg/L	1	1/30/2014 7:14:30 PM	11420
Benzyl alcohol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Bis(2-chloroethoxy)methane	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Bis(2-chloroethyl)ether	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Bis(2-chloroisopropyl)ether	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Bis(2-ethylhexyl)phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Bromophenyl phenyl ether	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Butyl benzyl phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Carbazole	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Chloro-3-methylphenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Chloroaniline	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
Lab ID: 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
2-Chloronaphthalene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2-Chlorophenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Chlorophenyl phenyl ether	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Chrysene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Di-n-butyl phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Di-n-octyl phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Dibenz(a,h)anthracene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Dibenzofuran	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
1,2-Dichlorobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
1,3-Dichlorobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
1,4-Dichlorobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
3,3'-Dichlorobenzidine	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Diethyl phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Dimethyl phthalate	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4-Dichlorophenol	ND	100		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4-Dimethylphenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4,6-Dinitro-2-methylphenol	ND	100		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4-Dinitrophenol	ND	100		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4-Dinitrotoluene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2,6-Dinitrotoluene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Fluoranthene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Fluorene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Hexachlorobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Hexachlorobutadiene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Hexachlorocyclopentadiene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Hexachloroethane	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Indeno(1,2,3-cd)pyrene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Isophorone	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
1-Methylnaphthalene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2-Methylnaphthalene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2-Methylphenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
3+4-Methylphenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
N-Nitrosodi-n-propylamine	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
N-Nitrosodimethylamine	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
N-Nitrosodiphenylamine	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Naphthalene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2-Nitroaniline	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
3-Nitroaniline	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Nitroaniline	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
Lab ID: 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Nitrobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2-Nitrophenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
4-Nitrophenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Pentachlorophenol	ND	100		µg/L	1	1/30/2014 7:14:30 PM	11420
Phenanthrene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Phenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Pyrene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Pyridine	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
1,2,4-Trichlorobenzene	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4,5-Trichlorophenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
2,4,6-Trichlorophenol	ND	50		µg/L	1	1/30/2014 7:14:30 PM	11420
Surr: 2-Fluorophenol	66.2	22.7-98		%REC	1	1/30/2014 7:14:30 PM	11420
Surr: Phenol-d5	54.5	23.4-74.9		%REC	1	1/30/2014 7:14:30 PM	11420
Surr: 2,4,6-Tribromophenol	97.6	23.3-111		%REC	1	1/30/2014 7:14:30 PM	11420
Surr: Nitrobenzene-d5	86.5	36.8-111		%REC	1	1/30/2014 7:14:30 PM	11420
Surr: 2-Fluorobiphenyl	86.4	38.3-110		%REC	1	1/30/2014 7:14:30 PM	11420
Surr: 4-Terphenyl-d14	73.7	52.1-116		%REC	1	1/30/2014 7:14:30 PM	11420
EPA METHOD 8260B: VOLATILES						Analyst: ***DJF***	
Benzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Toluene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Ethylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2,4-Trimethylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,3,5-Trimethylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2-Dichloroethane (EDC)	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Naphthalene	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441
1-Methylnaphthalene	ND	40		µg/L	10	1/31/2014 3:25:28 PM	R16441
2-Methylnaphthalene	ND	40		µg/L	10	1/31/2014 3:25:28 PM	R16441
Acetone	1400	100		µg/L	10	1/31/2014 3:25:28 PM	R16441
Bromobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Bromodichloromethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Bromoform	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Bromomethane	ND	30		µg/L	10	1/31/2014 3:25:28 PM	R16441
2-Butanone	200	100		µg/L	10	1/31/2014 3:25:28 PM	R16441
Carbon disulfide	ND	100		µg/L	10	1/31/2014 3:25:28 PM	R16441
Carbon Tetrachloride	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Chlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Chloroethane	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441

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.

CLIENT: Western Refining Southwest, Inc.
Project: Injection Well 1-23-2014
Lab ID: 1401A07-001 **Matrix:** AQUEOUS

Client Sample ID: Injection Well
Collection Date: 1/23/2014 8:35:00 AM
Received Date: 1/24/2014 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Chloroform	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Chloromethane	ND	30		µg/L	10	1/31/2014 3:25:28 PM	R16441
2-Chlorotoluene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
4-Chlorotoluene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
cis-1,2-DCE	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
cis-1,3-Dichloropropene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441
Dibromochloromethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Dibromomethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2-Dichlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,3-Dichlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,4-Dichlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Dichlorodifluoromethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1-Dichloroethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1-Dichloroethene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2-Dichloropropane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,3-Dichloropropane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
2,2-Dichloropropane	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1-Dichloropropene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Hexachlorobutadiene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
2-Hexanone	ND	100		µg/L	10	1/31/2014 3:25:28 PM	R16441
Isopropylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
4-Isopropyltoluene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
4-Methyl-2-pentanone	ND	100		µg/L	10	1/31/2014 3:25:28 PM	R16441
Methylene Chloride	ND	30		µg/L	10	1/31/2014 3:25:28 PM	R16441
n-Butylbenzene	ND	30		µg/L	10	1/31/2014 3:25:28 PM	R16441
n-Propylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
sec-Butylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Styrene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
tert-Butylbenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441
Tetrachloroethene (PCE)	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
trans-1,2-DCE	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
trans-1,3-Dichloropropene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2,3-Trichlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2,4-Trichlorobenzene	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1,1-Trichloroethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,1,2-Trichloroethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441

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.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well
Project: Injection Well 1-23-2014
Collection Date: 1/23/2014 8:35:00 AM
Lab ID: 1401A07-001
Matrix: AQUEOUS
Received Date: 1/24/2014 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Trichloroethene (TCE)	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Trichlorofluoromethane	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
1,2,3-Trichloropropane	ND	20		µg/L	10	1/31/2014 3:25:28 PM	R16441
Vinyl chloride	ND	10		µg/L	10	1/31/2014 3:25:28 PM	R16441
Xylenes, Total	ND	15		µg/L	10	1/31/2014 3:25:28 PM	R16441
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	10	1/31/2014 3:25:28 PM	R16441
Surr: 4-Bromofluorobenzene	86.4	70-130		%REC	10	1/31/2014 3:25:28 PM	R16441
Surr: Dibromofluoromethane	98.8	70-130		%REC	10	1/31/2014 3:25:28 PM	R16441
Surr: Toluene-d8	101	70-130		%REC	10	1/31/2014 3:25:28 PM	R16441
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **SRM**	
Conductivity	7100	0.010		µmhos/cm	1	1/24/2014 5:53:17 PM	R16304
SM4500-H+B: PH						Analyst: **SRM**	
pH	6.25	1.68	H	pH units	1	1/24/2014 5:53:17 PM	R16304
SM2320B: ALKALINITY						Analyst: **SRM**	
Bicarbonate (As CaCO3)	380	20		mg/L CaCO3	1	1/24/2014 5:53:17 PM	R16304
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	1/24/2014 5:53:17 PM	R16304
Total Alkalinity (as CaCO3)	380	20		mg/L CaCO3	1	1/24/2014 5:53:17 PM	R16304
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	5240	100	*	mg/L	1	1/28/2014 5:33:00 PM	11406

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		

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	140128036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1401A07
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	140128036-001	**Sampling Date**	1/23/2014	**Date/Time Received**	1/28/2014 12:18 PM
Client Sample ID	1401A07-001E / INJECTION WELL			**Sampling Time**	8:35 AM
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/L	1	2/12/2014	CRW	SW846 CH7	
Flashpoint	>200	°F		2/4/2014	KFG	EPA 1010	
pH	5.89	ph Units		1/31/2014	AJT	EPA 150.1	
Reactive sulfide	1.57	mg/L	1	1/29/2014	AJT	SW846 CH7	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0085; FL(NELAP): E871099

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R16313**	RunNo: **16313**
Prep Date:	Analysis Date: **1/24/2014**	SeqNo: **470380** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R16313**	RunNo: **16313**
Prep Date:	Analysis Date: **1/24/2014**	SeqNo: **470381** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.6	0.50	10.00	0	96.0	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R16337**	RunNo: **16337**
Prep Date:	Analysis Date: **1/27/2014**	SeqNo: **471000** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R16337**	RunNo: **16337**
Prep Date:	Analysis Date: **1/27/2014**	SeqNo: **471001** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.6	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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16441**	RunNo: **16441**
Prep Date:	Analysis Date: **1/31/2014**	SeqNo: **474209** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

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#: 1401A07

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID 5ml rb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES
Client ID: PBW	Batch ID: R16441	RunNo: 16441
Prep Date:	Analysis Date: 1/31/2014	SeqNo: 474209 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	8.4		10.00		84.4	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.4	70	130			
Surr: Toluene-d8	9.3		10.00		93.0	70	130			

Sample ID 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES
Client ID: LCSW	Batch ID: R16441	RunNo: 16441
Prep Date:	Analysis Date: 1/31/2014	SeqNo: 474213 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	101	82.2	124			
Chlorobenzene	18	1.0	20.00	0	92.5	70	130			

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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **100ng lcs**	SampType: **LCS**			TestCode: **EPA Method 8260B: VOLATILES**						
Client ID: **LCSW**	Batch ID: **R16441**			RunNo: **16441**						
Prep Date:	Analysis Date: **1/31/2014**			SeqNo: **474213**		Units: **µg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	24	1.0	20.00	0	119	83.5	155			
Trichloroethene (TCE)	19	1.0	20.00	0	93.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	8.8		10.00		88.1	70	130			
Surr: Dibromofluoromethane	8.1		10.00		80.7	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **mb-11420**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **11420**	RunNo: **16402**
Prep Date: **1/27/2014**	Analysis Date: **1/30/2014**	SeqNo: **473422** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **mb-11420**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**	
Client ID: **PBW**	Batch ID: **11420**	RunNo: **16402**	
Prep Date: **1/27/2014**	Analysis Date: **1/30/2014**	SeqNo: **473422**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	120		200.0		60.4	22.7	98			
Surr: Phenol-d5	91		200.0		45.4	23.4	74.9			
Surr: 2,4,6-Tribromophenol	150		200.0		74.9	23.3	111			
Surr: Nitrobenzene-d5	81		100.0		80.7	36.8	111			
Surr: 2-Fluorobiphenyl	77		100.0		76.6	38.3	110			
Surr: 4-Terphenyl-d14	74		100.0		73.9	52.1	116			

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

WO#: 1401A07

Hall Environmental Analysis Laboratory, Inc.

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID lcs-11420	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles							
Client ID: LCSW	Batch ID: 11420	RunNo: 16402							
Prep Date: 1/27/2014	Analysis Date: 1/30/2014	SeqNo: 473423	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	72	10	100.0	0	72.4	48	101			
4-Chloro-3-methylphenol	130	10	200.0	0	67.2	47.9	109			
2-Chlorophenol	70	10	200.0	0	35.0	40	105			S
1,4-Dichlorobenzene	60	10	100.0	0	60.3	40.8	94.3			
2,4-Dinitrotoluene	63	10	100.0	0	63.2	28.3	131			
N-Nitrosodi-n-propylamine	80	10	100.0	0	79.7	46.2	119			
4-Nitrophenol	16	10	200.0	0	8.02	10.5	67.9			S
Pentachlorophenol	31	20	200.0	0	15.5	22.4	81.1			S
Phenol	67	10	200.0	0	33.4	21.4	72.9			
Pyrene	66	10	100.0	0	65.9	46.9	109			
1,2,4-Trichlorobenzene	68	10	100.0	0	67.8	43.1	98.4			
Surr: 2-Fluorophenol	36		200.0		18.0	22.7	98			S
Surr: Phenol-d5	65		200.0		32.3	23.4	74.9			
Surr: 2,4,6-Tribromophenol	72		200.0		36.2	23.3	111			
Surr: Nitrobenzene-d5	74		100.0		73.5	36.8	111			
Surr: 2-Fluorobiphenyl	74		100.0		73.9	38.3	110			
Surr: 4-Terphenyl-d14	80		100.0		80.0	52.1	116			

Sample ID mb-11513	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles							
Client ID: PBW	Batch ID: 11513	RunNo: 16496							
Prep Date: 1/31/2014	Analysis Date: 2/3/2014	SeqNo: 475097	Units: %REC						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	110		200.0		54.9	22.7	98			
Surr: Phenol-d5	93		200.0		46.5	23.4	74.9			
Surr: 2,4,6-Tribromophenol	130		200.0		65.6	23.3	111			
Surr: Nitrobenzene-d5	77		100.0		77.3	36.8	111			
Surr: 2-Fluorobiphenyl	71		100.0		70.6	38.3	110			
Surr: 4-Terphenyl-d14	72		100.0		71.6	52.1	116			

Sample ID lcs-11513	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles							
Client ID: LCSW	Batch ID: 11513	RunNo: 16496							
Prep Date: 1/31/2014	Analysis Date: 2/3/2014	SeqNo: 475098	Units: %REC						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	100		200.0		49.8	22.7	98			
Surr: Phenol-d5	85		200.0		42.3	23.4	74.9			
Surr: 2,4,6-Tribromophenol	150		200.0		77.3	23.3	111			
Surr: Nitrobenzene-d5	82		100.0		81.7	36.8	111			
Surr: 2-Fluorobiphenyl	79		100.0		78.7	38.3	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#: 1401A07

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID	lcs-11513	SampType:	LCS	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	LCSW	Batch ID:	11513	RunNo:	16496					
Prep Date:	1/31/2014	Analysis Date:	2/3/2014	SeqNo:	475098	Units:	%REC			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	61		100.0		61.4	52.1	116			

Sample ID	lcsd-11513	SampType:	LCSD	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02	Batch ID:	11513	RunNo:	16496					
Prep Date:	1/31/2014	Analysis Date:	2/3/2014	SeqNo:	475099	Units:	%REC			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	110		200.0		54.1	22.7	98	0	0	
Surr: Phenol-d5	90		200.0		44.9	23.4	74.9	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		79.0	23.3	111	0	0	
Surr: Nitrobenzene-d5	89		100.0		88.8	36.8	111	0	0	
Surr: 2-Fluorobiphenyl	83		100.0		83.1	38.3	110	0	0	
Surr: 4-Terphenyl-d14	70		100.0		70.1	52.1	116	0	0	

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#: 1401A07

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID	MB-11463	SampType:	MBLK		TestCode:	EPA Method 7470: Mercury				
Client ID:	PBW	Batch ID:	11463		RunNo:	16401				
Prep Date:	1/29/2014	Analysis Date:	1/30/2014		SeqNo:	473049	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-11463	SampType:	LCS		TestCode:	EPA Method 7470: Mercury				
Client ID:	LCSW	Batch ID:	11463		RunNo:	16401				
Prep Date:	1/29/2014	Analysis Date:	1/30/2014		SeqNo:	473050	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.3	80	120			

Sample ID	1401A07-001CMS	SampType:	MS		TestCode:	EPA Method 7470: Mercury				
Client ID:	Injection Well	Batch ID:	11463		RunNo:	16401				
Prep Date:	1/29/2014	Analysis Date:	1/30/2014		SeqNo:	473069	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.0010	0.005000	0	91.0	75	125			

Sample ID	1401A07-001CMSD	SampType:	MSD		TestCode:	EPA Method 7470: Mercury				
Client ID:	Injection Well	Batch ID:	11463		RunNo:	16401				
Prep Date:	1/29/2014	Analysis Date:	1/30/2014		SeqNo:	473070	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.0010	0.005000	0	90.1	75	125	1.02	20	

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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **MB-11432** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **11432** RunNo: **16372**

Prep Date: **1/28/2014** Analysis Date: **1/29/2014** SeqNo: **472096** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID **LCS-11432** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **11432** RunNo: **16372**

Prep Date: **1/28/2014** Analysis Date: **1/29/2014** SeqNo: **472097** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.43	0.020	0.5000	0	85.6	80	120			
Barium	0.43	0.020	0.5000	0	85.5	80	120			
Cadmium	0.42	0.0020	0.5000	0	84.3	80	120			
Calcium	45	1.0	50.00	0	89.1	80	120			
Chromium	0.43	0.0060	0.5000	0	85.3	80	120			
Lead	0.42	0.0050	0.5000	0	84.4	80	120			
Magnesium	45	1.0	50.00	0	90.0	80	120			
Potassium	44	1.0	50.00	0	88.6	80	120			
Selenium	0.42	0.050	0.5000	0	83.4	80	120			
Silver	0.089	0.0050	0.1000	0	88.7	80	120			
Sodium	45	1.0	50.00	0	89.3	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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: *Injection Well 1-23-2014*

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R16304**	RunNo: **16304**							
Prep Date:	Analysis Date: **1/24/2014**	SeqNo: **470197**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R16304**	RunNo: **16304**							
Prep Date:	Analysis Date: **1/24/2014**	SeqNo: **470198**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	82	20	80.00	0	103	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#: **1401A07**

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Sample ID **MB-11406**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **11406**	RunNo: **16349**
Prep Date: **1/27/2014**	Analysis Date: **1/28/2014**	SeqNo: **471302** 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-11406**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **11406**	RunNo: **16349**
Prep Date: **1/27/2014**	Analysis Date: **1/28/2014**	SeqNo: **471303** 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.
- 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

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: 1401A07 RcptNo: 1

Received by/date: LM 01/24/14

Logged By: Michelle Garcia 1/24/2014 10:15:00 AM Michelle Garcia

Completed By: Michelle Garcia 1/24/2014 12:54:49 PM Michelle Garcia

Reviewed By: AT 01/27/14

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?	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° 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 (<2 or >12 unless noted)

Adjusted? No

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	1.2	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other

X EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: **Injection Well**

1-23-2014

Project #:

Project Manager:

Sampler: Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401A07	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ TDS	~~EDB (Method 504.1)~~ Back-up	PAH (8310 or 8270SIMS)	RCRA 8 Metals Ca, Mg, Na, K	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ignitability	Reactivity, Corrosivity	Ec, pH, SO_4, Alk, Cl	~~Sulfates~~ Sulfides	Air Bubbles (Y or N)
1-23-4	8:35	H_2O	Injection Well	5-VOA	HCl	-001										X						
		H_2O	Injection Well	1 - liter	Amber	-001											X					
		H_2O	Injection Well	1-500 ml	Amber	-001				X								X				
		H_2O	Injection Well	1-500 ml	Amber	-001														X		
		H_2O	Injection Well	1-250 ml	H_2SO_4	-001					X											
		H_2O	Injection Well	1-500 ml	HNO_3	-001							X									
		H_2O	Injection Well	1-500 ml	Na OH	-001													X			
		H_2O	Injection Well	1-500 ml	Zn Acutate	-001															X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
1-23-14	1510	Robert Krakow	Christine Walker	1/23/14	1510
1/23/14	1710	Christine Walker		01/24/14	1015

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 notated on the analytical report.

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

August 15, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Injection Well 7-28-14 3rd QTR OrderNo.: 1407D12

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/29/2014 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 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 qualifers 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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 7-28-14 3rd QTR **Collection Date:** 7/28/2014 9:30:00 AM
Lab ID: 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Chloride	510	25		mg/L	50	8/4/2014 5:04:09 PM	R20363
Sulfate	41	2.5		mg/L	5	7/29/2014 4:17:43 PM	R20236
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/4/2014 2:43:32 PM	14571
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/2/2014 2:09:02 PM	14549
Barium	0.63	0.020		mg/L	1	8/2/2014 2:09:02 PM	14549
Cadmium	ND	0.0020		mg/L	1	8/2/2014 2:09:02 PM	14549
Calcium	480	5.0		mg/L	5	8/2/2014 2:10:49 PM	14549
Chromium	ND	0.0060		mg/L	1	8/2/2014 2:09:02 PM	14549
Lead	ND	0.0050		mg/L	1	8/2/2014 2:09:02 PM	14549
Magnesium	99	1.0		mg/L	1	8/2/2014 2:09:02 PM	14549
Potassium	36	1.0		mg/L	1	8/2/2014 2:09:02 PM	14549
Selenium	ND	0.050		mg/L	1	8/2/2014 2:09:02 PM	14549
Silver	ND	0.0050		mg/L	1	8/2/2014 2:09:02 PM	14549
Sodium	1100	20		mg/L	20	8/2/2014 3:24:50 PM	14549
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Acenaphthylene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Aniline	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Anthracene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Azobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benz(a)anthracene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzo(a)pyrene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzo(b)fluoranthene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzo(g,h,i)perylene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzo(k)fluoranthene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzoic acid	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
Benzyl alcohol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Bis(2-chloroethoxy)methane	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Bis(2-chloroethyl)ether	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Bis(2-chloroisopropyl)ether	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Bis(2-ethylhexyl)phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Bromophenyl phenyl ether	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Butyl benzyl phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Carbazole	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Chloro-3-methylphenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Chloroaniline	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 7-28-14 3rd QTR **Collection Date:** 7/28/2014 9:30:00 AM
Lab ID: 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
2-Chloronaphthalene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2-Chlorophenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Chlorophenyl phenyl ether	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Chrysene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Di-n-butyl phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Di-n-octyl phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Dibenz(a,h)anthracene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Dibenzofuran	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
1,2-Dichlorobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
1,3-Dichlorobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
1,4-Dichlorobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
3,3'-Dichlorobenzidine	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Diethyl phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Dimethyl phthalate	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4-Dichlorophenol	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4-Dimethylphenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4,6-Dinitro-2-methylphenol	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4-Dinitrophenol	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4-Dinitrotoluene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2,6-Dinitrotoluene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Fluoranthene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Fluorene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Hexachlorobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Hexachlorobutadiene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Hexachlorocyclopentadiene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Hexachloroethane	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Indeno(1,2,3-cd)pyrene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Isophorone	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
1-Methylnaphthalene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2-Methylnaphthalene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2-Methylphenol	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
3+4-Methylphenol	210	100		µg/L	1	7/31/2014 8:37:47 PM	14520
N-Nitrosodi-n-propylamine	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
N-Nitrosodimethylamine	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
N-Nitrosodiphenylamine	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Naphthalene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2-Nitroaniline	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
3-Nitroaniline	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Nitroaniline	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520

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.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well
Project: Injection Well 7-28-14 3rd QTR
Collection Date: 7/28/2014 9:30:00 AM
Lab ID: 1407D12-001
Matrix: AQUEOUS
Received Date: 7/29/2014 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Nitrobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2-Nitrophenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
4-Nitrophenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Pentachlorophenol	ND	200		µg/L	1	7/31/2014 8:37:47 PM	14520
Phenanthrene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Phenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Pyrene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Pyridine	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
1,2,4-Trichlorobenzene	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4,5-Trichlorophenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
2,4,6-Trichlorophenol	ND	100		µg/L	1	7/31/2014 8:37:47 PM	14520
Surr: 2-Fluorophenol	0	12.1-85.8	S	%REC	1	7/31/2014 8:37:47 PM	14520
Surr: Phenol-d5	0	17.7-65.8	S	%REC	1	7/31/2014 8:37:47 PM	14520
Surr: 2,4,6-Tribromophenol	0	26-138	S	%REC	1	7/31/2014 8:37:47 PM	14520
Surr: Nitrobenzene-d5	0	47.5-119	S	%REC	1	7/31/2014 8:37:47 PM	14520
Surr: 2-Fluorobiphenyl	0	48.1-106	S	%REC	1	7/31/2014 8:37:47 PM	14520
Surr: 4-Terphenyl-d14	0	44-113	S	%REC	1	7/31/2014 8:37:47 PM	14520
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Toluene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Ethylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Naphthalene	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1-Methylnaphthalene	ND	8.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
2-Methylnaphthalene	ND	8.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Acetone	85	20		µg/L	2	7/31/2014 1:41:17 PM	R20298
Bromobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Bromodichloromethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Bromoform	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Bromomethane	ND	6.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
2-Butanone	ND	20		µg/L	2	7/31/2014 1:41:17 PM	R20298
Carbon disulfide	ND	20		µg/L	2	7/31/2014 1:41:17 PM	R20298
Carbon Tetrachloride	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Chlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Chloroethane	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 7-28-14 3rd QTR **Collection Date:** 7/28/2014 9:30:00 AM
Lab ID: 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Chloroform	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Chloromethane	ND	6.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
2-Chlorotoluene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
4-Chlorotoluene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
cis-1,2-DCE	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Dibromochloromethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Dibromomethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2-Dichlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,3-Dichlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,4-Dichlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Dichlorodifluoromethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1-Dichloroethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1-Dichloroethene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2-Dichloropropane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,3-Dichloropropane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
2,2-Dichloropropane	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1-Dichloropropene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Hexachlorobutadiene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
2-Hexanone	ND	20		µg/L	2	7/31/2014 1:41:17 PM	R20298
Isopropylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
4-Isopropyltoluene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
4-Methyl-2-pentanone	ND	20		µg/L	2	7/31/2014 1:41:17 PM	R20298
Methylene Chloride	ND	6.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
n-Butylbenzene	ND	6.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
n-Propylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
sec-Butylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Styrene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
tert-Butylbenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
trans-1,2-DCE	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1,1-Trichloroethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,1,2-Trichloroethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298

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.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well
Project: Injection Well 7-28-14 3rd QTR
Collection Date: 7/28/2014 9:30:00 AM
Lab ID: 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Trichloroethene (TCE)	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Trichlorofluoromethane	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
1,2,3-Trichloropropane	ND	4.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Vinyl chloride	ND	2.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Xylenes, Total	ND	3.0		µg/L	2	7/31/2014 1:41:17 PM	R20298
Surr: 1,2-Dichloroethane-d4	92.4	70-130		%REC	2	7/31/2014 1:41:17 PM	R20298
Surr: 4-Bromofluorobenzene	95.4	70-130		%REC	2	7/31/2014 1:41:17 PM	R20298
Surr: Dibromofluoromethane	100	70-130		%REC	2	7/31/2014 1:41:17 PM	R20298
Surr: Toluene-d8	93.6	70-130		%REC	2	7/31/2014 1:41:17 PM	R20298
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	1900	0.010		µmhos/cm	1	7/29/2014 12:08:01 PM	R20245
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.10	1.68	H	pH units	1	7/29/2014 12:08:01 PM	R20245
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	220	20		mg/L CaCO3	1	7/29/2014 12:08:01 PM	R20245
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	7/29/2014 12:08:01 PM	R20245
Total Alkalinity (as CaCO3)	220	20		mg/L CaCO3	1	7/29/2014 12:08:01 PM	R20245
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1380	200	*	mg/L	1	7/30/2014 5:19:00 PM	14475

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		

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	140730036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1407D12
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	140730036-001	**Sampling Date**	7/28/2014	**Date/Time Received**	7/30/2014 12:25 PM
Client Sample ID	1407D12-001E / INJECTION WELL			**Sampling Time**	9:30 AM
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/L	1	8/12/2014	CRW	SW846 CH7	
Flashpoint	>200	°F		8/5/2014	KFG	EPA 1010	
pH	7.44	ph Units		8/5/2014	AJT	SM 4500pH-B	
Reactive sulfide	ND	mg/L	1	8/1/2014	AJT	SW846 CH7	

Authorized Signature

John Coddington, Lab Manager

MCL *EPA's Maximum Contaminant Level*
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 140730036
Project Name: 1407D12

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Reactive sulfide	0.16	mg/L	0.2	80.0	70-130	8/1/2014	8/1/2014
Cyanide (reactive)	0.505	mg/L	0.5	101.0	80-120	8/12/2014	8/12/2014

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Reactive sulfide	0.18	mg/L	0.2	90.0	11.8	0-25	8/1/2014	8/1/2014

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
140730036-001	Reactive sulfide	ND	0.22	mg/L	0.2	110.0	70-130	8/1/2014	8/1/2014
140730036-001	Cyanide (reactive)	ND	0.919	mg/L	1	91.9	80-120	8/12/2014	8/12/2014

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide (reactive)	0.906	mg/L	1	90.6	1.4	0-25	8/12/2014	8/12/2014

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/L	1	8/12/2014	8/12/2014
Reactive sulfide	ND	mg/L	1	8/1/2014	8/1/2014

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1407D12

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20236**	RunNo: **20236**
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588153** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20236**	RunNo: **20236**
Prep Date:	*Analysis Date:* **7/29/2014**	SeqNo: **588154** *Units:* **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	97.4	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20236**	RunNo: **20236**
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588211** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20236**	RunNo: **20236**
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588212** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.6	0.50	10.00	0	95.6	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20363**	RunNo: **20363**
Prep Date:	Analysis Date: **8/4/2014**	SeqNo: **592146** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20363**	RunNo: **20363**
Prep Date:	Analysis Date: **8/4/2014**	SeqNo: **592147** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.2	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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20363**	RunNo: **20363**
Prep Date:	Analysis Date: **8/5/2014**	SeqNo: **592208** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20363**	RunNo: **20363**
Prep Date:	Analysis Date: **8/5/2014**	SeqNo: **592209** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.8	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

WO#: **1407D12**

Hall Environmental Analysis Laboratory, Inc.

15-Aug-14

Client: Western Refining Southwest, Inc.
Project: Injection Well 7-28-14 3rd QTR

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20230**	RunNo: **20230**
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **587928** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.3	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.2	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		96.7	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R20230**	RunNo: **20230**
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **587930** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.4	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	9.4		10.00		94.3	70	130			

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20298**	RunNo: **20298**
Prep Date:	Analysis Date: **7/31/2014**	SeqNo: **589943** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20298**	RunNo: **20298**
Prep Date:	*Analysis Date:* **7/31/2014**	*SeqNo:* **589943** *Units:* **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20298**	RunNo: **20298**
Prep Date:	Analysis Date: **7/31/2014**	SeqNo: **589943** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.2	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.9	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R20298**	RunNo: **20298**
Prep Date:	Analysis Date: **7/31/2014**	SeqNo: **589945** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	70	130			
Toluene	21	1.0	20.00	0	107	80	120			
Chlorobenzene	20	1.0	20.00	0	99.3	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	110	82.6	131			
Trichloroethene (TCE)	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.6	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.4		10.00		94.3	70	130			

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

WO#: **1407D12**

Hall Environmental Analysis Laboratory, Inc.

15-Aug-14

Client: Western Refining Southwest, Inc.
Project: Injection Well 7-28-14 3rd QTR

Sample ID **mb-14520**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14520**	RunNo: **20300**
Prep Date: **7/31/2014**	Analysis Date: **7/31/2014**	SeqNo: **590031** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

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#: 1407D12

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **mb-14520**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14520**	RunNo: **20300**
Prep Date: **7/31/2014**	Analysis Date: **7/31/2014**	SeqNo: **590031** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	20								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	130		200.0		66.7	12.1	85.8			
Surr: Phenol-d5	95		200.0		47.4	17.7	65.8			
Surr: 2,4,6-Tribromophenol	170		200.0		86.4	26	138			
Surr: Nitrobenzene-d5	84		100.0		83.6	47.5	119			
Surr: 2-Fluorobiphenyl	84		100.0		83.7	48.1	106			
Surr: 4-Terphenyl-d14	94		100.0		94.5	44	113			

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **lcs-14520** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **14520** RunNo: **20300**

Prep Date: **7/31/2014** Analysis Date: **7/31/2014** SeqNo: **590032** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	87	10	100.0	0	87.0	50.3	109			
4-Chloro-3-methylphenol	200	10	200.0	0	99.0	51.2	113			
2-Chlorophenol	190	10	200.0	0	94.9	48.5	104			
1,4-Dichlorobenzene	80	10	100.0	0	79.5	39.5	106			
2,4-Dinitrotoluene	82	10	100.0	0	82.3	45.4	107			
N-Nitrosodi-n-propylamine	91	10	100.0	0	91.0	50.4	119			
4-Nitrophenol	110	10	200.0	0	53.6	15.5	62.2			
Pentachlorophenol	150	20	200.0	0	72.7	23.5	93.5			
Phenol	110	10	200.0	0	54.8	26.8	65.6			
Pyrene	96	10	100.0	0	95.5	54.4	108			
1,2,4-Trichlorobenzene	78	10	100.0	0	78.0	39.9	106			
Surr: 2-Fluorophenol	140		200.0		72.4	12.1	85.8			
Surr: Phenol-d5	100		200.0		52.5	17.7	65.8			
Surr: 2,4,6-Tribromophenol	170		200.0		87.0	26	138			
Surr: Nitrobenzene-d5	100		100.0		101	47.5	119			
Surr: 2-Fluorobiphenyl	96		100.0		96.0	48.1	106			
Surr: 4-Terphenyl-d14	91		100.0		90.9	44	113			

Sample ID **lcsd-14520** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSS02** Batch ID: **14520** RunNo: **20300**

Prep Date: **7/31/2014** Analysis Date: **7/31/2014** SeqNo: **590033** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	77	10	100.0	0	76.5	50.3	109	12.8	27.2	
4-Chloro-3-methylphenol	190	10	200.0	0	93.8	51.2	113	5.37	25.9	
2-Chlorophenol	170	10	200.0	0	84.4	48.5	104	11.7	22.5	
1,4-Dichlorobenzene	73	10	100.0	0	73.3	39.5	106	8.19	24.6	
2,4-Dinitrotoluene	73	10	100.0	0	73.1	45.4	107	11.9	25.3	
N-Nitrosodi-n-propylamine	85	10	100.0	0	84.9	50.4	119	6.98	23.6	
4-Nitrophenol	110	10	200.0	0	52.7	15.5	62.2	1.69	34.7	
Pentachlorophenol	150	20	200.0	0	72.9	23.5	93.5	0.275	32.8	
Phenol	100	10	200.0	0	51.6	26.8	65.6	6.05	25.5	
Pyrene	89	10	100.0	0	88.8	54.4	108	7.31	31.4	
1,2,4-Trichlorobenzene	68	10	100.0	0	68.4	39.9	106	13.1	25.9	
Surr: 2-Fluorophenol	140		200.0		68.8	12.1	85.8	0	0	
Surr: Phenol-d5	110		200.0		53.9	17.7	65.8	0	0	
Surr: 2,4,6-Tribromophenol	170		200.0		86.5	26	138	0	0	
Surr: Nitrobenzene-d5	88		100.0		88.1	47.5	119	0	0	
Surr: 2-Fluorobiphenyl	90		100.0		89.9	48.1	106	0	0	

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID	**lcsd-14520**	SampType: **LCSD**		TestCode: **EPA Method 8270C: Semivolatiles**					
Client ID:	**LCSS02**	Batch ID: **14520**		RunNo: **20300**					
Prep Date:	**7/31/2014**	Analysis Date: **7/31/2014**		SeqNo: **590033**	Units: **µg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	90		100.0		90.0	44	113	0	0	

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID	**1407d12-001b dup**	SampType: **DUP**		TestCode: **SM2510B: Specific Conductance**					
Client ID:	**Injection Well**	Batch ID: **R20245**		RunNo: **20245**					
Prep Date:		*Analysis Date:* ***7/29/2014***		*SeqNo:* ***588403***		*Units:* **µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	1800	0.010						4.30	20	

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID	**MB-14571**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **14571**			RunNo: **20345**					
Prep Date:	**8/4/2014**	Analysis Date: **8/4/2014**			SeqNo: **591482**		Units: **mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		*ND*	*0.00020*								

Sample ID	**LCS-14571**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	***LCSW***	*Batch ID:* ***14571***			*RunNo:* ***20345***					
Prep Date:	**8/4/2014**	Analysis Date: **8/4/2014**			SeqNo: **591483**		Units: **mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0049	0.00020	0.005000	0	98.9	80	120			

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID **MB-14549** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590696** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID **LCS-14549** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	101	80	120			
Barium	0.50	0.020	0.5000	0	99.7	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.7	80	120			
Calcium	ND	1.0	50.00	0	0	80	120			S
Chromium	0.50	0.0060	0.5000	0	100	80	120			
Lead	0.50	0.0050	0.5000	0	99.5	80	120			
Magnesium	ND	1.0	50.00	0	0	80	120			S
Potassium	ND	1.0	50.00	0	0	80	120			S
Selenium	0.52	0.050	0.5000	0	105	80	120			
Silver	0.085	0.0050	0.1000	0	84.9	80	120			
Sodium	ND	1.0	50.00	0	0	80	120			S

Sample ID **LCS Cat-14549** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	51	1.0	50.00	0	101	80	120			
Potassium	49	1.0	50.00	0	97.3	80	120			
Sodium	50	1.0	50.00	0	101	80	120			

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#: **1407D12**

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID	**1407d12-001b dup**	SampType: **DUP**		TestCode: **SM4500-H+B: pH**						
Client ID:	**Injection Well**	Batch ID: **R20245**		RunNo: **20245**						
Prep Date:		Analysis Date: **7/29/2014**		SeqNo: **588388**		Units: **pH units**				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH		7.11	1.68								H

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#: **1407D12**

15-Aug-14

Client: *Western Refining Southwest, Inc.*

Project: Injection Well 7-28-14 3rd QTR

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20245**	RunNo: **20245**							
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588355**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	*SampType:* **LCS**	*TestCode:* **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20245**	RunNo: **20245**							
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588356**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20245**	RunNo: **20245**							
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588376**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20245**	RunNo: **20245**							
Prep Date:	Analysis Date: **7/29/2014**	SeqNo: **588377**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	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#: 1407D12

15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR

Sample ID MB-14475	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: PBW	Batch ID: 14475	RunNo: 20257
Prep Date: 7/29/2014	Analysis Date: 7/30/2014	SeqNo: 588640 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-14475	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: LCSW	Batch ID: 14475	RunNo: 20257
Prep Date: 7/29/2014	Analysis Date: 7/30/2014	SeqNo: 588641 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

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

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: 1407D12 RcptNo: 1

Received by/date: AT 07/29/14

Logged By: Anne Thorne 7/29/2014 7:55:00 AM Anne Thorne

Completed By: Anne Thorne 7/29/2014 Anne Thorne

Reviewed By: MG 07/29/14

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?	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° 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) 2 (<2 or >12 unless noted)

Adjusted? no

Checked by: CS

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	1.0	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: 7-28-14
Injection Well 3rd QTR

Project #:

Project Manager:

Sampler: Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1407212	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TDS	Backup	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals Ca, Mg, Na, K	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ignitability, Corrosivity, Reactivity	Ec, pH, SO4, Alk, Cl	Sulfides	Air Bubbles (Y or N)
7-28-14	9:30	H2O	Injection Well	3-VOA	HCl	001										X					
				1-liter	amber	002											X				
				1-500ml	—	003												X			
				1-500ml	—	004				X									X		
				1-250ml	H_2SO_4	005					X										
				1-500ml	HNO_3	006							X								
				1-500ml	NaOH	007												X			
				1-500ml	ZN Acetate	008														X	

Date:	Time:	Relinquished by:	Received by:	Date Time
7-28-14	1452	Robert Krakow	Christine Walls	7/28/14 1452
7/28/14	1724	Christine Walls		07/29/14 0755

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 notated on the analytical report.

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

October 23, 2014

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Injection Well 4th QTR 10-1-14 OrderNo.: 1410102

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 10/2/2014 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 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 qualifers 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

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

Case Narrative

WO#: **1410102**
Date: **10/23/2014**

CLIENT: Western Refining Southwest, Inc.
Project: Injection Well 4th QTR 10-1-14

Analytical Notes Regarding EPA Method 8260:
The injection well sample was diluted due to a foamy matrix.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
Lab ID: 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Chloride	220	10		mg/L	20	10/2/2014 4:07:13 PM	R21640
Sulfate	26	2.5		mg/L	5	10/2/2014 3:54:49 PM	R21640
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	10/8/2014 3:02:49 PM	15770
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	10/10/2014 9:26:53 AM	15825
Barium	0.20	0.020		mg/L	1	10/10/2014 9:26:53 AM	15825
Cadmium	ND	0.0020		mg/L	1	10/10/2014 9:26:53 AM	15825
Calcium	110	5.0		mg/L	5	10/10/2014 9:28:28 AM	15825
Chromium	ND	0.0060		mg/L	1	10/10/2014 9:26:53 AM	15825
Lead	ND	0.0050		mg/L	1	10/10/2014 9:26:53 AM	15825
Magnesium	23	1.0		mg/L	1	10/10/2014 9:26:53 AM	15825
Potassium	8.2	1.0		mg/L	1	10/10/2014 9:26:53 AM	15825
Selenium	ND	0.050		mg/L	1	10/10/2014 9:26:53 AM	15825
Silver	ND	0.0050		mg/L	1	10/10/2014 9:26:53 AM	15825
Sodium	220	5.0		mg/L	5	10/10/2014 9:28:28 AM	15825
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Acenaphthylene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Aniline	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Anthracene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Azobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benz(a)anthracene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzo(a)pyrene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzo(b)fluoranthene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzo(g,h,i)perylene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzo(k)fluoranthene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzoic acid	ND	40		µg/L	1	10/9/2014 9:16:21 PM	15747
Benzyl alcohol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Bis(2-chloroethyl)ether	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Bromophenyl phenyl ether	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Butyl benzyl phthalate	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Carbazole	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Chloro-3-methylphenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Chloroaniline	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
Lab ID: 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
2-Chloronaphthalene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2-Chlorophenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Chrysene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Di-n-butyl phthalate	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Di-n-octyl phthalate	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
Dibenz(a,h)anthracene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Dibenzofuran	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
1,2-Dichlorobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
1,3-Dichlorobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
1,4-Dichlorobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
3,3'-Dichlorobenzidine	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Diethyl phthalate	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Dimethyl phthalate	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4-Dichlorophenol	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4-Dimethylphenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4-Dinitrophenol	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4-Dinitrotoluene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2,6-Dinitrotoluene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Fluoranthene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Fluorene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Hexachlorobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Hexachlorobutadiene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Hexachlorocyclopentadiene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Hexachloroethane	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Isophorone	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
1-Methylnaphthalene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2-Methylnaphthalene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2-Methylphenol	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
3+4-Methylphenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
N-Nitrosodimethylamine	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
N-Nitrosodiphenylamine	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Naphthalene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2-Nitroaniline	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
3-Nitroaniline	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Nitroaniline	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
Lab ID: 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Nitrobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2-Nitrophenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
4-Nitrophenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Pentachlorophenol	ND	20		µg/L	1	10/9/2014 9:16:21 PM	15747
Phenanthrene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Phenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Pyrene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Pyridine	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
1,2,4-Trichlorobenzene	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4,5-Trichlorophenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
2,4,6-Trichlorophenol	ND	10		µg/L	1	10/9/2014 9:16:21 PM	15747
Surr: 2-Fluorophenol	59.4	12.1-85.8		%REC	1	10/9/2014 9:16:21 PM	15747
Surr: Phenol-d5	52.8	17.7-65.8		%REC	1	10/9/2014 9:16:21 PM	15747
Surr: 2,4,6-Tribromophenol	83.8	26-138		%REC	1	10/9/2014 9:16:21 PM	15747
Surr: Nitrobenzene-d5	76.3	47.5-119		%REC	1	10/9/2014 9:16:21 PM	15747
Surr: 2-Fluorobiphenyl	68.0	48.1-106		%REC	1	10/9/2014 9:16:21 PM	15747
Surr: 4-Terphenyl-d14	69.3	44-113		%REC	1	10/9/2014 9:16:21 PM	15747
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Toluene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Ethylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2,4-Trimethylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,3,5-Trimethylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Naphthalene	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653
1-Methylnaphthalene	ND	20		µg/L	5	10/3/2014 10:52:10 PM	R21653
2-Methylnaphthalene	ND	20		µg/L	5	10/3/2014 10:52:10 PM	R21653
Acetone	120	50		µg/L	5	10/3/2014 10:52:10 PM	R21653
Bromobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Bromodichloromethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Bromoform	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Bromomethane	ND	15		µg/L	5	10/3/2014 10:52:10 PM	R21653
2-Butanone	ND	50		µg/L	5	10/3/2014 10:52:10 PM	R21653
Carbon disulfide	ND	50		µg/L	5	10/3/2014 10:52:10 PM	R21653
Carbon Tetrachloride	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Chlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Chloroethane	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653

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.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
Lab ID: 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Chloroform	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Chloromethane	ND	15		µg/L	5	10/3/2014 10:52:10 PM	R21653
2-Chlorotoluene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
4-Chlorotoluene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
cis-1,2-DCE	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653
Dibromochloromethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Dibromomethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,3-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,4-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Dichlorodifluoromethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1-Dichloroethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1-Dichloroethene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2-Dichloropropane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,3-Dichloropropane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
2,2-Dichloropropane	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1-Dichloropropene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Hexachlorobutadiene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
2-Hexanone	ND	50		µg/L	5	10/3/2014 10:52:10 PM	R21653
Isopropylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
4-Isopropyltoluene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
4-Methyl-2-pentanone	ND	50		µg/L	5	10/3/2014 10:52:10 PM	R21653
Methylene Chloride	ND	15		µg/L	5	10/3/2014 10:52:10 PM	R21653
n-Butylbenzene	ND	15		µg/L	5	10/3/2014 10:52:10 PM	R21653
n-Propylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
sec-Butylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Styrene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
tert-Butylbenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
trans-1,2-DCE	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1,1-Trichloroethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,1,2-Trichloroethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653

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.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well
Project: Injection Well 4th QTR 10-1-14
Collection Date: 10/1/2014 10:00:00 AM
Lab ID: 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Trichloroethene (TCE)	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Trichlorofluoromethane	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
1,2,3-Trichloropropane	ND	10		µg/L	5	10/3/2014 10:52:10 PM	R21653
Vinyl chloride	ND	5.0		µg/L	5	10/3/2014 10:52:10 PM	R21653
Xylenes, Total	ND	7.5		µg/L	5	10/3/2014 10:52:10 PM	R21653
Surr: 1,2-Dichloroethane-d4	82.3	70-130		%REC	5	10/3/2014 10:52:10 PM	R21653
Surr: 4-Bromofluorobenzene	84.8	70-130		%REC	5	10/3/2014 10:52:10 PM	R21653
Surr: Dibromofluoromethane	79.9	70-130		%REC	5	10/3/2014 10:52:10 PM	R21653
Surr: Toluene-d8	84.8	70-130		%REC	5	10/3/2014 10:52:10 PM	R21653
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	1100	0.010		µmhos/cm	1	10/6/2014 5:51:56 PM	R21715
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.08	1.68	H	pH units	1	10/6/2014 5:51:56 PM	R21715
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	150	20		mg/L CaCO3	1	10/6/2014 5:51:56 PM	R21715
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	10/6/2014 5:51:56 PM	R21715
Total Alkalinity (as CaCO3)	150	20		mg/L CaCO3	1	10/6/2014 5:51:56 PM	R21715
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	742	40.0	*	mg/L	1	10/8/2014 4:42:00 PM	15759

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		

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	141003043
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1410102
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	141003043-001	**Sampling Date**	10/1/2014	**Date/Time Received**	10/3/2014 1:30 PM
Client Sample ID	1410102-001E / INJECTION WELL			**Sampling Time**	10:00 AM
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/L	1	10/15/2014	CRW	SW846 CH7	
Flashpoint	>200	°F		10/15/2014	KFG	EPA 1010	
pH	6.82	ph Units		10/6/2014	KJS	SM 4500pH-B	
Reactive sulfide	3.01	mg/L	1	10/15/2014	HSW	SW846 CH7	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	141003043
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1410102
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Reactive sulfide	0.180	mg/L	0.2	90.0	70-130	10/15/2014	10/15/2014
Cyanide (reactive)	0.519	mg/L	0.5	103.8	80-120	10/15/2014	10/15/2014

Matrix Spike

Sample Number	*Parameter*	*Sample Result*	*MS Result*	*Units*	*MS Spike*	*%Rec*	*AR %Rec*	*Prep Date*	*Analysis Date*
141003043-001	Reactive sulfide	3.01	3.77	mg/L	0.767	99.1	70-130	10/15/2014	10/15/2014
141003043-001	*Cyanide (reactive)*	*ND*	2.41	*mg/L*	2.5	96.4	80-120	10/15/2014	10/15/2014

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide (reactive)	2.41	mg/L	2.5	96.4	0.0	0-25	10/15/2014	10/15/2014

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/L	1	10/15/2014	10/15/2014
Reactive sulfide	ND	mg/L	1	10/15/2014	10/15/2014

AR	Acceptable Range
ND	Not Detected.
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871039

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R21640**	RunNo: **21640**
Prep Date:	Analysis Date: **10/2/2014**	SeqNo: **634799** 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								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R21640**	RunNo: **21640**
Prep Date:	Analysis Date: **10/2/2014**	SeqNo: **634800** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Sulfate	9.7	0.50	10.00	0	96.8	90	110			

Qualifiers:

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- E Value above quantitation range
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- 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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **5ml-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21653**	RunNo: **21653**
Prep Date:	Analysis Date: **10/3/2014**	SeqNo: **636225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	*ND*	*10*								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	*ND*	*1.0*								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **5ml-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21653**	RunNo: **21653**
Prep Date:	Analysis Date: **10/3/2014**	SeqNo: **636225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.0		10.00		80.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	8.0		10.00		80.5	70	130			
Surr: Toluene-d8	8.9		10.00		89.4	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21653**	RunNo: **21653**
Prep Date:	Analysis Date: **10/3/2014**	SeqNo: **636227** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.4	70	130			
Toluene	20	1.0	20.00	0	98.8	80	120			
Chlorobenzene	20	1.0	20.00	0	97.9	70	130			

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21653**	RunNo: **21653**
Prep Date:	Analysis Date: **10/3/2014**	SeqNo: **636227** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21	1.0	20.00	0	105	82.6	131			
Trichloroethene (TCE)	19	1.0	20.00	0	96.9	70	130			
Surr: 1,2-Dichloroethane-d4	8.5		10.00		84.9	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.7	70	130			
Surr: Dibromofluoromethane	8.0		10.00		79.7	70	130			
Surr: Toluene-d8	9.1		10.00		91.1	70	130			

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **mb-15747**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **15747**	RunNo: **21803**
Prep Date: **10/7/2014**	Analysis Date: **10/9/2014**	SeqNo: **640784** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	40								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **mb-15747**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **15747**	RunNo: **21803**
Prep Date: **10/7/2014**	Analysis Date: **10/9/2014**	SeqNo: **640784** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	*ND*	*10*								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	*ND*	*10*								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	*ND*	*10*								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	20								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	140		200.0		68.8	12.1	85.8			
Surr: Phenol-d5	130		200.0		64.5	17.7	65.8			
Surr: 2,4,6-Tribromophenol	130		200.0		66.6	26	138			
Surr: Nitrobenzene-d5	79		100.0		79.4	47.5	119			
Surr: 2-Fluorobiphenyl	75		100.0		75.3	48.1	106			
Surr: 4-Terphenyl-d14	74		100.0		74.3	44	113			

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **lcs-15747**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **15747**	RunNo: **21803**
Prep Date: **10/7/2014**	Analysis Date: **10/9/2014**	SeqNo: **640785** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	77	10	100.0	0	76.7	47.9	114			
4-Chloro-3-methylphenol	180	10	200.0	0	88.1	51.7	122			
2-Chlorophenol	170	10	200.0	0	83.0	40.7	113			
1,4-Dichlorobenzene	70	10	100.0	0	70.4	39.6	99.9			
2,4-Dinitrotoluene	69	10	100.0	0	68.9	40.8	113			
N-Nitrosodi-n-propylamine	81	10	100.0	0	81.2	51.2	111			
4-Nitrophenol	130	10	200.0	0	64.1	15.7	86.9			
Pentachlorophenol	120	20	200.0	0	59.2	21.6	104			
Phenol	140	10	200.0	0	71.0	28.6	71.7			
Pyrene	73	10	100.0	0	73.1	54.2	128			
1,2,4-Trichlorobenzene	71	10	100.0	0	71.2	40.9	101			
Surr: 2-Fluorophenol	150		200.0		73.2	12.1	85.8			
Surr: Phenol-d5	140		200.0		71.8	17.7	65.8			S
Surr: 2,4,6-Tribromophenol	140		200.0		70.9	26	138			
Surr: Nitrobenzene-d5	83		100.0		83.4	47.5	119			
Surr: 2-Fluorobiphenyl	0.46		100.0		0.460	48.1	106			S
Surr: 4-Terphenyl-d14	75		100.0		75.1	44	113			

Sample ID **lcsd-15747**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **15747**	RunNo: **21803**
Prep Date: **10/7/2014**	Analysis Date: **10/9/2014**	SeqNo: **640786** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	79	10	100.0	0	78.8	47.9	114	2.60	27.2	
4-Chloro-3-methylphenol	190	10	200.0	0	94.7	51.7	122	7.26	25.9	
2-Chlorophenol	160	10	200.0	0	80.2	40.7	113	3.52	22.5	
1,4-Dichlorobenzene	74	10	100.0	0	73.7	39.6	99.9	4.50	24.6	
2,4-Dinitrotoluene	73	10	100.0	0	73.1	40.8	113	6.00	25.3	
N-Nitrosodi-n-propylamine	79	10	100.0	0	79.0	51.2	111	2.82	23.6	
4-Nitrophenol	140	10	200.0	0	69.4	15.7	86.9	7.95	34.7	
Pentachlorophenol	120	20	200.0	0	61.6	21.6	104	4.01	32.8	
Phenol	140	10	200.0	0	68.3	28.6	71.7	3.88	25.5	
Pyrene	79	10	100.0	0	78.8	54.2	128	7.56	31.4	
1,2,4-Trichlorobenzene	76	10	100.0	0	75.7	40.9	101	6.10	25.9	
Surr: 2-Fluorophenol	150		200.0		73.3	12.1	85.8	0	0	
Surr: Phenol-d5	140		200.0		72.3	17.7	65.8	0	0	S
Surr: 2,4,6-Tribromophenol	140		200.0		70.9	26	138	0	0	
Surr: Nitrobenzene-d5	88		100.0		88.0	47.5	119	0	0	
Surr: 2-Fluorobiphenyl	83		100.0		83.2	48.1	106	0	0	

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID	**lcsd-15747**	SampType: **LCSD**		TestCode: **EPA Method 8270C: Semivolatiles**					
Client ID:	**LCSS02**	Batch ID: **15747**		RunNo: **21803**					
Prep Date:	***10/7/2014***	*Analysis Date:* ***10/9/2014***		*SeqNo:* ***640786***	*Units:* **µg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	81		100.0		80.9	44	113	0	0	

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID	**MB-15770**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **15770**			RunNo: **21753**					
Prep Date:	**10/7/2014**	Analysis Date: **10/8/2014**			SeqNo: **639033**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-15770**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID: **15770**			RunNo: **21753**					
Prep Date:	**10/7/2014**	Analysis Date: **10/8/2014**			SeqNo: **639034**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **MB-15825**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **15825**	RunNo: **21801**
Prep Date: **10/9/2014**	Analysis Date: **10/10/2014**	SeqNo: **640639** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	0.010	0.0050								
Sodium	ND	1.0								

Sample ID **LCS-15825**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **15825**	RunNo: **21801**
Prep Date: ***10/9/2014***	*Analysis Date:* ***10/10/2014***	*SeqNo:* ***640640*** *Units:* ***mg/L***

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.9	80	120			
Calcium	52	1.0	50.00	0	104	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Lead	0.49	0.0050	0.5000	0	97.6	80	120			
Magnesium	51	1.0	50.00	0	103	80	120			
Potassium	49	1.0	50.00	0	98.8	80	120			
Selenium	0.50	0.050	0.5000	0	100	80	120			
Silver	0.10	0.0050	0.1000	0	102	80	120			B
Sodium	51	1.0	50.00	0	101	80	120			

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#: **1410102**

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R21715**	RunNo: **21715**							
Prep Date:	Analysis Date: **10/6/2014**	SeqNo: **637458**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R21715**	RunNo: **21715**							
Prep Date:	Analysis Date: **10/6/2014**	SeqNo: **637459**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	83	20	80.00	0	103	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R21715**	RunNo: **21715**							
Prep Date:	Analysis Date: **10/6/2014**	SeqNo: **637474**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R21715**	RunNo: **21715**							
Prep Date:	Analysis Date: **10/6/2014**	SeqNo: **637475**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	81	20	80.00	0	102	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#: 1410102

23-Oct-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 4th QTR 10-1-14

Sample ID **MB-15759**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **15759**	RunNo: **21752**
Prep Date: **10/7/2014**	Analysis Date: **10/8/2014**	SeqNo: **638741** 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-15759**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **15759**	RunNo: **21752**
Prep Date: **10/7/2014**	Analysis Date: **10/8/2014**	SeqNo: **638742** 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.
- 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

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: 1410102 RcptNo: 1

Received by/date: LM 10/02/14

Logged By: Anne Thorne 10/2/2014 6:50:00 AM Anne Thorne

Completed By: Anne Thorne 10/2/2014 Anne Thorne

Reviewed By: 10/02/14

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?	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° 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: 2,12 (2 or >12 unless noted)

Adjusted? NO

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	1.3	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: 10-1-14
Injection Well 4th QTR

Project #:

Project Manager:

Sampler: Bob

On Ice: ☐ No

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410182
10-1-14	10:00	H2O	Inj. well	3-VOA	HCl	-001
				1-Liter	amber	-002
				1-500ml		-003
				1-500ml		-004
				1-125 ml	H_2SO_4	-005
				1-500 ml	HNO_3	-006
				1-500ml	NaOH	-007
				1-500ml	ZN-Acetate	-008

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	[redacted] TDS	[redacted] Back up	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals Ca, Mg, Na, K	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ignitability, Corrosivity	Reactivity	Ec, pH, SAR, Alk, Cl	Sulfides	Air Bubbles (Y or N)
									X						
										X					
											X				
				X									X		
					X										
						X									
												X			
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10-1-14	1421	Robert Krakow	Christa Waller	10/1/14	1421
10/1/14	1815	Christa Waller		10/02/14	0650

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 notated on the analytical report.

Appendix D
Closure Plan

Western Refinery Southwest Inc.
Bloomfield Terminal
Waste Disposal Well (WDW) #2

Closure Plan

In accordance with Rule 19.15.25 NMAC the following information describes the possible closure plan which would entail plugging and abandoning the proposed well bore and reclaiming the surface location to pre-drill status. This is Western's standard closure procedure.

All closure activities will include proper documentation and be available for review upon request. All required paperwork (sundry notices) will be submitted to NMOCD for approval prior to any field work taking place. All plug and abandon activities are intended to protect fresh water, public health and the environment.

General Plan

1. Notify NMOCD
2. Note: verify all cement volumes based on actual slurry to be pumped.
3. Review any COA's from NMOCD

Procedure

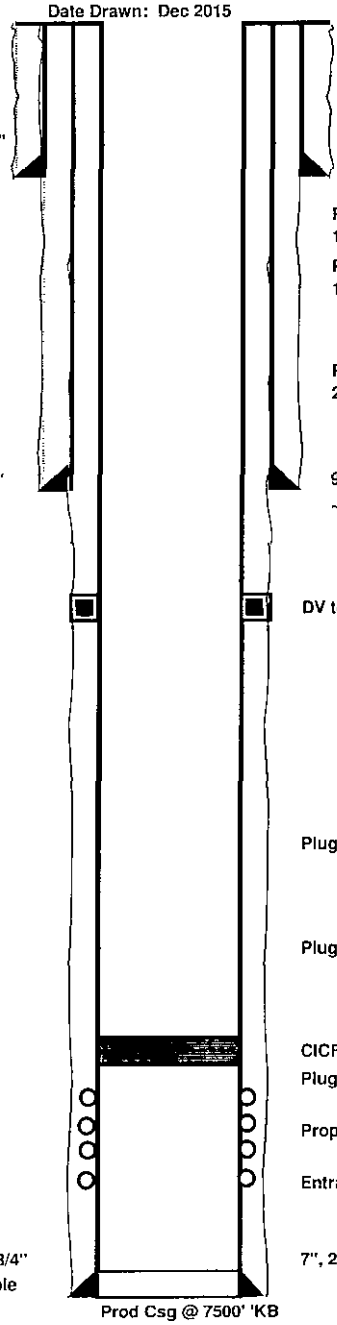
1 Move-in, rig up pulling unit. Pump & pit. Half tank for cement returns.
2 Hold safety meeting with rig crew and related personnel explaining the procedure and outlining potential hazards.
3 ND WH & NU BOP
4 TIH w/ CICR & set at ~ 7265'.
5 Load hole and circulate clean with fresh water.
6 Load tubing and pressure test tubing to 1000 psi.
7 Pull stinger out of CICR enough to load hole w/ water and circulate clean. Test casing to 500 psi.
8 Plug #1 (7265'-7483'). Mix & pump 85 sx (100 cf) of Class B neat cement. Sting out of retainer leaving 50' of cement on top of retainer. Note. Cement volumes will be adjusted if alternate but comparable cement is used (based on vendor selection). Volumes estimated using 100% excess.
9 Pull up hole.
10 Spot plug #2 in a balanced plug. Plug #2 Dakota: (6099'–6199'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.

11 Pull up hole & WOC. TIH & tag TOC.
12 Spot plug #3 in a balanced plug. Plug #3 Gallup (5549'-5649'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
13 Pull up hole & WOC. TIH & tag TOC.
14 Spot plug #4 in a balanced plug. Plug #4 Mesaverde (3285'-4087'). Mix & pump 150 sx (177 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
15 Pull up hole & WOC. TIH & tag TOC.
16 Spot plug #5 in a balanced plug. Plug #5 Chacra (2638'-2738'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
17 Pull up hole & WOC. TIH & tag TOC.
18 Spot plug #6 in a balanced plug. Plug #6 Pictured Cliffs (1668'-1768'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
19 Pull up hole & WOC. TIH & tag TOC.
20 Spot plug #7 in a balanced plug. Plug #7 Fruitland (1153'-11253'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
21 Pull up hole & WOC. TIH & tag TOC.
22 Spot plug #8 in a balanced plug. Plug #8 Surface Plug (350'-surface). Mix & pump 66 sx (77.9 cf) of Class B neat cement.
23 Fill up inside of casing w/ additional cement as needed to top off.
24 ND BOP & cut off well head.
25 Install P&A marker and cut off anchors.
26 RD & release rig and related equipment.
27 Remove all surface/production equipment.
28 Re-contour and re-claim surface/location as per NMOCD approved Reclamation plan.

Well/Facility:	WDW #2	Well Status:	Proposed P&A
Operator:	Western Refinery	Orig Oper:	
Lease/Op Agmt:		Inj Interval:	
Field:	Entrada	API #:	
County:	San Juan	GR/KB:	
State:	NM	TD:	Proposed 7500'
Spud:		PBTD:	
Comp. Date:		WI:	
1st Prod:		NRI:	
Xmas tree:			
Surface Loc:	2028' fnl & 111' fel		
Sec-Twn-Rge:	Sec 27/T29N/11W		
Comments:			

Date Drawn: Dec 2015

WALSH ENGINEERING FARMINGTON, NM



Plug #8 surface plug: 350' to surface (70 sx/82.6 cf)

13-3/8", 48#, H40 at ~ 350'

Plug #7 Fruitland: 1153'-1253' (30 sx/35.4 cf)

Plug #6 Pictured Cliffs: 1668'-1768' (30 sx/35.4 cf)

Plug #5 Chacra: 2638'-2738 (30 sx/35.4 cf)

9-5/8", 36#, J55 ~ 3600'

Plug #4 Mesaverde: 3285'-4087' (150 sx/177 cf)

DV tool at 4000' KB

Plug #3 Gallup: 5549-5649' (30 sx/35.4 cf)

Plug #2 Dakota: 6099'-6199' (30 sx/35.4 cf)

CICR: 7265

Plug #1 7265' - 7483' (85 sx/100 cf)

Proposed Injection Zone:

Entrada Sandstone: 7315' - 7483'

7", 23#, J55

		Geologic Markers	
		MD	Formation
		Surface	Quaternary Alluv
		10'	Nacimiento
		515'	Ojo Alamo
		625'	Kirtland
		1203'	Fruitland
		1718'	Pictured Cliffs
		1880'	Lewis
		2660'	Huerfanito Bentonite
		2688'	Chacra
		2877'	Lower Lewis
		3335'	Cliff House
		3394'	Menefee
		4037'	Point Lookout
		4423'	Mancos Shale
		5292'	Niobrara A
		5394'	Niobrara B
		5517'	Niobrara C
		5599'	Gallup
		5842'	Juana Lopez
		5965'	Carlile
		6060'	Greenhorn
		6116'	Graneros
		6149'	Dakota
		6365'	Burro Canyon
		6411'	Morrison
		7046'	Bluff Sandstone
		7164'	Wanakah
		7287'	Todilto
		7315'	Endrada
		7483'	Chinle
		7500'	Proposed TD

Injection String Detail - PL 4-1/2", 10.5 ppf, J55			
	Length	*Top*	*Bottom*
KB Adjustment	15.00	0	15.00
4-1/2" PL casing/tubing		15.00	15.00

WALSH ENGINEERING & PRODUCTION CORP.

Workover Cost Estimate

Western Refinery Southwest, Inc.
AUTHORITY FOR EXPENDITURE

Date: 2/2/2016

***Well Name*: WDW #2**
***Location*: Sec 27, T29N, R11W, San Juan, NM** ***Objective*: Permanently P&A Wellbore**

	Tangible	Intangible	Total
I. Workover Costs			
Anchors, and Misc.			
Completion Rig (18 hrs @ $250/hr, includes Mob-de-Mob, crew travel)		29,500	29,500
Completion Fluids/Water hauling (pump truck)			
Cased Hole Services (Including CICR)		7,200	7,200
Cement		24,650	24,650
Tubing Head and Well Connection Fittings			
Tubing (480 ft @ 3.30 $/ft.)			
Sucker Rods (50 rods @ 60 $/rod)			
Down hole pump			
Pumping equipment (Polish rod, tbg anchor, ect)			
Rentals (tanks, etc)		1,720	1,720
Trucking		5,100	5,100
Surface Facility Installation			
Restore Location			
Well Site Supervision		4,100	4,100
Engineering		1,000	1,000
Bits			
Labor & Trucking to remove surface equipment			
Pipelines and Installation			
Tank and Fittings			
Disposal Costs		1,250	1,250
Meter			
Surface Reclamation		5,125	5,125
P&A marker		135	135
Workover Costs	**0**	**79,780**	**79,780**
10% Contingency	0	7,978	7,978
Total Workover Costs	**0**	**87,758**	**87,758**

Prepared By: John C. Thompson
Date: 2/2/2016

Working Interest Owners

ESTIMATED COSTS ONLY--Each participating Owner to pay Proportionate Share of Actual Well Costs Subject to Operating Agreement

C-108 Review Checklist: Received 03/07/16 First C-108 Application Add. Request: — Reply Date: — Suspended: 03/07/16 [Ver 16]

ORDER TYPE: WFX / PMX / (SWD) Number: 1629 Order Date: 06/01/2016 Legacy Permits/Orders: In Conjunction with WQCC application for Class I (Non-hazardous) Disposal Well

Well No. 2 Well Name(s): Waste Disposal Well

API : 30-0 45-35747 Spud Date: TBD New or Old: New (*UIC Class II Primacy 03/07/1982*)

Footages 2028' FNL / 111' FEL ① Lot — or Unit H Sec 27 Tsp 29N Rge 11W County San Juan

① First Application footages: 2019' FNL / 110' FEL - changes did not impact notice or AOR wells

General Location: At decomissioned Bloomfield Refinery Bloomfield, NM [operated as terminal] Pool: SWD; Entrada [BWff - Entrada] Pool No.: 96436

BLM 100K Map: Navajo Reservoir Operator: Western Refining Southwest, INC OGRID: 267595 Contact: Allen Haines, Western Refining

COMPLIANCE RULE 5.9: Total Wells: FA bonding will be based on Inactive: — Fincl Assur: — Compl. Order? No **IS 5.9 OK?** See note ② Date: 06/01/2016

WELL FILE REVIEWED ✓ ② Current Status: APD pending; Class I (non-haz) permit pending

WELL DIAGRAMS: NEW: Proposed ✓ or **RE-ENTER:** Before Conv. ○ After Conv. ○ Logs in Imaging: NA

Planned Rehab Work to Well: NA - new well

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Stage Tool	Cement (Sx) or Cf	Cement Top and Determination Method
Planned ✓ or Existing __Surface	17 1/2 / 13 3/8	0 to 350		394	Cir. to surf
Planned ✓ or Existing (Interm)/Prod	12 1/4 / 9 5/8	0 to 3600	DV tool	857	Cir. to surf
Planned ✓ or Existing __Interm/(Prod)	8 3/4 / 7	0 to 7500	CBL for 7-inch	868	Cir. to surf (DV for Prod casing)
Planned __ or Existing __Prod/Liner	—	—		—	—
Planned __ or Existing __Liner	—	—		—	—
Planned ✓ or Existing __OH / (PERF)	8 3/4 / 7	7315 to 7483	Inj Length 168		

Injection Lithostratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops
Adjacent Unit: Litho. Struc. Por.		Morrison	6411
Confining Unit: (Litho.) (Struc.) Por.	±0	Todilto LS	7287
Proposed Inj Interval TOP:	7315	Entrada	7315
Proposed Inj Interval BOTTOM:	7483	—	—
Confining Unit: (Litho.) Struc. Por.	±0	Chinle	7483
Adjacent Unit: Litho. Struc. Por.		San Andres	—

Completion/Operation Details:

Drilled TD — PBTD —

NEW TD 7500 NEW PBTD —

NEW Open Hole ○ or NEW Perfs ✓

Tubing Size 4 1/2 in. Inter Coated? Yes

Proposed Packer Depth 7265 ft

Min. Packer Depth 7215 (100-ft limit)

Proposed Max. Surface Press. 2000 psi

Admin. Inj. Press. 1463 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P NA Noticed? NA **BLM Sec Ord** NA **WIPP** NA Noticed? NA **Salt/Salado** T: NA B: NA **NW: Cliff House fm** 3335

FRESH WATER: Aquifer Alluvial (San Juan R) Ojo Alamo formation Max Depth <600' **HYDRO AFFIRM STATEMENT By Qualified Person** ✓

NMOSE Basin: San Juan **CAPITAN REEF:** thru __ adj __ NA ✓ **No. GW Wells in 1-Mile Radius?** 1 FW Analysis? NA

Disposal Fluid: Formation Source(s) Onsite-treatment and oil brought to terminal Analysis? Yes On Lease ○ Operator Only ✓ or Commercial ○

Disposal Interval: Inject Rate (Avg/Max BWPD): 3500 / 8000 Protectable Waters? Low prob. Source: Extrap. from 20 miles (SWD well) System: (Closed) or Open

HC Potential: Producing Interval? No Formerly Producing? No Method: Logs/DST/P&A/Other Historical exploration 2-Mile Radius Pool Map ○ No Entrada w/in 2-mile

1-M Radius Map - Yes

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: 0 - 1/2 mile Horizontals? 0

Penetrating Wells: No. Active Wells 1/2 mile 0 Num Repairs? — on which well(s)? ① SWD / ① 1-mile AOR / Ashcraft SWD #1 30-045-30788 (XTO) Diagrams? NA

Penetrating Wells: No. P&A Wells 1/2 mile 0 Num Repairs? — on which well(s)? — Diagrams? NA

NOTICE: Newspaper Date 12/14/15 Mineral Owner Applicant Surface Owner Applicant N. Date 12/14/15

RULE 26.7(A): Identified Tracts? Yes Affected Persons: Burlington and XTO; Holcomb Oil & Gas N. Date 12/17/15

Order Conditions: Issues: Unknown water quality of injection interval; site-specific HC potential

Add Order Cond: - Added to COA for APD - TDS sample of formation water / mudlog / SRT after any well workover - stimulation / CBL for Prod. Casing (DV tool)

P&A Well List (One-mile Radius +) - Western Refining SW, Inc. C-108 Application and Class I (non-haz) Application

API WELL #	Well Name	Well #	Operator Name	Type	Stat	Sur Owner	UL	Sec	Twp	N/S	Rng	W/E	Footage	N/S	Footage	E/W	TVD (ft)	Comment
30-045-08125-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	B	21	29	N	11	W	850	N	1750	E	1693	
30-045-07972-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	M	21	29	N	11	W	990	S	560	W	1703	
30-045-08024-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	F	21	29	N	11	W	2515	N	1410	W	704	
30-045-08025-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	O	P	P	F	21	29	N	11	W	2440	N	1520	W	660	
30-045-08027-00-00	PRE-ONGARD WELL	009	PRE-ONGARD WELL OPERATOR	O	P	P	G	21	29	N	11	W	2430	N	1920	E	700	
30-045-08051-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	F	21	29	N	11	W	1650	N	1830	W	1915	
30-045-30587-00-00	SATEGNA	001R	BURLINGTON RESOURCES OIL & GAS COMPANY LP	G	P	P	M	21	29	N	11	W	1040	S	770	W	1744	
30-045-08036-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	E	21	29	N	11	W	1650	N	330	E	630	
30-045-08137-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	A	21	29	N	11	W	568	N	301	E	795	
30-045-08162-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	W	P	P	B	21	29	N	11	W	100	N	2100	W	300	
30-045-08136-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	A	22	29	N	11	W	660	N	785	E	767	
30-045-08166-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	C	22	29	N	11	W	175	N	1570	W	700	
30-045-08169-00-00	PRE-ONGARD WELL	003	PRE-ONGARD WELL OPERATOR	G	P	P	D	22	29	N	11	W	200	N	200	W	540	
30-045-08109-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	D	22	29	N	11	W	905	N	1155	W	700	
30-045-32453-00-00	PRE-ONGARD WELL	007	PRE-ONGARD WELL OPERATOR	G	P	P	G	22	29	N	11	W	2400	N	2310	E	1036	
30-045-08086-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	D	22	29	N	11	W	1278	N	1027	W	1350	
30-045-07959-00-00	GRACE PEARCE	001	JOHN C PICKETT	G	P	P	O	22	29	N	11	W	990	S	1650	E	1620	
30-045-07961-00-00	HARTMAN	001	MANANA GAS INC	G	P	P	P	22	29	N	11	W	990	S	990	E	**6310**	Dakota target
30-045-08138-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	B	22	29	N	11	W	500	N	1800	E	620	
30-045-08045-00-00	HARE	001	KENDALL & ASSOCIATES	O	P	P	G	23	29	N	11	W	1980	N	1650	E	730	
30-045-08120-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	D	23	29	N	11	W	990	N	990	W	1130	
30-045-08010-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	I	23	29	N	11	W	2275	S	685	E	1478	
30-045-08116-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	C	23	29	N	11	W	990	N	1650	W	1490	
30-045-08165-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	G	P	P	B	23	29	N	11	W	150	N	1980	E	800	
30-045-08110-00-00	PRE-ONGARD WELL	004	PRE-ONGARD WELL OPERATOR	O	P	P	B	23	29	N	11	W	990	N	1650	E	802	
30-045-08064-00-00	PRE-ONGARD WELL	005	PRE-ONGARD WELL OPERATOR	G	P	P	E	23	29	N	11	W	1620	N	300	W	650	
30-045-25887-00-00	EARL B SULLIVAN GAS COM B	001	BP AMERICA PRODUCTION COMPANY	G	P	P	I	23	29	N	11	W	1650	S	1190	E	2858	
30-045-08061-00-00	HARE	001	BURLINGTON RESOURCES OIL & GAS COMPANY LP	G	P	P	G	23	29	N	11	W	1650	N	1650	E	1766	
30-045-07985-00-00	PEARCE GAS COM	001	BP AMERICA PRODUCTION COMPANY	G	P	S	K	23	29	N	11	W	1470	S	1775	W	**6274**	Dakota target
30-045-08009-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	S	K	23	29	N	11	W	2210	S	1660	W	1507	
30-045-08056-00-00	HARE	003	KENDALL & ASSOCIATES	O	P	P	G	23	29	N	11	W	1686	N	2239	E	735	
30-045-08034-00-00	HARE	002	KENDALL & ASSOCIATES	O	P	P	G	23	29	N	11	W	2310	N	1650	E	738	
30-045-08032-00-00	SEITZINGER	001	ALLEN ORION	O	P	P	H	23	29	N	11	W	2310	N	990	E	750	
30-045-24517-00-00	HARE	004	KENDALL & ASSOCIATES	O	P	P	G	23	29	N	11	W	2020	N	2140	E	1000	
30-045-08047-00-00	HARE GAS COM B	001	XTO ENERGY, INC	G	P	P	G	23	29	N	11	W	1825	N	2330	E	**6382**	Dakota target
30-045-07776-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	S	M	26	29	N	11	W	330	S	330	W	1758	
30-045-07870-00-00	PRE-ONGARD WELL	00X	PRE-ONGARD WELL OPERATOR	G	P	P	G	26	29	N	11	W	1782	N	1570	E	1442	
30-045-29107-00-00	PRE-ONGARD WELL	001X	PRE-ONGARD WELL OPERATOR	G	P	P	G	26	29	N	11	W	1806	N	1570	E	850	Junk in hole; P&A
30-045-22639-00-00	DELO	011	GENERAL MINERALS CORP	G	P	F	P	26	29	N	11	W	790	S	790	E	1945	
30-045-07883-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	G	P	P	H	27	29	N	11	W	1450	N	1120	E	1701	
30-045-07903-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	F	M	27	29	N	11	W	990	S	990	W	1747	
30-045-07825-00-00	DAVIS GAS COM F	001	BP AMERICA PRODUCTION COMPANY	G	P	P	I	27	29	N	11	W	1850	S	1190	E	6365	Dakota target
30-045-07812-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	I	27	29	N	11	W	1650	S	990	E	1804	
30-045-23553-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	H	27	29	N	11	W	1545	N	1140	E	NA	Never spud
30-045-07896-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	C	27	29	N	11	W	920	N	1520	W	800	
30-045-21732-00-00	GARLAND B	001R	BURLINGTON RESOURCES OIL & GAS COMPANY LP	G	P	F	M	27	29	N	11	W	790	S	860	W	1810	
30-045-23554-00-00	DAVIS GAS COM G	001	XTO ENERGY, INC	G	P	P	I	27	29	N	11	W	1805	S	1135	E	2951	
30-045-07849-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	P	E	28	29	N	11	W	2310	N	990	W	1645	
30-045-07895-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	G	P	P	A	28	29	N	11	W	1000	N	885	E	1623	
30-045-07762-00-00	PRE-ONGARD WELL	003	PRE-ONGARD WELL OPERATOR	G	P	S	A	28	29	N	11	W	1080	N	940	E	670	
30-045-34466-00-00	MASDEN GAS COM	001F	XTO ENERGY, INC	G	P	P	F	28	29	N	11	W	1975	N	2275	W	710	
30-045-07862-00-00	PRE-ONGARD WELL	003	PRE-ONGARD WELL OPERATOR	G	P	S	G	28	29	N	11	W	1650	N	1650	E	1610	
30-045-07810-00-00	MANGUM	003	BURLINGTON RESOURCES OIL & GAS COMPANY LP	G	P	P	J	28	29	N	11	W	1650	S	1650	E	1748	

P&A Well List (One-mile Radius +) - Western Refining SW, Inc. C-108 Application and Class I (non-haz) Application

API WELL #	Well Name	Well #	Operator Name	Type	Stat	Sur Owner	UL	Sec	Twp	N/S	Rng	W/E	Footage	N/S	Footage	E/W	TVD (ft)	Comment
30-045-25268-00-00	SUMMIT	010	ENERGEN RESOURCES CORPORATION	G	P	F	G	33	29	N	11	W	1650	N	1690	E	1564	
30-045-28407-00-00	PRE-ONGARD WELL	500	PRE-ONGARD WELL OPERATOR	G	P	F	H	33	29	N	11	W	1825	N	1100	E	NA	Aband location
30-045-07725-00-00	SUMMIT	004	BURLINGTON RESOURCES OIL & GAS COMPANY LP	G	P	F	A	33	29	N	11	W	990	N	990	E	1752	
30-045-07621-00-00	WITT	001	DUGAN PRODUCTION CORP	G	P	P	N	33	29	N	11	W	860	S	1840	W	1595	
30-045-07648-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	G	P	F	J	34	29	N	11	W	1520	S	1520	E	1792	
30-045-07674-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	F	J	34	29	N	11	W	2640	S	2300	E	1910	
30-045-07675-00-00	PRE-ONGARD WELL	002	PRE-ONGARD WELL OPERATOR	G	P	F	F	34	29	N	11	W	2440	N	1520	W	1800	
30-045-07633-00-00	PRE-ONGARD WELL	001	PRE-ONGARD WELL OPERATOR	G	P	F	N	34	29	N	11	W	1070	S	2390	W	2002	
30-045-20752-00-00	LEA ANN	001	CHAPARRAL OIL & GAS CO	G	P	F	E	35	29	N	11	W	1850	N	790	W	1900	
30-045-25658-00-00	CONGRESS	014	BURLINGTON RESOURCES OIL & GAS COMPANY LP	O	P	F	A	35	29	N	11	W	445	N	953	E	6013	Gallup target

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(acre ft per annum)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y
SJ 00394		DOM	0	PABLO D. QUINTANA	SJ	SJ 00394 - Expired				1 1	27	29N	11W	233260	4066010*
SJ 00700		DOM	3	EDD H. BROWN	SJ	SJ 00700 TD-30'			Shallow	3 3 1	27	29N	11W	233147	4065507*
SJ 01804		DOM	3	KENNETH W. LARSEN	SJ	SJ 01804 - NG info				3 3 3	27	29N	11W	233119	4064713*
SJ 01808		POL	0	PLATEAU INC	SJ	SJ 01808 0-1			Shallow	2 4 2	27	29N	11W	234561	4065683*
					SJ	SJ 01808 0-2			Shallow	3 4 2	27	29N	11W	234361	4065483*
					SJ	SJ 01808 0-3			Shallow	4 4 2	27	29N	11W	234561	4065483*
					SJ	SJ 01808 0-4			Shallow	3 3 2	27	29N	11W	233956	4065491*
					SJ	SJ 01808 0-5			Shallow	1 1 3	26	29N	11W	234753	4065274*
					SJ	SJ 01808 0-6			Shallow	1 2 4	27	29N	11W	234347	4065283*
SJ 01845		DOM	3	JOHN SCHLISSIGEN	SJ	SJ 01845 - No info				1 1	27	29N	11W	233260	4066010*
SJ 02121		DOM	3	HUSKIE CHATTO	SJ	SJ 02121 - TD-30'			Shallow	1 1	27	29N	11W	233260	4066010*
SJ 02148		DOM	3	CARROLL W. WOOTEN	SJ	SJ 02148 — in application			Shallow	2 4	27	29N	11W	234448	4065184*
SJ 02210		DOM	3	DONALD C. LOONEY	SJ	SJ 02210 - TD-32'			Shallow	1 1	27	29N	11W	233260	4066010*
SJ 02227		DOM	3	YOGI B. CHAVEZ	SJ	SJ 02227 — TD-27'			Shallow	4 1 1	27	29N	11W	233359	4065909*
SJ 02231		DOM	3	DANIEL YELINEK	SJ	SJ 02231				4 1 1	27	29N	11W	233359	4065909*
SJ 02664		POL	0	BLOOMFIELD REFINING COMPANY	SJ	SJ 02664			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-10			Shallow	2 3	27	29N	11W	233639	4065202*

Monitoring wells/recovery wells 25' or less

Monitoring & recovery wells at facility

*UTM location was derived from PLSS - see Help

(acre ft per annum) (R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code	Grant	Source	q q q 6 4 16 4	Sec	Tws	Rng	X	Y
					SJ	SJ 02664 S-2			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-3			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-4			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-5			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-6			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-7			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-8			Shallow	2 3	27	29N	11W	233639	4065202*
					SJ	SJ 02664 S-9			Shallow	2 3	27	29N	11W	233639	4065202*
SJ 03588		STK	3	ROBERTA HENDERSON	SJ	SJ 03588			Shallow	2 1 1	27	29N	11W	233359	4066109*
SJ 03590		DOM	0	GARY WOODALL	SJ	SJ 03590				2 1 1	27	29N	11W	233359	4066109*

TD(s) 31' - 43'

SJ 03588 — 10' TD

SJ 03590 — Expired

Record Count: 28

POD Search:

POD Basin: San Juan

PLSS Search:

Section(s): 26, 27 **Township:** 29N **Range:** 11W

Sorted by: File Number

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

McMillan, Michael, EMNRD

From: John Thompson <john@walsheng.net>
Sent: Monday, January 04, 2016 10:23 AM
To: McMillan, Michael, EMNRD
Subject: RE: Western Refining Southwest Refining Co. SWD Well No.2 San Juan Co.

Western owns the surface.

From: McMillan, Michael, EMNRD [mailto:Michael.McMillan@state.nm.us]
Sent: Monday, January 04, 2016 9:31 AM
To: john@walsheng.net
Subject: Western Refining Southwest Refining Co. SWD Well No.2 San Juan Co.

John:
I could not figure out who owns the surface-have they been notified for the Western Refining Southwest Refining Co. SWD Well No.2?

Thank You

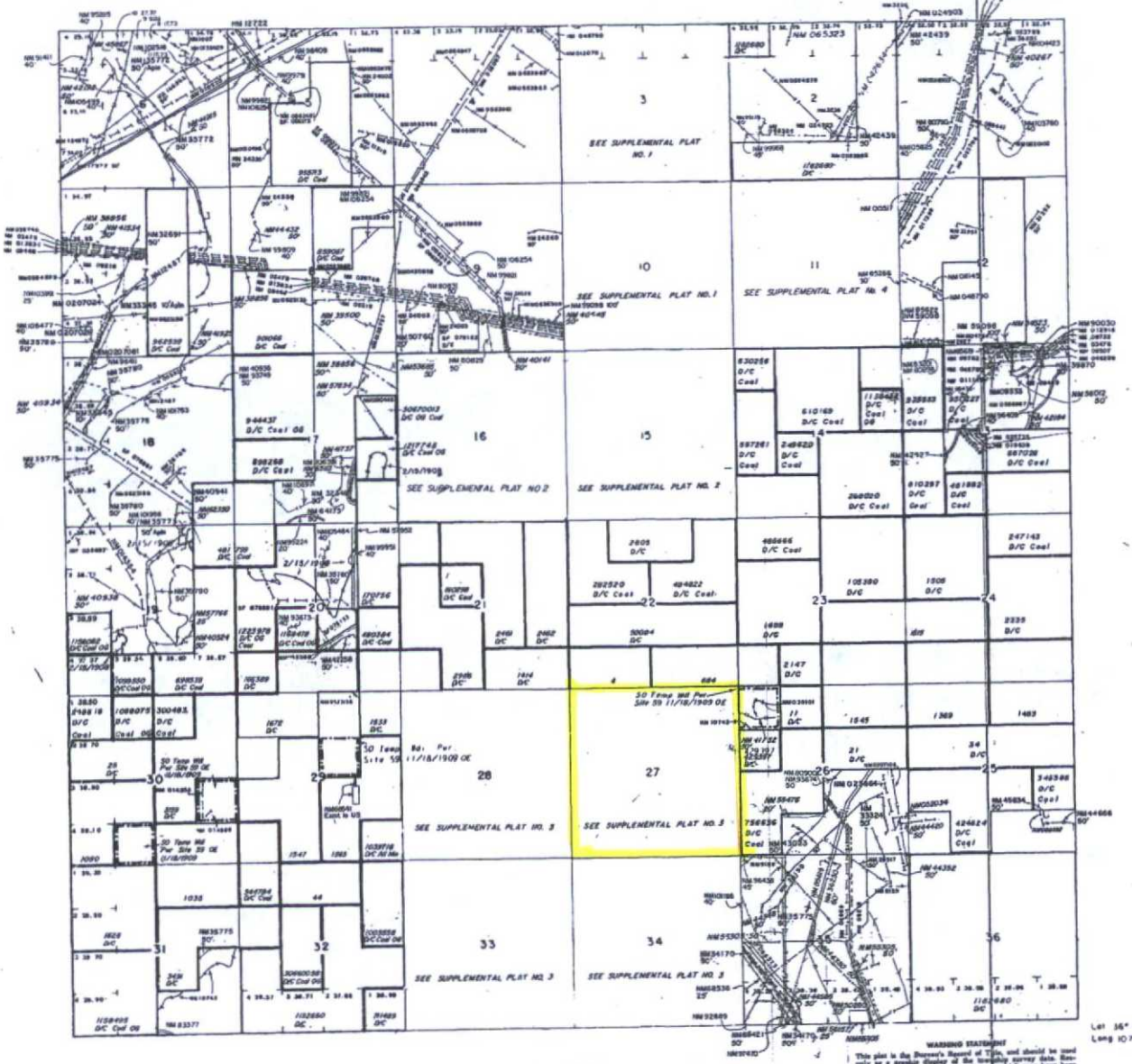
Michael A. McMillan
Engineering and Geological Services Bureau, Oil Conservation Division
1220 South St. Francis Dr., Santa Fe NM 87505
O: 505.476.3448 F. 505.476.3462
Michael.mcmillan@state.nm.us

TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM-I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MTP



INDEX TO SEGREGATED TRACTS

RESURVEY PENDING
GROUP NO 851 NM DATE 1/13/84

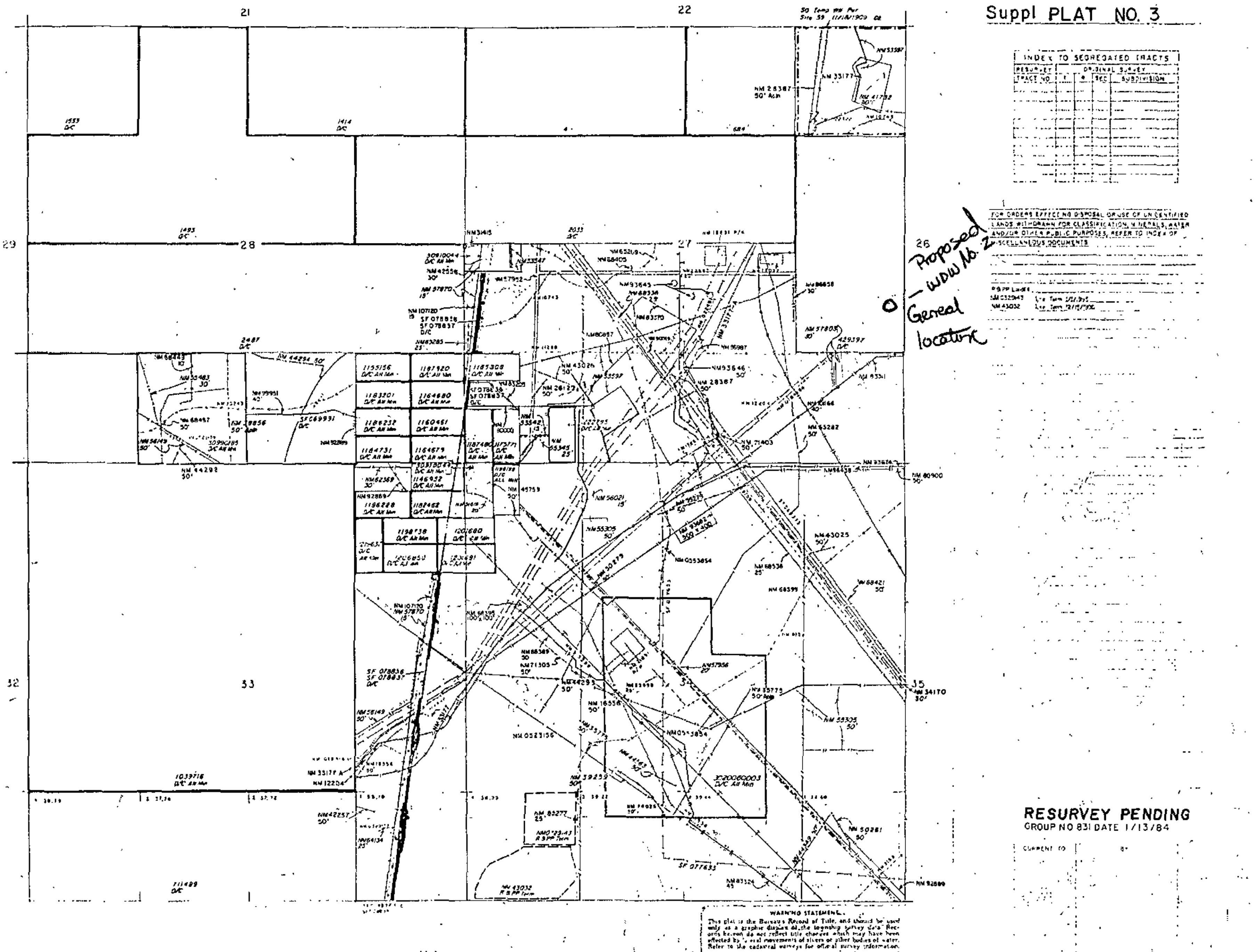
T 29 N
R 11 W
NMPM

TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM-I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MTP
Suppl PLAT NO. 3



TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM—I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

OG PLAT

INDEX TO SEGREGATED TRACTS				
RESURVEY TRACT NO.	ORIGINAL SURVEY T	R	SEC	SUBDIVISION

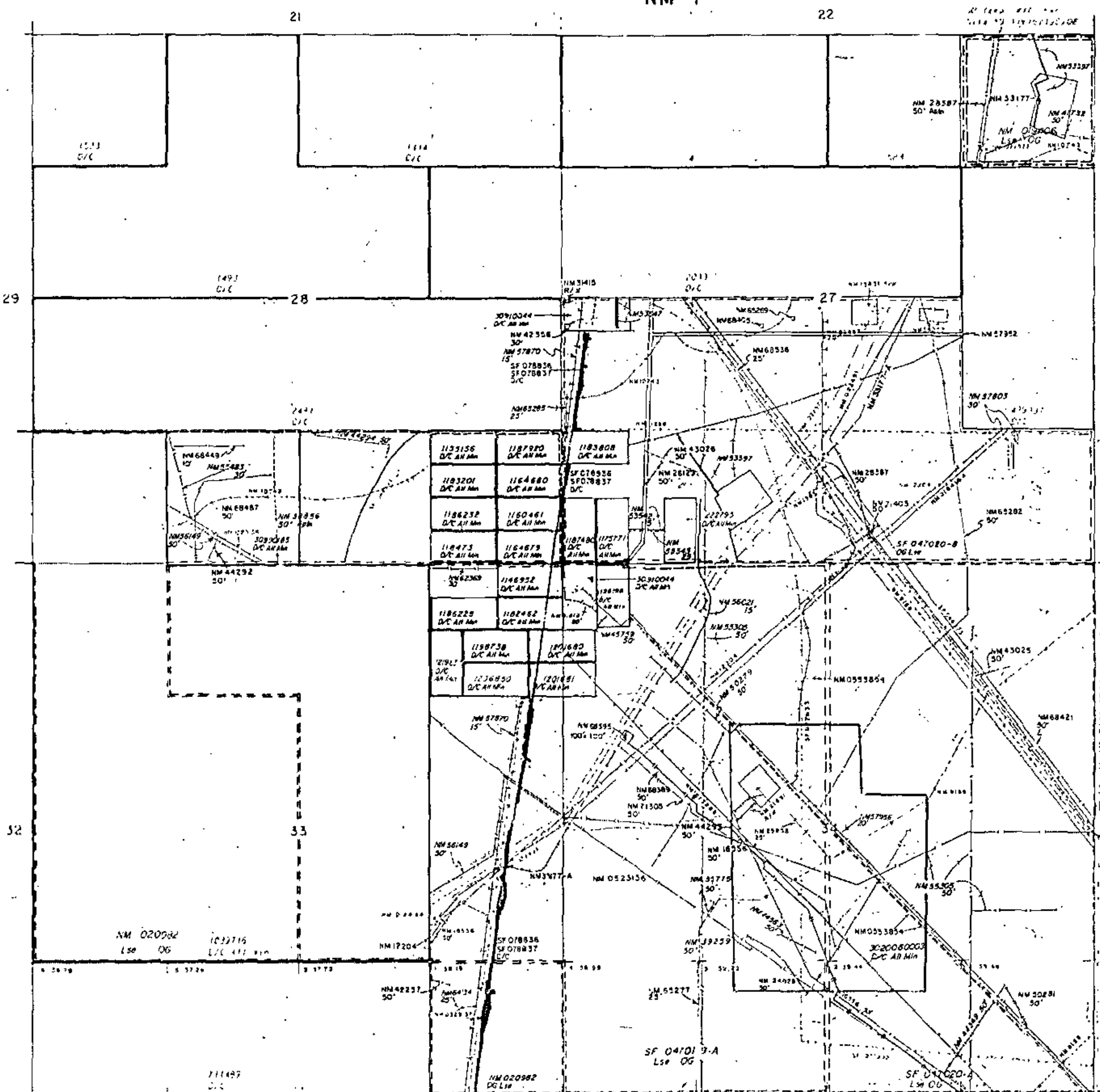
RESURVEY PENDING
GROUP NO 831 NM DATE 1/13/84

T 29 N
R 11 W
NMPM

TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045

NM-1



WARNING STATEMENT

This plat is the Bureau's Record of Title, and should be used only as a graphic display of the township survey data. Records hereon do not reflect title changes which may have been effected by lateral movements of rivers or other bodies of water. Refer to the cadastral surveys for official survey information.

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

OG PLAT
Suppl PLAT NO. 3

INDEX TO SEGREGATED TRACTS

RESURVEY TRACT NO.	ORIGINAL SURVEY T.	R.	SEC.	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS

KGS Entire Township

Communitization Agreement

Com. Agr. No. SN-134
Sec. 33: SE¼

Com. Agr. No. SCR-8
Sec. 27: NE¼
Com. Agr. No. SRM-1402
Sec. 27: SE¼
Com. Agr. No. SCR-298
Sec. 33: NW4
Com. Agr. No. NMNM-SP35-87-329
Sec. 34 A 1
Com. Agr. No. NMNM-SP35-87C-332
Sec. 28 SE4

RESURVEY PENDING
GROUP NO. 831 NM DATE 1/13/84

CURRENT TO	BY

T. 29 N.
R. 11 W.
NMPM

Goetze, Phillip, EMNRD

From: Goetze, Phillip, EMNRD
Sent: Friday, May 20, 2016 4:23 PM
To: 'Allen Hains'
Cc: Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD; John Thompson (john@walsheng.net)
Subject: Notification of Affected Persons; C-108 Application for WDW No. 2

Mr. Hains:

Per our conversation today, I was conducting a assessment of the amended C-108 application for the Waste Disposal Well No. 2 for Western Refining Southwest's facility near Bloomfield. For this application, I found no attached copies of notification for affected persons as required under NMAC. However, at your suggestion, I revisited the original C-108 application prepared by Walsh Engineering and submitted in the original effort in December 2015 (Application No. pMAM1600432778; logged in 01/04/216). For the record, the notification provided in this first submittal is sufficient to satisfy the notification requirements. Though the surface location between the two applications (as described in the published notice and letters to effected persons) has slightly changed (from 2019' FNL/110' to FEL 2028' FNL/111' FEL), this is not significant and does not impact either the parties to be noticed or AOR wells. Additionally, the published notice is accurate to those major items that are deemed critical to proper notification such as injection interval, rate of injection, applicant, and contact information. Thank you for your patience in this matter. PRG

Phillip R. Goetze, PG
Engineering Bureau
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Direct: 505.476.3466
E-mail: phillip.goetze@state.nm.us

Goetze, Phillip, EMNRD

From: Powell, Brandon, EMNRD
Sent: Wednesday, May 18, 2016 3:04 PM
To: Perrin, Charlie, EMNRD; Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD; Goetze, Phillip, EMNRD
Subject: FW: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)
Attachments: Western approval cover sheet.docx

Gentlemen-

We are in the process of finalizing the APD approval for this well and hope to have it completed and scanned possibly tomorrow. Attached is the conditions page we are planning on attaching. Please review and provide any concerns or comments. The API for the well will be 30-045-35747.

Thank You

Brandon Powell
Office: (505) 334-6178 ext. 116
"He who wishes to gain knowledge is wiser than he who thinks he has knowledge (unknown)"

From: Perrin, Charlie, EMNRD
Sent: Tuesday, May 17, 2016 2:37 PM
To: Vermersch, Amy H, EMNRD <AmyH.Vermersch@state.nm.us>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: FW: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

From: Chavez, Carl J, EMNRD
Sent: Tuesday, May 17, 2016 2:13 PM
To: Hains, Allen <Allen.Hains@wnr.com>
Cc: Gallegos, Denise, EMNRD <Denise.Gallegos@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us>; Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>
Subject: RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Allen:

Hi. A few things Western needs to begin acting on are provided below.

1) Western needs to obtain the API# for the well from Brandon Powell in the Aztec District Office so OCD may post in its Public Notice. Once you get it, forward the number over to me as I am working with Jim G to get the draft DP posted in Newspapers on or before COB Friday on 5/20 with requested post in Albuq. Journal and Farmington Daily for Sunday 5/22.

2) Brandon needs to issue an approval of the C-101 and C-102 Forms and include a Condition of Approval in the C-101 Form that the Entrada Fm. must be tested for TDS to determine water quality before OCD can authorize injection. There is scarce water quality information for the Entrada in San Juan County. OCD has incorporated language in the Draft DP to also highlight this requirement.

3) Once numbers 1 and 2 above are satisfied, Western needs to submit its financial bond. The amount provided in the Application Closure Plan is acceptable. Please procure a WQCC Well Bond (click here) for the approved amount and submit to OCD Santa Fe (Denise Gallegos at (505) 476-3453 or E-mail: Denise.Gallegos@state.nm.us).

Thank you.

Carl J. Chavez, CHMM
Environmental Engineer
Oil Conservation Division- Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Phone: (505) 476-3490
Main Phone: (505) 476-3440
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: www.emnrd.state.nm.us/ocd
Why not prevent pollution, minimize waste, reduce operation costs, and move forward with the rest of the Nation? To see how, go to "Publications" and "Pollution Prevention" on the OCD Website.

From: Hains, Allen [mailto:Allen.Hains@wnr.com]
Sent: Tuesday, May 17, 2016 1:40 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
Cc: Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Robinson, Kelly <Kelly.Robinson@wnr.com>
Subject: RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Carl,

We appreciate your help with this permit.

Looking forward, are there requirements that Western can be working on during the OCD public notice period?

Thank you,

Allen S. Hains
Manager
Remediation Projects

Western Refining
123 W. Mills Ave.
El Paso, Texas 79901
915 534-1483
915 490-1594 (cell)

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, May 17, 2016 7:22 AM
To: Donnelly, Patti <Patti.Donnelly@wnr.com>
Cc: Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Hains, Allen <Allen.Hains@wnr.com>; Robinson, Kelly

<Kelly.Robinson@wnr.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
Subject: RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Patti:

Received.

FYI: I am working with Jim Griswold to begin OCD's public notice in the newspapers soon.

Thank you.

Carl J. Chavez, CHMM
Environmental Engineer
Oil Conservation Division- Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Phone: (505) 476-3490
Main Phone: (505) 476-3440
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: www.emnrd.state.nm.us/ocd
Why not prevent pollution, minimize waste, reduce operation costs, and move forward with the rest of the Nation? To see how, go to "Publications" and "Pollution Prevention" on the OCD Website.

From: Donnelly, Patti [mailto:Patti.Donnelly@wnr.com]
Sent: Monday, May 16, 2016 1:08 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Hains, Allen <Allen.Hains@wnr.com>; Robinson, Kelly <Kelly.Robinson@wnr.com>
Subject: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Good afternoon! This is our submittal of proof of Public Notice for the WDW-2 Class 1 Injection Well Discharge Permit Application. The originals will be mailed to you Certified via the US Postal Service. If you have any questions or concerns, please do not hesitate to contact myself, Randy Schmaltz or Kelly Robinson.

Thank you,
Patti Donnelly

Patti Donnelly
Logistics, HSER
Western Refining
111 CR 4990
Bloomfield, NM 87413
(505) 632-4005
patti.donnelly@wnr.com

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
12/30/15	1/4/16		1-4-2016	SWD	PMAM1600432778

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

- SWD
- SAN JUAN REFINING CO
37218
- well
- SWD #2 - pending
- 30-045-

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

RECEIVED OCD
2015 DEC 30 P 1:48

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

Pool

[C] ☐ Application is One Which Requires Published Legal Notice

- SWD; Entrada
96436

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

John C. Thompson		Agent / Engineer	12/15/2015
Print or Type Name	Signature	Title	Date

johnew@alohenq.net
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___X___Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: San Juan Refining Co./Western Refining Southwest, Inc.

ADDRESS: #50 County Road 4990, Bloomfield, NM 87413

CONTACT PARTY: John Thompson PHONE: 505-327-4892

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ___X___No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

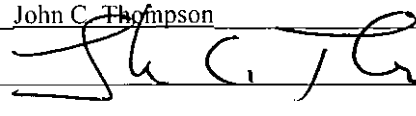
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: John C. Thompson TITLE: Agent/Engineer

SIGNATURE:  DATE: 12/15/2015

E-MAIL ADDRESS: john@walsheng.net

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INJECTION WELL DATA SHEET

Tubing Size: 4-1/2", 10.5 ppf Lining Material: Plastic Lined

Type of Packer: 7" Baker "FAB-1" (or similar model"

Packer Setting Depth: ~ 7265'

Other Type of Tubing/Casing Seal (if applicable): Baker Model "KBH-22" Anchor tubing seal assembly, landed in packer

Additional Data

1. Is this a new well drilled for injection? X Yes _____ No

   If no, for what purpose was the well originally drilled? _____

2. Name of the Injection Formation: Entrada

3. Name of Field or Pool (if applicable): _____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota

Side 1

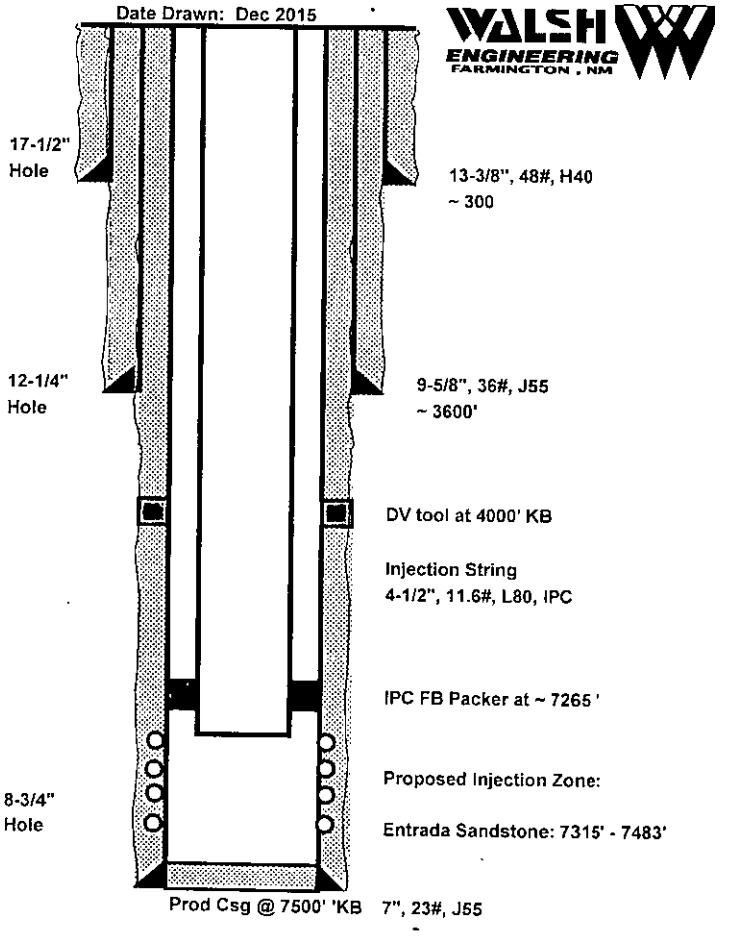
INJECTION WELL DATA SHEET

OPERATOR: Western Refining Southwest, Inc.

WELL NAME & NUMBER: SWD #2

WELL LOCATION: 2028' FNL & 111' FEL (FOOTAGE LOCATION) H (UNIT LETTER) 27 (SECTION) T29N (TOWNSHIP) R11W (RANGE)

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8, 48 ppf, H40

Cemented with: 394 sx. *or* 548 ft^3

Top of Cement: Surface Method Determined: _____

Intermediate Casing

Hole Size: 12-1/4" Casing Size: 9-5/8", 36#, J55

Cemented with: 857 sx *or* 1693 ft^3

Top of Cement: Surface Method Determined: _____

Production Casing

Hole Size: 8-3/4" Casing Size: 7", 26 ppf, L80

Cemented with: 868 sx. *or* 1692 ft^3

Top of Cement: Surface Method Determined: _____

Total Depth: ~ 7500'

Injection Interval (Proposed) 7315 ~~7316'~~ feet to 7483 ~~7482'~~ (perforated 4 spf) — Published interval

(Perforated or Open Hole; indicate which)

San Juan Refining Co./Western Refining Southwest, Inc.

SWD #2

C-108 Data Sheet

V. See Attached Map

VI. See Attached Tabulation Sheet

VII. Operation Data

1. A. Average Daily Injection Rate = 3,500 bbls
   B. Maximum Daily Injection Rate = 8,500 bbls

2. The system is closed (water will be collected onsite as part of the refinery process and pumped over to the injection well)

3. Proposed pressures
   A. The average and maximum injection pressures will be determined from a step rate test run after the well is completed. The anticipated injection pressures are ~ 2000 psi.

4. The fluid to be disposed of will be non-hazardous treated water generated from the Bloomfield Terminal (former Refinery). Representative water analysis for each formation are attached.

5. A water sample and corresponding water analysis will be provided once the well is perforated and a water sample can be obtained. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately 3/4 miles to the east of the proposed Western SWD #1. The Ashcroft is a SWD well operated by XTO Energy Resources and is completed in the Entrada and Bluff formations. The NMOCD records did not containing any data regarding the in-situ water quality found in the Ashcroft SWD #1 prior to injection. However, water analysis of the recently drilled TnT SWD #1, located in the southern portion of the San Juan Basin are included. Additional geologic properties of the Entrada formation are attached.

VIII. Geology

The Entrada Sandstone formation is Jurassic in age and is described as a wind blown deposit with fine to coarse-grained sandstone particles, clean and well sorted. Generally, the Entrada Sandstone formation is 200 to 280 ft thick throughout the San Juan Basin. Natural fractures are few to nonexistent.

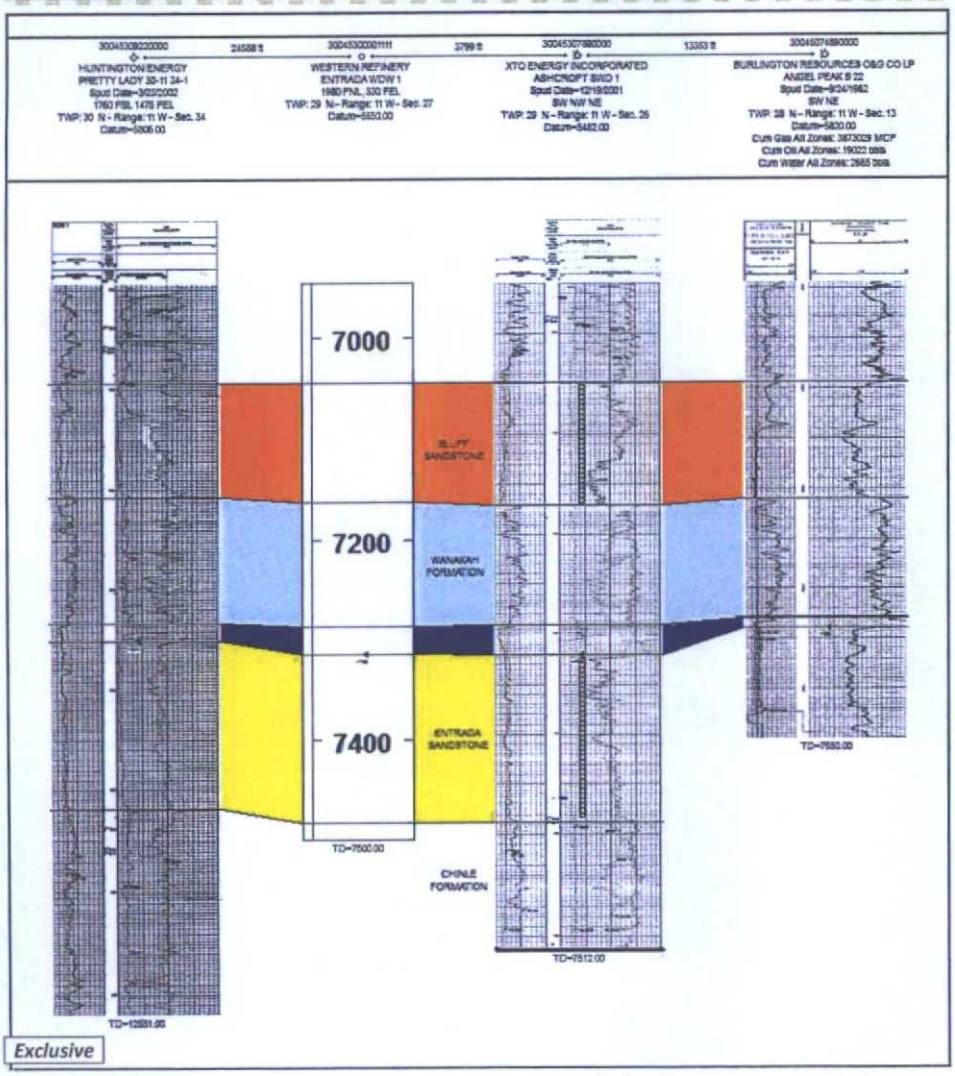
April 15, 2016 - Fluid capacity critical

The overlaying formation is the Todilto Limestone. Cores from the oil bearing portion of the Entrada formation indicate high porosities and permeability's with averages ranging from 22 – 26 percent and 150 – 450 millidarcies respectively. A cross section showing the regional thickness and log characteristics is included (below).

San Juan Refining Co./Western Refining Southwest, Inc. has approximately 70 ground water monitoring wells located within the refinery terminal (map of well locations is attached for reference). A sampling of the seven closest monitoring wells indicates an average depth to ground water to be approximately 24 ft.

Based on the attached comprehensive water analysis for the treated refinery water to be disposed the approximate TDS is 1220 mg/L.

Regional Bluff & Entrada Sandstones Cross-Section



Exclusive

IX. After the well is drilled, cased and perforated a injectivity test will be performed. If the injection rate is less than 6 BPM prior to parting pressure, the well will be stimulated w/ approximately 222,000 lbs of 20/40 white sand in 110,000 gals of 30# cross linked gel at 50 bpm. Note: actual job design (if needed) will be based on actual results of the injectivity test.

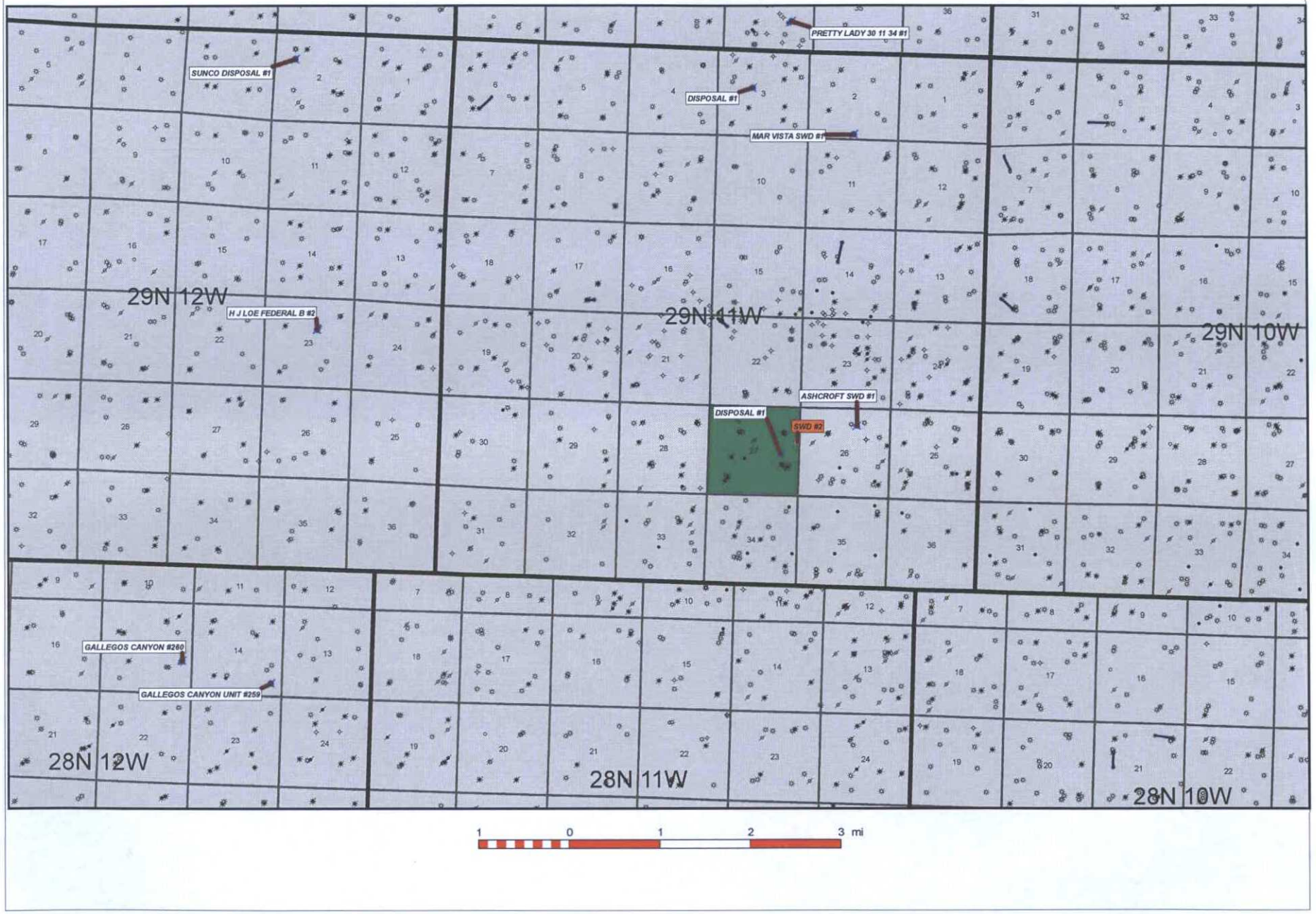
X. All open hole and cased hole logs will be filed with NMOCD once the well is drilled and completed.

XII. Based on the information available online as well as information from the "Four Corners Geological Society" there are no known faults located in the area of the proposed well. Natural fractures are few to nonexistent in the Entrada formation. The overlaying formation is the relatively impermeable Todilto Limestone. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately ¾ of mile to the east of the proposed SWD #1. The Ashcroft SWD #1 is a SWD well operated by XTO Energy and is completed in the Bluff and Entrada formations and has no evidence of water migrating out of the injection zones.

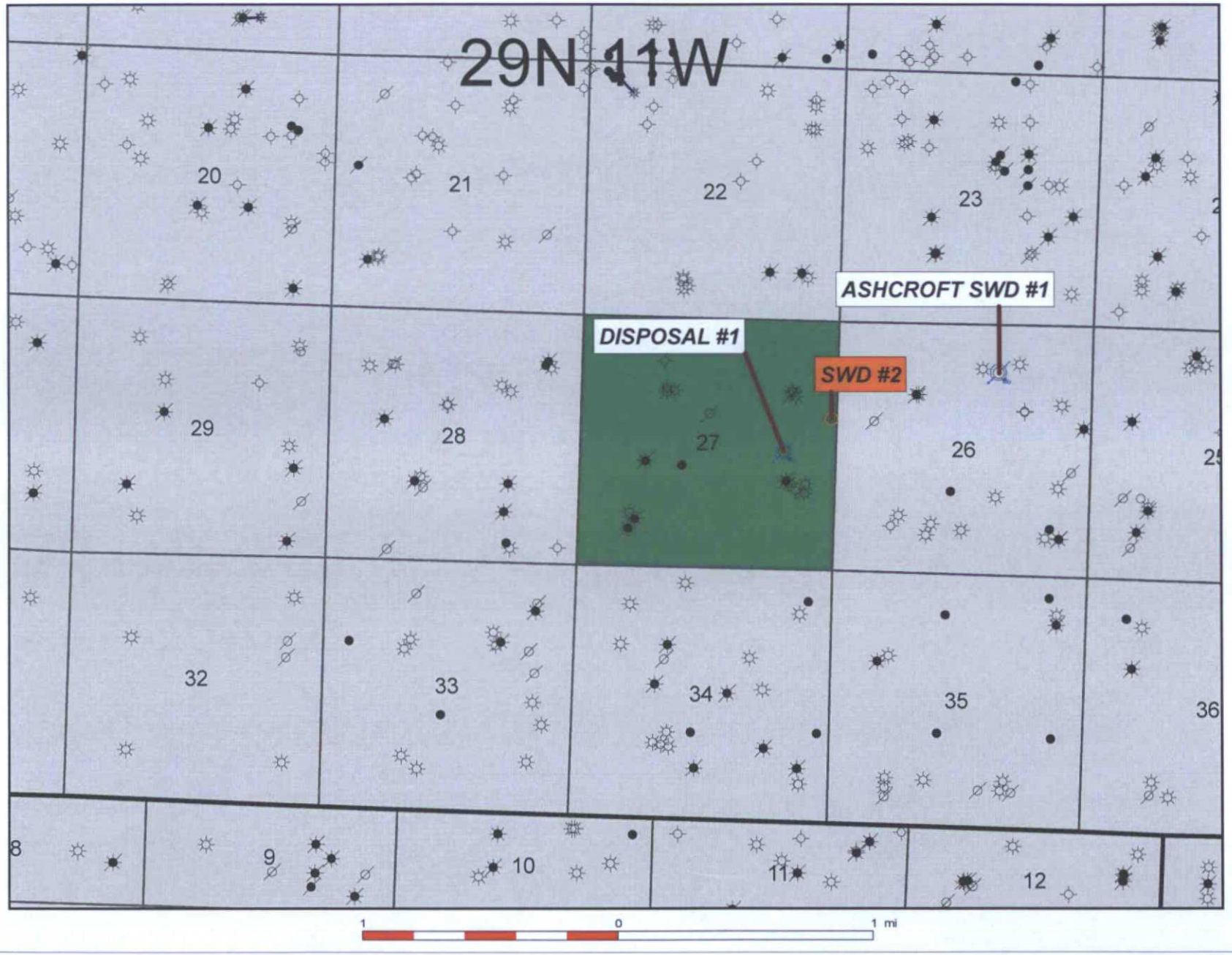
XIII. See attached certified mail receipts.

SWD-812-B

Well Base Map



Well Base Map



Entrada/Bluff WDW #1

Geologic Prognosis

Entrada & Bluff WDW, San Juan County

Western Refining

Header

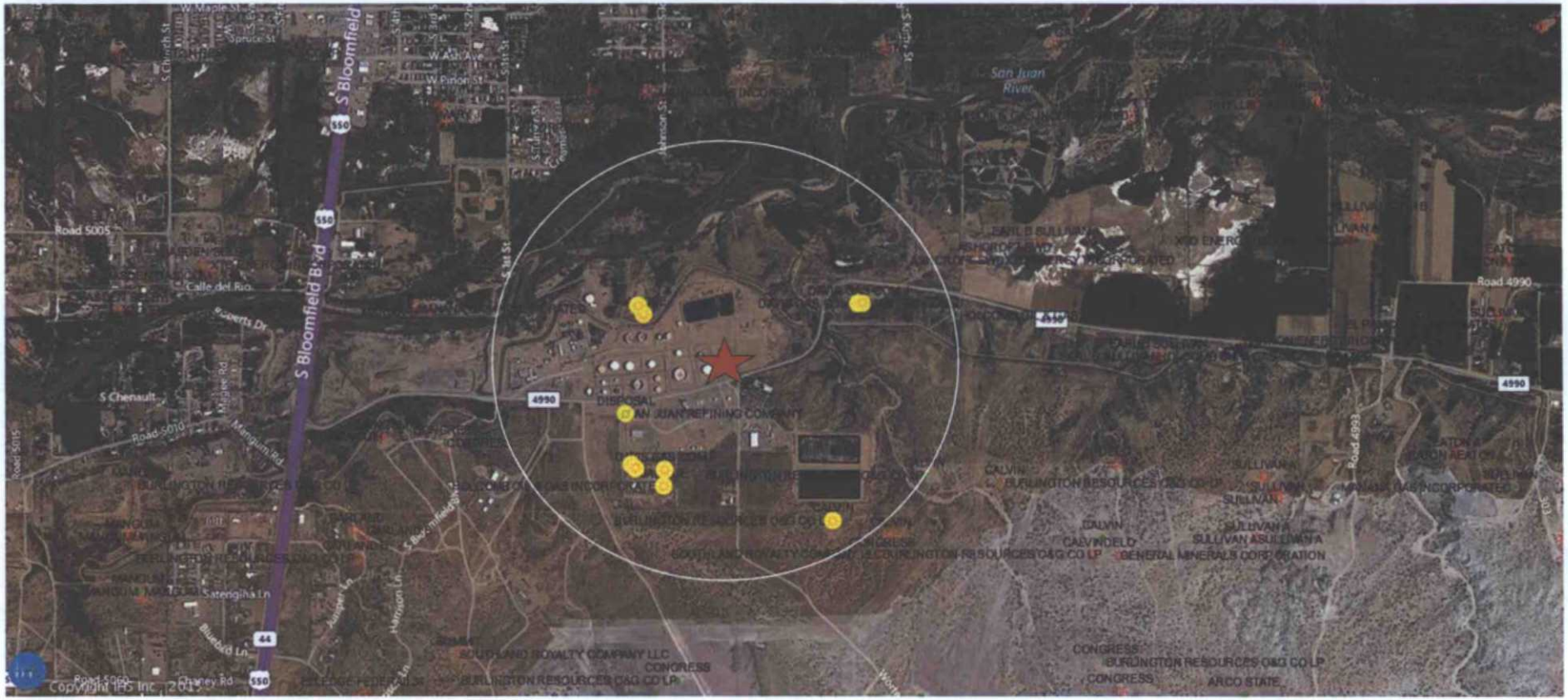
Well Name & Number:	**Entrada/Bluff WDW #1**		
API	Pending	Latitude (NAD 83):	36.698499
Objective:	**Entrada & Bluff FM Water Disposal**	Longitude (NAD 83):	-107.971156
Location:	TWP: 29 N - Range: 11 W - Sec. 27	Field:	Basin
Surface Location Footage:	1980 FNL, 330 FEL	County:	San Juan
Bottom Hole Location Footage:	Same as Surface	State:	New Mexico
Lease:		GL Elevation:	5538
Surface Owner:		KB Elevation:	5550
Type:		**Proposed TD:**	**7500**
Expiration Date:		Proposed Plugback:	
Depth:			

November 25, 2015
Geologist: Peter Kondrat

Formation Tops	Top MD (KB)	Top Subsea (KB)	Thickness (FT)	Rock Type	Drilling Notes	Depositional Environment
Quaternary Alluvium	0	5550	10	Unconsolidated Gravels	Boulders, water, lost circulation	Continental Rivers
Nacimiento FM	10	5540	505	Shale & Sandstone	Water, gas	Continental Rivers
Ojo Alamo Sandstone	515	5035	110	Sandstone & Shale	Water, gas	Continental Rivers
Kirtland Shale	625	4925	578	Interbeddded Shale, sandstone	Water, gas	Coastal to Alluvial Plain
Fruitland FM	1203	4347	515	Interbeddded Shale, sandstone & coal	Coalbed methane	Coastal Plain
Pictured Cliffs Sandstone	1718	3832	162	Sandstone	Gas, water	Regressive Marine Beach
Lewis Shale	1880	3670	780	Shale, thin limestones	Gas	Offshore Marine
Huerfanito Bentonite Bed	2660	2890	28	Alterted volcanic ash, bentonite bed	Swelling clay	Volcanic Ash Layers
Chacra FM	2688	2862	189	Sandstone, siltstone	Gas, Water	Offshore Marine Sands
Lower Lewis Shale	2877	2673	458	Shale, thin limestones	Gas, Water	Offshore Marine
Cliff House Sandstone	3335	2215	59	Sandstone	Gas, Water, Oil	Transgressive Marine Beach
Menefee Member	3394	2156	643	Interbeddded Shale, sandstone & coal	Gas, Water, Oil	Coastal Plain
Point Lookout Sandstone	4037	1513	386	Sandstone	Gas, Water, Oil	Regressive Marine Beach
Mancos Shale	4423	1127	869	Shale, thin sandstones & siltstones	Gas, Water, Oil	Offshore Marine
Niobrara A	5292	258	102	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Niobrara B	5394	156	123	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Niobrara C	5517	33	82	Interbeddded Shale, sandstone	Oil, Gas, Water	Offshore Marine Sands
Gallup FM	5599	-49	243	Interbeddded Shale, sandstone	Oil, Gas, Water	Regressive Marine to Coastal Deposit
Juana Lopez FM	5842	-292	123	Shale, thin limestones	Oil, Gas, Water	Offshore Marine
Carlile Shale	5965	-415	95	Shale, thin limestones	Oil, Gas, Water	Offshore Marine
Greenhorn Limestone	6060	-510	56	Limestone	Oil, Gas, Water	Offshore Marine
Graneros Shale	6116	-566	33	Shale	Oil, Gas, Water	Offshore Marine
Dakota FM	6149	-599	216	Sandstone, shale & coals	Oil, Gas, Water	Transgressive Coastal Plain to Marine
Burro Canyon FM	6365	-815	46	Sandstones, some conglomerate & mudstone	Oil, Gas, Water	Braided Fluvial Fill
Morrison FM	6411	-861	635	Mudstones, sandstone	Oil, Gas, Water	Continental Rivers
Bluff Sandstone (aka Junction Creek Sandstone), Morrison FM Member	**7046**	**-1496**	**118**	**Sandstone**	**Oil, Gas, Water**	**Alluvial Plain and Eolian**
Wanakah FM	7164	-1614	123	Siltstone, Sandstone	Oil, Gas, Water	Alluvial Plain and Eolian
Todilto Limestone & Anhydrite	7287	-1737	28	Interbedded Limestone & Anhydrite	Oil, Gas, Water, Anyhydrite	Alluvial Plain and Eolian
Entrada Sandstone	**7315**	**-1765**	**168**	**Sandstone**	**Oil, Gas, Water**	**Eolian Sand Dunes**
Chinle FM	7483	-1933	17	Interbeddded Shale, sandstone	Oil, Gas, Water	Continental Rivers
Proposed TD	**7500**	**-1950**		**TD designed for complete log covergage over Entrada Sandstone.**		

Notes: Any significant flow rates, abnormal pressures, lost circulation, sticking, fluid loss or gain immediately notify company man, drilling superintendent and/or drilling engineer.

1/2 Mile Radius



Enerdeq Browser Date: Nov 23, 2015 Author: JOHN THOMPSON

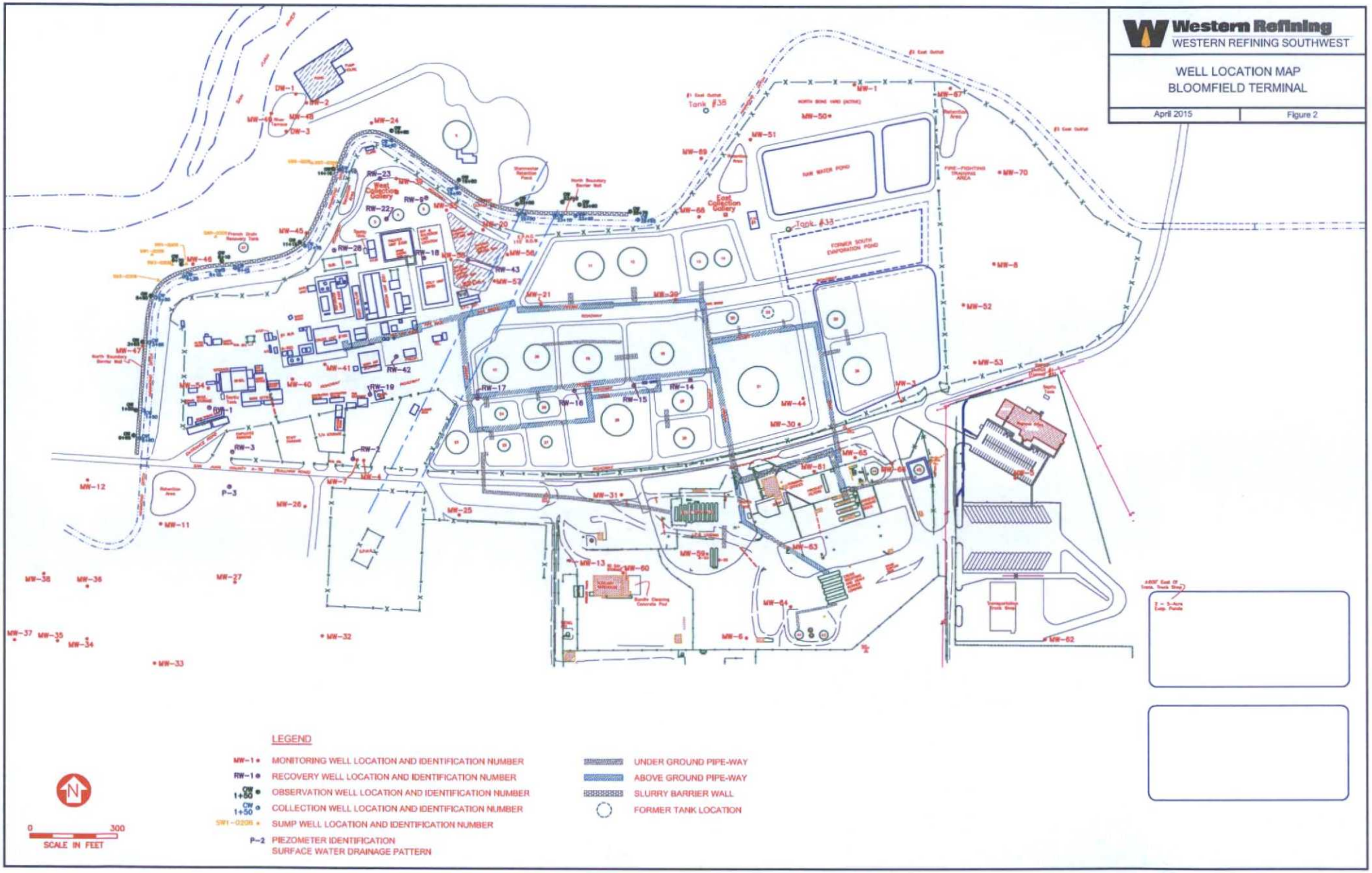
Western Refining
SWD #2
Well Tabulation Sheet

Operator Name	Lease Name	Well Num	Primary API	Location	First Prod Date	TD	Status Na	Upper Perf	Lower Perf
SAN JUAN REFINING COMPA	DISPOSAL	1	30045290020000	29N 11W 27I NW NE SE			P&A	3276	3514
BP AMERICA PRODUCTION C	DAVIS GAS COM F	1	30045078250000	29N 11W 27I SW NE SE	1960-12-01	6365	P&A	6215	6240
BURLINGTON RESOURCES OI	CALVIN	1	30045120030000	29N 11W 26M SW SW	1963-03-01	6450	ACTIVE	6176	6348
XTO ENERGY INCORPORATEI	DAVIS GAS COM G	1	30045235540000	29N 11W 27I SW NE SE	1981-01-01	2951	P&A	2827	2839
XTO ENERGY INCORPORATEI	SULLIVAN GAS COM D	1E	30045240830000	29N 11W 26F NW SE NW	1980-09-01	6329	ACTIVE	6086	6242
XTO ENERGY INCORPORATEI	DAVIS GAS COM F	1E	30045240840000	29N 11W 27H NW SE NE	1981-05-01	6386	ACTIVE	6163	6262
XTO ENERGY INCORPORATEI	DAVIS GAS COM F	1E	30045240840000	29N 11W 27H NW SE NE	1981-06-01	6386	ACTIVE	2701	2810
HOLCOMB OIL & GAS INCOR	DAVIS GAS COM J	1	30045253290000	29N 11W 26F NW SE NW	2008-04-01		ACTIVE	1462	1645
HOLCOMB OIL & GAS INCOR	DAVIS GAS COM J	1	30045253290000	29N 11W 26F NW SE NW	1985-02-01	4331	INACTIVE	3970	4030
XTO ENERGY INCORPORATEI	DAVIS GAS COM J	1	30045253290000	29N 11W 26F NW SE NW	1983-05-01	4331	INACTIVE	2631	2772
XTO ENERGY INCORPORATEI	DAVIS GAS COM F	1R	30045308330001	29N 11W 27I SW NE SE	2002-05-01		ACTIVE	5314	5646
XTO ENERGY INCORPORATEI	DAVIS GAS COM F	1R	30045308330000	29N 11W 27I SW NE SE	2002-03-01		ACTIVE	6177	6308
HOLCOMB OIL & GAS INCOR	JACQUE	2	30045344090000	29N 11W 27H NW SE NE	2008-01-01	1897	ACTIVE	1483	1689
HOLCOMB OIL & GAS INCOR	JACQUE	1	30045344630000	29N 11W 27L	2008-02-01	1890	ACTIVE	1543	1714

San Juan Refining Co./Western Refining Southwest

Monitor Well Information

	Depth to Groundwater	Approximate GW Elevation
	(ft)	(ft amsl)
MW-1	15	5502.2
MW-8	31	5502.9
MW-50	16	5502.1
MW-52	33	5502.6
MW-53	35	5502.5
MW-67	18	5502.1
MW-70	22	5502.4


Western Refining
WESTERN REFINING SOUTHWEST
WELL LOCATION MAP
BLOOMFIELD TERMINAL
April 2015
Figure 2
LEGEND
MW-1 • MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
RW-1 • RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
OW 1+00 • OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
CW 1+50 • COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
SW1-0206 + SUMP WELL LOCATION AND IDENTIFICATION NUMBER
P-2 PIEZOMETER IDENTIFICATION
SURFACE WATER DRAINAGE PATTERN
UNDER GROUND PIPE-WAY
ABOVE GROUND PIPE-WAY
SLURRY BARRIER WALL
FORMER TANK LOCATION
0
300
SCALE IN FEET

Comprehensive Water Analysis

non-hazardous, treated water from Western Refinery facility – Bloomfield, NM

Analytical Report
Lab Order **1507094**
Date Reported: **8/6/2015**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Injection Well 7-1-15
Lab ID: 1507094-001 **Matrix:** AQUEOUS

Client Sample ID: Injection Well
Collection Date: 7/1/2015 9:00:00 AM
Received Date: 7/2/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	480	50		mg/L	100	7/2/2015 5:18:55 PM	R27295
Sulfate	65	5.0		mg/L	10	7/2/2015 5:06:31 PM	R27295
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	2000	0.010		µmhos/cm	1	7/6/2015 11:31:17 AM	R27329
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	274.6	20.00		mg/L CaCO3	1	7/6/2015 11:31:17 AM	R27329
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	7/6/2015 11:31:17 AM	R27329
Total Alkalinity (as CaCO3)	274.6	20.00		mg/L CaCO3	1	7/6/2015 11:31:17 AM	R27329
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1220	40.0	*	mg/L	1	7/8/2015 5:09:00 PM	20129
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.45	1.68	H	pH units	1	7/6/2015 11:31:17 AM	R27329
EPA METHOD 7470: MERCURY						Analyst: **JLF**	
Mercury	ND	0.0010		mg/L	5	7/8/2015 4:47:51 PM	20158
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**	
Arsenic	ND	0.020		mg/L	1	7/9/2015 10:51:23 AM	20102
Barium	0.27	0.020		mg/L	1	7/9/2015 10:51:23 AM	20102
Cadmium	ND	0.0020		mg/L	1	7/16/2015 12:13:28 PM	20102
Calcium	120	5.0		mg/L	5	7/9/2015 1:02:36 PM	20102
Chromium	ND	0.0060		mg/L	1	7/14/2015 3:52:06 PM	20102
Lead	ND	0.0050		mg/L	1	7/9/2015 10:51:23 AM	20102
Magnesium	28	1.0		mg/L	1	7/9/2015 10:51:23 AM	20102
Potassium	7.7	1.0		mg/L	1	7/9/2015 10:51:23 AM	20102
Selenium	ND	0.050		mg/L	1	7/16/2015 12:13:28 PM	20102
Silver	ND	0.0050		mg/L	1	7/16/2015 12:13:28 PM	20102
Sodium	280	5.0		mg/L	5	7/9/2015 1:02:36 PM	20102
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Acenaphthylene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Aniline	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Anthracene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Azobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Benz(a)anthracene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Benzo(a)pyrene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Benzo(b)fluoranthene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Benzo(g,h,i)perylene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095

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		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
Project: Injection Well 7-1-15 **Collection Date:** 7/1/2015 9:00:00 AM
Lab ID: 1507094-001 **Matrix:** AQUEOUS **Received Date:** 7/2/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Benzo(k)fluoranthene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Benzoic acid	ND	20		µg/L	1	7/10/2015 1:30:30 PM	20095
Benzyl alcohol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Bis(2-chloroethyl)ether	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Bromophenyl phenyl ether	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Butyl benzyl phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Carbazole	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Chloro-3-methylphenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Chloroaniline	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Chloronaphthalene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Chlorophenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Chrysene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Di-n-butyl phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Di-n-octyl phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Dibenz(a,h)anthracene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Dibenzofuran	*ND*	*10*		*µg/L*	*1*	*7/10/2015 1:30:30 PM*	*20095*
1,2-Dichlorobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
1,3-Dichlorobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
1,4-Dichlorobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
3,3'-Dichlorobenzidine	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Diethyl phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Dimethyl phthalate	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4-Dichlorophenol	ND	20		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4-Dimethylphenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4-Dinitrophenol	ND	20		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4-Dinitrotoluene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2,6-Dinitrotoluene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Fluoranthene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Fluorene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Hexachlorobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Hexachlorobutadiene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Hexachlorocyclopentadiene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Hexachloroethane	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095

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
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Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Isophorone	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
1-Methylnaphthalene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Methylnaphthalene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Methylphenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
3+4-Methylphenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
N-Nitrosodimethylamine	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
N-Nitrosodiphenylamine	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Naphthalene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Nitroaniline	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
3-Nitroaniline	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Nitroaniline	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Nitrobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2-Nitrophenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
4-Nitrophenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Pentachlorophenol	ND	20		µg/L	1	7/10/2015 1:30:30 PM	20095
Phenanthrene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Phenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Pyrene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Pyridine	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
1,2,4-Trichlorobenzene	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4,5-Trichlorophenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
2,4,6-Trichlorophenol	ND	10		µg/L	1	7/10/2015 1:30:30 PM	20095
Surr: 2-Fluorophenol	66.2	14.9-111		%REC	1	7/10/2015 1:30:30 PM	20095
Surr: Phenol-d5	64.1	11.3-108		%REC	1	7/10/2015 1:30:30 PM	20095
Surr: 2,4,6-Tribromophenol	75.7	15.7-154		%REC	1	7/10/2015 1:30:30 PM	20095
Surr: Nitrobenzene-d5	84.6	47.8-106		%REC	1	7/10/2015 1:30:30 PM	20095
Surr: 2-Fluorobiphenyl	63.7	21.3-123		%REC	1	7/10/2015 1:30:30 PM	20095
Surr: 4-Terphenyl-d14	51.4	14.3-135		%REC	1	7/10/2015 1:30:30 PM	20095
EPA METHOD 8260B: VOLATILES						Analyst: **BCN**	
Benzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Toluene	1.5	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Ethylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Naphthalene	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397

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

Qualifiers:

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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		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Injection Well 7-1-15
Lab ID: 1507094-001 **Matrix:** AQUEOUS

Client Sample ID: Injection Well
Collection Date: 7/1/2015 9:00:00 AM
Received Date: 7/2/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **BCN**	
1-Methylnaphthalene	ND	4.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
2-Methylnaphthalene	ND	4.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Acetone	72	10		µg/L	1	7/9/2015 8:19:52 PM	R27397
Bromobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Bromodichloromethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Bromoform	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Bromomethane	ND	3.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
2-Butanone	11	10		µg/L	1	7/9/2015 8:19:52 PM	R27397
Carbon disulfide	ND	10		µg/L	1	7/9/2015 8:19:52 PM	R27397
Carbon Tetrachloride	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Chlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Chloroethane	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Chloroform	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Chloromethane	ND	3.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
2-Chlorotoluene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
4-Chlorotoluene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
cis-1,2-DCE	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Dibromochloromethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Dibromomethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1-Dichloroethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1-Dichloroethene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2-Dichloropropane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,3-Dichloropropane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
2,2-Dichloropropane	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1-Dichloropropene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Hexachlorobutadiene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
2-Hexanone	ND	10		µg/L	1	7/9/2015 8:19:52 PM	R27397
Isopropylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
4-Isopropyltoluene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
4-Methyl-2-pentanone	ND	10		µg/L	1	7/9/2015 8:19:52 PM	R27397
Methylene Chloride	ND	3.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
n-Butylbenzene	ND	3.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
n-Propylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397

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		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: Injection Well 7-1-15
Lab ID: 1507094-001 **Matrix:** AQUEOUS

Client Sample ID: Injection Well
Collection Date: 7/1/2015 9:00:00 AM
Received Date: 7/2/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **BCN**	
sec-Butylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Styrene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
tert-Butylbenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
trans-1,2-DCE	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Trichlorofluoromethane	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Vinyl chloride	ND	1.0		µg/L	1	7/9/2015 8:19:52 PM	R27397
Xylenes, Total	ND	1.5		µg/L	1	7/9/2015 8:19:52 PM	R27397
Surr: 1,2-Dichloroethane-d4	96.9	70-130		%REC	1	7/9/2015 8:19:52 PM	R27397
Surr: 4-Bromofluorobenzene	90.8	70-130		%REC	1	7/9/2015 8:19:52 PM	R27397
Surr: Dibromofluoromethane	103	70-130		%REC	1	7/9/2015 8:19:52 PM	R27397
Surr: Toluene-d8	95.5	70-130		%REC	1	7/9/2015 8:19:52 PM	R27397

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
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	150707035
Address:	4901 HAWKINS NE SUITE D	**Project Name:**	1507094
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	150707035-001	**Sampling Date**	7/1/2015	**Date/Time Received**	7/7/2015 11:00 AM
Client Sample ID	1507094-001E / INJECTION WELL			**Sampling Time**	9:00 AM
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/L	1	7/15/2015	CRW	SW846 CH7	
Flashpoint	>200	°F		7/15/2015	KFG	EPA 1010	
pH	7.36	ph Units		7/8/2015	KMC	SM 4500pH-B	
Reactive sulfide	ND	mg/L	1	7/15/2015	HSW	SW846 CH7	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 150707035
Project Name: 1507094

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Reactive sulfide	*0.816*	*mg/L*	*0.907*	*90.0*	*70-130*	*7/15/2015*	*7/15/2015*
Cyanide (reactive)	0.486	mg/L	0.5	97.2	80-120	7/15/2015	7/15/2015

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
150707035-001A	Reactive sulfide	ND	0.816	mg/L	0.907	90.0	70-130	7/15/2015	7/15/2015
150707035-001	*Cyanide (reactive)*	*ND*	*0.462*	*mg/L*	*0.5*	*92.4*	*80-120*	*7/15/2015*	*7/15/2015*

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide (reactive)	0.454	mg/L	0.5	90.8	1.7	0-25	7/15/2015	7/15/2015

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/L	1	7/15/2015	7/15/2015
Reactive sulfide	ND	mg/L	1	7/15/2015	7/15/2015

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013, FL(NELAP) E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP). E871099

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R27295**	RunNo: **27295**
Prep Date:	Analysis Date: **7/2/2015**	SeqNo: **817819** 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								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R27295**	RunNo: **27295**
Prep Date:	Analysis Date: **7/2/2015**	SeqNo: **817820** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	99.0	90	110			
Sulfate	10	0.50	10.00	0	103	90	110			

Qualifiers:

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- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **100ng LCS**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R27397**	RunNo: **27397**
Prep Date:	Analysis Date: **7/9/2015**	SeqNo: **822125** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.9	70	130			
Toluene	17	1.0	20.00	0	87.2	70	130			
Chlorobenzene	17	1.0	20.00	0	85.5	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	95.4	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.0	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.4	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R27397**	RunNo: **27397**
Prep Date:	Analysis Date: **7/9/2015**	SeqNo: **822418** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R27397**	RunNo: **27397**
Prep Date:	Analysis Date: **7/9/2015**	SeqNo: **822418** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R27397**	RunNo: **27397**
Prep Date:	Analysis Date: **7/9/2015**	SeqNo: **822418** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **mb-20095**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **20095**	RunNo: **27414**
Prep Date: **7/6/2015**	Analysis Date: **7/10/2015**	SeqNo: **822558** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

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- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
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- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **mb-20095**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **20095**	RunNo: **27414**
Prep Date: **7/6/2015**	Analysis Date: **7/10/2015**	SeqNo: **822558** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	140		200.0		69.6	14.9	111			
Surr: Phenol-d5	150		200.0		74.2	11.3	108			
Surr: 2,4,6-Tribromophenol	150		200.0		75.2	15.7	154			
Surr: Nitrobenzene-d5	75		100.0		75.0	47.8	106			
Surr: 2-Fluorobiphenyl	76		100.0		75.9	21.3	123			
Surr: 4-Terphenyl-d14	52		100.0		52.2	14.3	135			

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		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **lcs-20095**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **20095**	RunNo: **27414**
Prep Date: **7/6/2015**	Analysis Date: **7/10/2015**	SeqNo: **822559** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	51	10	100.0	0	51.2	47.8	99.7			
4-Chloro-3-methylphenol	110	10	200.0	0	56.2	58.1	103			S
2-Chlorophenol	73	10	200.0	0	36.7	49.5	96.8			S
1,4-Dichlorobenzene	34	10	100.0	0	33.8	40.4	89.4			S
2,4-Dinitrotoluene	42	10	100.0	0	41.8	38.6	91.3			
N-Nitrosodi-n-propylamine	51	10	100.0	0	51.1	53.9	95.6			S
4-Nitrophenol	93	10	200.0	0	46.3	26.4	108			
Pentachlorophenol	98	20	200.0	0	49.1	36.5	86.6			
Phenol	85	10	200.0	0	42.7	29.3	108			
Pyrene	56	10	100.0	0	56.2	45.7	100			
1,2,4-Trichlorobenzene	43	10	100.0	0	42.9	39.3	94.5			
Surr: 2-Fluorophenol	67		200.0		33.4	14.9	111			
Surr: Phenol-d5	86		200.0		43.0	11.3	108			
Surr: 2,4,6-Tribromophenol	120		200.0		62.3	15.7	154			
Surr: Nitrobenzene-d5	47		100.0		46.6	47.8	106			S
Surr: 2-Fluorobiphenyl	53		100.0		53.0	21.3	123			
Surr: 4-Terphenyl-d14	44		100.0		44.1	14.3	135			

Sample ID **lcsd-20095**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **20095**	RunNo: **27414**
Prep Date: **7/6/2015**	Analysis Date: **7/10/2015**	SeqNo: **822560** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	76	10	100.0	0	76.1	47.8	99.7	39.1	28.2	R
4-Chloro-3-methylphenol	160	10	200.0	0	81.3	58.1	103	36.4	24.4	R
2-Chlorophenol	150	10	200.0	0	76.8	49.5	96.8	70.6	28.1	R
1,4-Dichlorobenzene	72	10	100.0	0	72.5	40.4	89.4	72.9	31.2	R
2,4-Dinitrotoluene	55	10	100.0	0	54.6	38.6	91.3	26.4	44.4	
N-Nitrosodi-n-propylamine	76	10	100.0	0	76.4	53.9	95.6	39.6	24.2	R
4-Nitrophenol	130	10	200.0	0	63.8	26.4	108	31.8	36.6	
Pentachlorophenol	130	20	200.0	0	65.8	36.5	86.6	29.1	29.5	
Phenol	160	10	200.0	0	77.8	29.3	108	58.2	30	R
Pyrene	69	10	100.0	0	69.3	45.7	100	20.8	31	
1,2,4-Trichlorobenzene	86	10	100.0	0	85.7	39.3	94.5	66.6	24	R
Surr: 2-Fluorophenol	140		200.0		70.6	14.9	111	0	0	
Surr: Phenol-d5	160		200.0		79.2	11.3	108	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		82.0	15.7	154	0	0	
Surr: Nitrobenzene-d5	80		100.0		79.5	47.8	106	0	0	
Surr: 2-Fluorobiphenyl	77		100.0		77.3	21.3	123	0	0	

Qualifiers:

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- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **lcsd-20095**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **20095**	RunNo: **27414**
Prep Date: **7/6/2015**	Analysis Date: **7/10/2015**	SeqNo: **822560** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	51		100.0		51.2	14.3	135	0	0	

Sample ID **mb-20218**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **20218**	RunNo: **27531**
Prep Date: **7/13/2015**	Analysis Date: **7/15/2015**	SeqNo: **826536** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	90		200.0		45.0	14.9	111			
Surr: Phenol-d5	75		200.0		37.3	11.3	108			
Surr: 2,4,6-Tribromophenol	140		200.0		69.6	15.7	154			
Surr: Nitrobenzene-d5	64		100.0		64.4	47.8	106			
Surr: 2-Fluorobiphenyl	61		100.0		61.2	21.3	123			
Surr: 4-Terphenyl-d14	45		100.0		45.2	14.3	135			

Sample ID **lcs-20218**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **20218**	RunNo: **27531**
Prep Date: **7/13/2015**	Analysis Date: **7/15/2015**	SeqNo: **826537** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	110		200.0		53.4	14.9	111			
Surr: Phenol-d5	82		200.0		41.0	11.3	108			
Surr: 2,4,6-Tribromophenol	150		200.0		74.7	15.7	154			
Surr: Nitrobenzene-d5	74		100.0		74.2	47.8	106			
Surr: 2-Fluorobiphenyl	74		100.0		73.5	21.3	123			
Surr: 4-Terphenyl-d14	44		100.0		44.2	14.3	135			

Sample ID **lcsd-20218**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **20218**	RunNo: **27531**
Prep Date: **7/13/2015**	Analysis Date: **7/15/2015**	SeqNo: **826538** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	100		200.0		52.2	14.9	111	0	0	
Surr: Phenol-d5	84		200.0		41.8	11.3	108	0	0	
Surr: 2,4,6-Tribromophenol	150		200.0		75.7	15.7	154	0	0	
Surr: Nitrobenzene-d5	76		100.0		76.0	47.8	106	0	0	
Surr: 2-Fluorobiphenyl	69		100.0		68.5	21.3	123	0	0	
Surr: 4-Terphenyl-d14	46		100.0		45.5	14.3	135	0	0	

Qualifiers:

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- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID	**1507094-001b dup**	SampType: **DUP**		TestCode: **SM2510B: Specific Conductance**					
Client ID:	**Injection Well**	Batch ID: **R27329**		RunNo: **27329**					
Prep Date:		Analysis Date: **7/6/2015**		SeqNo: **819171**		Units: **µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	2000	0.010						0.0491	20	

Qualifiers:

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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		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **MB-20158**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **20158**	RunNo: **27365**
Prep Date: **7/8/2015**	Analysis Date: **7/8/2015**	SeqNo: **820590** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-20158**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **20158**	RunNo: **27365**
Prep Date: **7/8/2015**	Analysis Date: **7/8/2015**	SeqNo: **820591** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

Sample ID **1507094-001DMS**	SampType: **MS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well**	Batch ID: **20158**	RunNo: **27365**
Prep Date: **7/8/2015**	Analysis Date: **7/8/2015**	SeqNo: **820635** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0059	0.0010	0.005000	0	118	75	125			

Sample ID **1507094-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well**	Batch ID: **20158**	RunNo: **27365**
Prep Date: **7/8/2015**	Analysis Date: **7/8/2015**	SeqNo: **820638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0058	0.0010	0.005000	0	116	75	125	1.62	20	

Qualifiers:

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- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **MB-20102**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **20102**	RunNo: **27378**
Prep Date: **7/6/2015**	Analysis Date: **7/9/2015**	SeqNo: **821352** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Calcium	ND	1.0								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID **LCS-20102**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **20102**	RunNo: **27378**
Prep Date: **7/6/2015**	Analysis Date: **7/9/2015**	SeqNo: **821353** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.49	0.020	0.5000	0	98.5	80	120			
Calcium	51	1.0	50.00	0	102	80	120			
Lead	0.50	0.0050	0.5000	0	100	80	120			
Magnesium	50	1.0	50.00	0	101	80	120			
Potassium	48	1.0	50.00	0	96.8	80	120			
Sodium	49	1.0	50.00	0	98.9	80	120			

Sample ID **MB-20102**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **20102**	RunNo: **27491**
Prep Date: **7/6/2015**	Analysis Date: **7/14/2015**	SeqNo: **824974** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0060								

Sample ID **LCS-20102**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **20102**	RunNo: **27491**
Prep Date: **7/6/2015**	Analysis Date: **7/14/2015**	SeqNo: **824975** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.49	0.0060	0.5000	0	98.5	80	120			

Sample ID **MB-20102**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **20102**	RunNo: **27540**
Prep Date: **7/6/2015**	Analysis Date: **7/16/2015**	SeqNo: **826932** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **MB-20102**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **20102**	RunNo: **27540**
Prep Date: **7/6/2015**	Analysis Date: **7/16/2015**	SeqNo: **826932** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-20102**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **20102**	RunNo: **27540**
Prep Date: **7/6/2015**	Analysis Date: **7/16/2015**	SeqNo: **826933** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Selenium	0.50	0.050	0.5000	0	99.7	80	120			
Silver	0.10	0.0050	0.1000	0	105	80	120			

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID	**1507094-001b dup**	SampType: **DUP**		TestCode: **SM4500-H+B: pH**						
Client ID:	**Injection Well**	Batch ID: **R27329**		RunNo: **27329**						
Prep Date:		Analysis Date: **7/6/2015**		SeqNo: **819204**		Units: **pH units**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.46	1.68								H

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		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R27329**	RunNo: **27329**
Prep Date:	Analysis Date: **7/6/2015**	SeqNo: **819128** 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: **R27329**	RunNo: **27329**
Prep Date:	Analysis Date: **7/6/2015**	SeqNo: **819129** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.36	20.00	80.00	0	98.0	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R27329**	RunNo: **27329**
Prep Date:	Analysis Date: **7/6/2015**	SeqNo: **819152** 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-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW**	Batch ID: **R27329**	RunNo: **27329**
Prep Date:	Analysis Date: **7/6/2015**	SeqNo: **819153** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79.44	20.00	80.00	0	99.3	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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507094**

06-Aug-15

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-1-15

Sample ID **MB-20129**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **20129**	RunNo: **27360**
Prep Date: **7/7/2015**	Analysis Date: **7/8/2015**	SeqNo: **820297** 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-20129**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **20129**	RunNo: **27360**
Prep Date: **7/7/2015**	Analysis Date: **7/8/2015**	SeqNo: **820298** 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

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

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1507094 RcptNo: 1

Received by/date: AT 07/02/15

Logged By: Anne Thorne 7/2/2015 7:00:00 AM

Completed By: Anne Thorne 7/2/2015

Reviewed By: CS 07/02/15

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° 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 (<2 or >12 unless noted)

Adjusted? —

Checked by: JA

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	1.0	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Injection Well 7-1-15

Project #:
P.O.# 12610939

Project Manager:

Sampler: Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1501094	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ TDS	~~EDB (Method 504.1)~~ Back up	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals Ca, Mg, Na, K	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ignitability	Reactivity, Corrosivity	Ca, pH, SO_4, Alk, Cl	Sulfides	Air Bubbles (Y or N)
7-1-15	9:00	H_2O	injection well	5-VOA	HCl	-001										X						
				1-liter	amber	-002											X					
				1-500ml	—	-003												X				
				1-500ml	—	-004				X										X		
				1-125ml	H_2SO_4	-005					X											
				1-500ml	HNO_3	-006							X									
				1-500ml	NaOH	-007													X			
				1-500ml	Zn Acetate	-008															X	

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
7-1-15	1215	Robert Bratton	Christy Walker	7/1/15	1215	
7/1/15	1810	Christy Walker		07/02/15	0700	

Water Analysis of Entrada Formation Water

(from TnT Disposal well located in section 8/T25N/R3W)

Multi-Chem Analytical Laboratory
1122 S. FM1788
Midland, TX 76706

multi-chem
A HALLIBURTON SERVICE

Units of Measurement: **Standard**

Water Analysis Report

Production Company: **TNT Environmental**
Well Name: **SWD ENTRADA**
Sample Point: **SWD**
Sample Date: **11/20/2014**
Sample ID: **WA-294316**

Sales Rep: **Greg Ramalho**
Lab Tech: **Andrew Callaghan**

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	11/25/2014
System Temperature 1 (°F):	31
System Pressure 1 (psig):	15
System Temperature 2 (°F):	300
System Pressure 2 (psig):	300
Calculated Density (g/ml):	1.0059
pH:	7.60
Calculated TDS (mg/L):	12320.63
CO2 in Gas (%):	
Dissolved CO2 (mg/L)):	80.00
H2S in Gas (%):	
H2S in Water (mg/L):	2.50

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	4455.35	Chloride (Cl):	6000.00
Potassium (K):	44.79	Sulfate (SO_4):	1094.00
Magnesium (Mg):	23.10	Bicarbonate (HCO_3):	427.00
Calcium (Ca):	115.67	Carbonate (CO_3):	120.00
Strontium (Sr):	7.60	Acetic Acid (CH_3COO)	
Barium (Ba):	9.30	Propionic Acid (C_2H_5COO)	
Iron (Fe):	1.82	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.10	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.55	Silica (SiO_2):	21.35

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum $CaSO_4 \cdot 2H_2O$		Celestite $SrSO_4$		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
300.00	300.00	1.90	85.63	1.92	5.47	2.21	0.99	1.95	1.31	0.00	0.00	0.09	1.02	0.00	0.00	6.95	0.05
270.00	268.00	1.68	77.73	1.90	5.47	2.04	0.99	1.80	1.30	0.00	0.00	0.00	0.00	0.00	0.00	7.04	0.05
240.00	236.00	1.47	68.31	1.90	5.47	1.89	0.98	1.63	1.29	0.00	0.00	0.00	0.00	0.00	0.00	7.17	0.05
210.00	205.00	1.26	57.99	1.92	5.47	1.76	0.97	1.45	1.27	0.00	0.00	0.00	0.00	0.00	0.00	7.32	0.05
180.00	173.00	1.06	47.51	1.98	5.48	1.67	0.96	1.25	1.24	0.00	0.00	0.00	0.00	0.00	0.00	7.53	0.05
150.00	141.00	0.88	37.61	2.08	5.49	1.62	0.96	1.03	1.19	0.00	0.00	0.00	0.00	0.00	0.00	7.79	0.05
120.00	110.00	0.71	29.02	2.23	5.51	1.64	0.96	0.81	1.11	0.00	0.00	0.00	0.00	0.00	0.00	8.13	0.05
90.00	78.00	0.57	22.00	2.44	5.52	1.73	0.97	0.59	0.96	0.00	0.00	0.00	0.00	0.00	0.00	8.56	0.05
60.00	46.00	0.46	16.76	2.73	5.53	1.92	0.98	0.36	0.73	0.00	0.00	0.00	0.00	0.00	0.00	9.11	0.05
31.00	15.00	0.39	13.73	3.10	5.53	2.26	0.99	0.16	0.39	0.00	0.00	0.00	0.00	0.00	0.00	9.83	0.05

		Hemihydrate $CaSO_4 \cdot 0.5H_2O$		*Anhydrate* $CaSO_4$		*Calcium* Fluoride		*Zinc* Carbonate		*Lead* Sulfide		*Mg* Silicate		*Ca Mg* Silicate		*Fe* Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
300.00	300.00	0.00	0.00	0.14	31.79	0.00	0.00	0.91	0.06	0.00	0.00	7.71	25.75	4.14	13.11	9.66	1.42
270.00	268.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.06	0.00	0.00	6.34	25.03	3.32	12.39	8.62	1.41
240.00	236.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.05	0.00	0.00	4.87	22.02	2.45	10.55	7.49	1.41
210.00	205.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.03	0.00	0.00	3.30	15.59	1.51	7.07	6.31	1.40
180.00	173.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	7.51	0.54	2.57	5.08	1.38
150.00	141.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.84	1.32
120.00	110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66	1.18
90.00	78.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.90
60.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.45
31.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01

AFFIDAVIT OF PUBLICATION

Ad No. 72205

STATE OF NEW MEXICO
County of San Juan:

SAMMY LOPEZ, being duly sworn says: That he IS the PUBLISHER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said *DAILY TIMES*, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Monday, December 14, 2015

And the cost of the publication is $60.13

ON 12/15/15 SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Christine Sellers

OFFICIAL SEAL
CHRISTINE SELLERS
Notary Public
State of New Mexico
My Comm. Expires 11/05/19

COPY OF PUBLICATION

Western Refining Southwest, Inc., represented by John Thompson (505) 327-4892, has applied to the New Mexico Oil Conservation Division for administrative approval to be authorized to inject nonhazardous treated water generated from the Bloomfield Terminal (former Refinery) into the proposed Class I (nonhazardous) disposal well. The proposed SWD #2, will be located 2019' FNL & 110' FEL, Section 27, T29N, R11W, San Juan County, New Mexico.

The proposed injection zone is the Entrada formation. The estimated injection depths are 7315' to 7,483' and the maximum anticipated injection rate is 8000 BPD. The maximum injection pressure will be determined from a step rate test. Interested parties can make comments to this application to the NM Oil Conservation Division, 1220 St. Francis Dr., Santa Fe, NM 87505. Comments must be received within 15 days of the date of this publication.

Legal No. 72205 published in The Daily Times on Dec 14, 2015

December 10, 2015

VIA CERTIFIED MAIL

Attn: Crystal Walker (Regulatory Coordinator)
Burlington Resources Oil & Gas Company LP
3401 E. 30th Street
Farmington, NM 87402

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Ms. Walker,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator (the Calvin #1 is within a half mile of the proposed SWD #2) you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

VIA CERTIFIED MAIL

Attn: Diane Montano (Regulatory
Compliance Mgr.)
XTO Energy, Inc.
382 Road 3100
Aztec, NM 87410

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Ms. Montano,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Sullivan Gas Com D #1E, Davis Gas Com F #1E, Davis Gas Com F #1R, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

VIA CERTIFIED MAIL

Attn: Regulatory Coordinator
Holcomb Oil & Gas Inc.
512 W. Arrington
Farmington, NM 87402

Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.

Dear Mr. Holcomb,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Davis Com J#1, Jacque #1, Jacque #2, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

SENDER: COMPLETE THIS SECTION

- ■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ☐ Print your name and address on the reverse so that we can return the card to you.
- ☐ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Burlington Resources Oil & Gas
Attn: Crystal Walker
3401 E. 30th St.
Farmington, NM 87401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Judith Dee ☒ Agent ☐ Addressee

B. Received by (Printed Name) Judith Dee
C. Date of Delivery 12-17-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4465

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- ■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ■ Print your name and address on the reverse so that we can return the card to you.
- ■ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

XTO Energy, Inc
Attn: Diane Montano
382 Rd. 3100
Aztec, NM 87410

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Renee S. Mendias ☐ Agent ☐ Addressee

B. Received by (Printed Name) Renee S. Mendias
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

DEC 17 2015

3. Service Type
☐ Certified Mail ☐ Express Mail
☒ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4441

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Hilcorp Oil + Gas Inc
Attn: Regulatory Coordinator
512 W. Arrington
Farmington NM 87402

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X

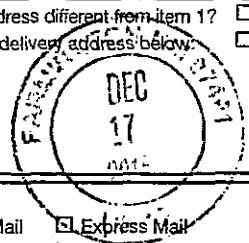
☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1?
If YES, enter delivery address below:

☐ Yes
☐ No



3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7011 1570 0001 0594 4458

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540