UIC - I - __011__

PERMITS, RENEWALS, & MODS (WDW-2)

2016

Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD |
|----------|--|
| Sent: | Tuesday, May 23, 2017 3:45 PM |
| То: | Schmaltz, Randy (Randy.Schmaltz@wnr.com) |
| Cc: | Griswold, Jim, EMNRD; Sanchez, Daniel J., EMNRD |
| Subject: | Western Refining SW, Inc. WDW-2 (UICI-11) Permit Conditions Variance Request May |
| | 17, 2017 |

Mr. James R. Schmaltz:

The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject request. Please find below OCD responses to Western's Variance Requests.

- 1) Quarterly Monitoring Requirements: Provide the environmental test type and methods that deviate from the discharge permit for OCD review.
- Monitor and Piezometer Wells: Provide a map to scale with MWs and piezometric groundwater flow direction for OCD review.
- 3) Continuous Monitoring Device: OCD approves on the condition that Western provide monthly 24-hr. graphs of pressure and flow rate in the quarterly report and/or annual report.
- 4) Fall-Off Test: OCD approves on the condition that Western complete its UIC Class I (NH) Disposal Well Fall-Off Test on or before September 30, 2017.

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490 E-mail: <u>CarlJ.Chavez@state.nm.us</u>

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: <u>http://www.emnrd.state.nm.us/OCD</u> and see "Publications")



May 17, 2017

Carl Chavez Environmental Bureau New Mexico Energy, Minerals & Natural Resources Dept. 1220 South St. Francis Drive Santa Fe, NM 87505

Certified Mailer #: 7016 2140 0000 3867 3529

RE: Permit Conditions Variance Request Class I Waste Injection Well "WDW-2" Bloomfield Terminal OCD Discharge Permit UICI-0011

Dear Mr. Chavez,

Western Refining Southwest, Inc. (Western) requests the following variances to the OCD Discharge Permit UICI-0011 conditions:

- **Condition 2.A Quarterly Monitoring Requirements** Western requests a permit variance to use the most up-to-date EPA approved methods for on-going sampling activities. The listed analytical methods in some cases do not reflect the most up-to-date EPA approved methods.
- **Condition 2.A.1 Monitor and Piezometer Wells** Western proposes to use the existing ground water remediation and monitoring program to detect potential ground water contamination associated with WDW-2. This program includes monitoring frequency, chemical monitoring parameters and reporting requirements.
- **Condition 3.C Continuous Monitoring Device** Western requests a permit variance to use the Terminal's data historian system to continuously record well injection parameters in real time. This system is more reliable than a chart recording system.
- **Condition 3.E Fall-Off Test** Western requests a permit variance to complete the Fall-Off Test (FOT) within 90-days of commencement of injection operations. Prior to the FOT, the well injection parameters must be allowed to stabilize which will not be possible until the NMOCD approved well stimulation is completed. Western will provide NMOCD proper notice prior the FOT.

If you have any questions or prefer to discuss these topics in more detail, please feel free to contact me at (505) 632-4171 at your convenience.

Sincerely,

State R. Schmaltz Western Refining HSER Manager – Logistics

cc: A. Hains (WNR)

Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD |
|--------------|--|
| Sent: | Tuesday, February 7, 2017 9:22 AM |
| То: | Griswold, Jim, EMNRD; Goetze, Phillip, EMNRD |
| Cc: | 'Allen.Hains@wnr.com' |
| Subject: | FW: Western WDW#2 Formation Water Analytical (UICI-011) API# 30-045-35747 Water Quality Data |
| | Entrada Fm. |
| Attachments: | Western WDW#2 Formation Water Analytical.pdf |

Gentlemen:

Western Refining SW, Inc. has submitted their environmental laboratory data results for the Entrada Fm. The TDS is 48,900 ppm.

It appears that Western has an acceptable injection zone.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490 E-mail: <u>Carl J. Chavez@state.nm.us</u> **"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: <u>http://www.emnrd.state.nm.us/OCD</u> and see "Publications")**

From: Hains, Allen [mailto:Allen.Hains@wnr.com]
Sent: Tuesday, February 7, 2017 9:11 AM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Subject: Western WDW#2 Formation Water Analytical

Carl,

The WDW#2 formation water analysis is attached.

Thank you,

Allen S. Hains Manager Remediation Projects

Western Refining 212 N. Clark Street El Paso, Texas 79905 915 534-1483 915 490-1594 (cell)

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



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

February 01, 2017

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

RE: DWD #2

OrderNo.: 1701A75

Dear Kelly Robinson:

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

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1701A75 Date Reported: 2/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Project:** DWD #2

Lab ID: 1701A75-001 Client Sample ID: DWD 2 Formation Water Collection Date: 1/25/2017 11:00:00 AM Received Date: 1/26/2017 7:05:00 AM

Analyses Result **PQL** Qual Units **DF** Date Analyzed Batch **EPA METHOD 300.0: ANIONS** Analyst: MRA 1/26/2017 6:37:17 PM Fluoride ND 2.0 mg/L R40335 20 Chloride 23000 2500 mg/L 5E 1/27/2017 7:20:01 PM R40361 Bromide ND 2.0 R40335 mg/L 20 1/26/2017 6:37:17 PM Phosphorus, Orthophosphate (As P) ND 10 mg/L 1/26/2017 6:37:17 PM R40335 20 Sulfate 910 25 mg/L 50 1/27/2017 7:07:36 PM R40361 Nitrate+Nitrite as N ND 20 mg/L 100 1/27/2017 7:32:26 PM R40361 SM2510B: SPECIFIC CONDUCTANCE Analyst: JRR 1/30/2017 1:40:54 PM 94000 50 µmhos/cm R40366 Conductivity 50 SM2320B: ALKALINITY Analyst: JRR 1/30/2017 11:39:53 AM R40366 mg/L CaCO3 Bicarbonate (As CaCO3) 255.3 20.00 1 Carbonate (As CaCO3) ND 2.000 mg/L CaCO3 1 1/30/2017 11:39:53 AM R40366 Total Alkalinity (as CaCO3) 255.3 20.00 mg/L CaCO3 1/30/2017 11:39:53 AM R40366 1 SM2540C MOD: TOTAL DISSOLVED SOLIDS Analyst: KS **Total Dissolved Solids** 48900 2000 *D mg/L 2/1/2017 3:56:00 PM 29970 1 **EPA 6010B: TOTAL RECOVERABLE METALS** Analyst: pmf Calcium 1700 20 mg/L 20 1/30/2017 10:59:56 AM 29930 Magnesium 200 20 mg/L 20 1/30/2017 10:59:56 AM 29930 Potassium 450 20 mg/L 20 1/30/2017 10:59:56 AM 29930 Sodium 16000 500 500 1/30/2017 11:06:12 AM 29930 mg/L

Matrix: AQUEOUS

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

Oualifiers: * Value exceeds Maximum Contaminant Level.

- D Sample Diluted Due to Matrix
- Н 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
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits J Page 1 of 5
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client:Hall EnvironmentalProject:Not indicatedLab ID:B17011690-001Client Sample ID:1701A75-001C DWD 2 Formation Water

 Report Date:
 01/27/17

 Collection Date:
 01/25/17
 11:00

 DateReceived:
 01/27/17

 Matrix:
 Aqueous

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

RL - Analyte reporting limit. QCL - Quality control limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.



QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Project: Not Indicated

Report Date: 01/27/17 Work Order: B17011690

| Analyte | | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---------------|-------------------|----------------------------|---------------------|---------------------|------|-----------|---------------|----------------|------------|------------|
| Method: | SW9040C | | | | - | | Analytical Ru | n: ORION | 720A HZW | _170127A |
| Lab ID: pH | ICV | Initial Calibratio 8.11 | on Verifications.u. | on Standard 0.10 | 101 | 98 | 102 | | 01/27 | 7/17 10:54 |
| Method: | SW9040C | | | | | | | | Batch | R273874 |
| Lab ID: pH | B17011690-001ADUP | Sample Duplic 6.49 | ate s.u. | 0.10 | | Run: ORIC | ON 720A HZW_ | 170127A 0.5 | 01/27 3 | 7/17 10:54 |

ND - Not detected at the reporting limit.

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

| 170 | WO#: |
|------|------|
| 01-F | |
| | |

| Client: | Westerr | n Refining S | outhwe | st, Inc. | | | | | | | |
|-----------------|----------------------|--------------|------------------|-----------|------------------------------------|-----------|-----------|---------------|------|----------|------|
| Project: | DWD# | 2 | | | | | | | | | |
| Sample ID | МВ | SampT | Type: m t | olk | TestCode: EPA Method 300.0: Anions | | | | | | |
| Client ID: | PBW | Batcl | h ID: R4 | 0335 | R | RunNo: 4 | 0335 | | | | |
| Prep Date: | | Analysis D | Date: 1/ | 26/2017 | S | SeqNo: 12 | 264291 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Fluoride | | ND | 0.10 | | | | | | | | |
| Bromide | | ND | 0.10 | | | | | | | | |
| Phosphorus, C | Orthophosphate (As P | ND | 0.50 | | | | | | | | |
| Sample ID | LCSb | SampT | Type: Ics | 5 | Tes | tCode: El | PA Method | 300.0: Anions | | | |
| Client ID: | LCSW | Batcl | h ID: R4 | 0335 | R | RunNo: 4 | 0335 | | | | |
| Prep Date: | | Analysis D | Date: 1/ | 26/2017 | S | SeqNo: 12 | 264293 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Fluoride | | 0.52 | 0.10 | 0.5000 | 0 | 104 | 90 | 110 | | | |
| Bromide | | 2.4 | 0.10 | 2.500 | 0 | 96.4 | 90 | 110 | | | |
| Phosphorus, C | Orthophosphate (As P | 4.8 | 0.50 | 5.000 | 0 | 96.7 | 90 | 110 | | | |
| Sample ID | МВ | SampT | Type: m t | olk | Tes | tCode: El | PA Method | 300.0: Anions | ; | | |
| Client ID: | PBW | Batcl | h ID: R4 | 0361 | R | RunNo: 4 | 0361 | | | | |
| Prep Date: | | Analysis D | Date: 1/ | 27/2017 | S | SeqNo: 12 | 265117 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | ND | 0.50 | | | | | | | | |
| Sulfate | | ND | 0.50 | | | | | | | | |
| Nitrate+Nitrite | as N | ND | 0.20 | | | | | | | | |
| Sample ID | LCS | SampT | Type: Ics | 6 | Tes | tCode: El | PA Method | 300.0: Anions | | | |
| Client ID: | LCSW | Batcl | h ID: R4 | 0361 | R | RunNo: 4 | 0361 | | | | |
| Prep Date: | | Analysis D | Date: 1/ | 27/2017 | S | SeqNo: 12 | 265118 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | 4.8 | 0.50 | 5.000 | 0 | 95.5 | 90 | 110 | | | |
| Sulfate | | 9.7 | 0.50 | 10.00 | 0 | 97.2 | 90 | 110 | | | |
| Nitrate+Nitrite | as N | 3.5 | 0.20 | 3.500 | 0 | 98.8 | 90 | 110 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 2 of 5

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

| WO#: | 1701A75 |
|------|-----------|
| | 01-Feb-17 |

| Client: Project: | Western F DWD #2 | Refining S | Southwe | st, Inc. | | | | | | | |
|---------------------|---------------------|-----------------|-----------------|-----------|---|-----------|-----------|---------------|-----------|----------|------|
| Sample ID | MB-29930 | Samp | Гуре: М | BLK | TestCode: EPA 6010B: Total Recoverable Metals | | | | | | |
| Client ID: | PBW | Batch ID: 29930 | | | F | RunNo: 4 | 0375 | | | | |
| Prep Date: | 1/27/2017 | Analysis E | Date: 1/ | 30/2017 | S | SeqNo: 12 | 265583 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | | ND | 1.0 | | | | | | | | |
| Magnesium | | ND | 1.0 | | | | | | | | |
| Potassium | | ND | 1.0 | | | | | | | | |
| Sodium | | ND | 1.0 | | | | | | | | |
| Sample ID | LCS-29930 | Samp | Type: LC | S | Tes | tCode: El | PA 6010B: | Total Recover | able Meta | als | |
| Client ID: | LCSW | Batc | h ID: 29 | 930 | F | RunNo: 4 | 0375 | | | | |
| Prep Date: | 1/27/2017 | Analysis E | Date: 1/ | 30/2017 | 5 | SeqNo: 12 | 265584 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | | 49 | 1.0 | 50.00 | 0 | 98.3 | 80 | 120 | | | |
| Magnesium | | 49 | 1.0 | 50.00 | 0 | 97.3 | 80 | 120 | | | |
| Potassium | | 47 | 1.0 | 50.00 | 0 | 94.9 | 80 | 120 | | | |
| Sodium | | 40 | 4.0 | F0 00 | 0 | 05.4 | 00 | 100 | | | |

Qualifiers:

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

Page 3 of 5

| WO#: | 1701A75 |
|------|-----------|
| | 01-Feb-17 |

| Client: Project: | Western Refining DWD #2 | g Southwest, Inc. | | | | | |
|--------------------------|----------------------------|---------------------|--------------------|-------------|-------------------|----------|------|
| Sample ID mb-1 | Sam | npType: mblk | TestCode | SM2320B: AI | lkalinity | | |
| Client ID: PBW | Ba | atch ID: R40366 | RunNo | 40366 | | | |
| Prep Date: | Analysis | s Date: 1/30/2017 | SeqNo | 1266120 | Units: mg/L CaCO3 | | |
| Analyte | Result | PQL SPK val | ue SPK Ref Val %RE | C LowLimit | HighLimit %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaC | :03) ND | 20.00 | | | | | |
| Sample ID Ics-1 | Sam | ıрТуре: Ics | TestCode | SM2320B: AI | lkalinity | | |
| Client ID: LCSV | l Ba | atch ID: R40366 | RunNo | 40366 | | | |
| Prep Date: | Analysis | s Date: 1/30/2017 | SeqNo | 1266121 | Units: mg/L CaCO3 | | |
| Analyte | Result | PQL SPK val | ue SPK Ref Val %RE | C LowLimit | HighLimit %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaC | 78.04 | 20.00 80. | 0 0 97 | .6 90 | 110 | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 5

Page 5 of 5

| Client: Project: | Weste DWD | rn Refining Southy #2 | vest, Inc. | | | | | | |
|---------------------|--------------|--------------------------|-------------|-------------|----------------------|--------------------|-----------|----------|------|
| Sample ID | MB-29970 | SampType: | MBLK | Test | Code: SM2540C N | IOD: Total Dise | solved So | lids | |
| Client ID: | PBW | Batch ID: 2 | 29970 | R | unNo: 40436 | | | | |
| Prep Date: | 1/31/2017 | Analysis Date: | 2/1/2017 | S | eqNo: 1267368 | Units: mg/L | | | |
| Analyte | | Result PQ | L SPK value | SPK Ref Val | %REC LowLimi | t HighLimit | %RPD | RPDLimit | Qual |
| Total Dissolve | d Solids | ND 20 | .0 | | | | | | |
| Sample ID | LCS-29970 | SampType: | LCS | Test | Code: SM2540C N | IOD: Total Diss | solved So | lids | |
| Client ID: | LCSW | Batch ID: | 29970 | R | unNo: 40436 | | | | |
| Prep Date: | 1/31/2017 | Analysis Date: | 2/1/2017 | S | eqNo: 1267369 | Units: mg/L | | | |
| Analyte | | Result PQ | L SPK value | SPK Ref Val | %REC LowLimi | t HighLimit | %RPD | RPDLimit | Qual |
| Total Dissolve | d Solids | 1010 20 | .0 1000 | 0 | 101 80 |) 120 | | | |

Qualifiers:

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

| HALL ENVIRONMENTAL ANALYSIS LABORATORY | Hall Environmental Analysis Lab 4901 Haw Aibuquerque, NA TEL: 505-345-3975 FAX: 505-34 Website: www.hallenvironmer | kins NE 487109 Sam 45-4107 ttal.com | ple Log-In C | heck List |
|--|--|---|----------------------------|--------------------------|
| Client Name: Western Refining Southw | Work Order Number: 1701A75 | | RcptNo: | 1 |
| Received by/date: AT 611 216/17 | | | | |
| Logged By: Anne Thorne 1 | /26/2017 7:05:00 AM | anne An- | ~ | |
| Completed By: Anne Thorne 1 | /26/2017 9:13:16 AM | are the | | |
| Reviewed By: 12 | 6/17 | | | |
| Chain of Custody | ··· • | | | |
| 1. Custody seals intact on sample bottles? | Yes 🗌 | No 🗌 | Not Present 🗹 | |
| 2. Is Chain of Custody complete? | Yes 🗹 | No 🗌 | Not Present | |
| 3. How was the sample delivered? | <u>Courier</u> | | | |
| Log In | | | | |
| 4. Was an attempt made to cool the samples? | Yes 🗹 | No | | |
| 5. Were all samples received at a temperature o | f >0° C to 6.0°C Yes ☑ | No 🗌 | | |
| 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 🔽 | # of processed | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes 🔽 | No 🗌 | bottles checked for pH: | 2 r >12 unless noted; |
| 13. Are matrices correctly identified on Chain of C | ustody? Yes 🗹 | No 🗀 | Adjusted? | <u>Ny</u> |
| 14. Is it clear what analyses were requested? | Yes 🗹 | No | Oh - she she she s | La |
| Were all holding times able to be met? (If no, notify customer for authorization.) | Yes 🗹 | No 🗔 | Checked by: | V - V |
| Special Handling (if applicable) | | | | |
| 16. Was client notified of all discrepancies with thi | s order? Yes | No | NA 🔽 | |
| Person Notified: | | ····· | |] |
| By Whom: | Via: □ eMail □ | Phone Fax | In Person | |
| Regarding: | | | | |
| Client Instructions: | | | | |
| 17. Additional remarks: | | | | - |
| 18. <u>Cooler Information</u> Cooler No Temp °C Condition Sea | I Intact Seal No Seal Date | Signed By | | |

| NTAL | | | | | | | | (N 1 | o Y) | Air Bubbles | | | | | | | | | | |
|-------------------|-------------|--------------|---------------|-------------|--------------------------------|--------------|------------------------------|-----------------|--------------|--------------------------|--------------------------|----------|----------|----------|------|------|------|------|----------------------------------|--------------------------------------|
| Ū | | 2 | 109 | | | - | +m | гму: | פי | See at | X | \times | \times | _ | | | | | | - |
| Ż | | | UIII M 87 | | -410 t | | | (\ | /0/ | -im92) 0728 | | | | | | | | | | - |
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| 5 | , v | ן מ | uera | | s Re | 120 | PCB's | 1 8082 | səp | 8081 Pestici | | | | | | | | | | - |
| Z | ΞĮ | 5 | Abua | 5 5 1 | ra) alysi | (*(| <u></u> | I ON O | NC SIRI | 9M 8 ANUA | | | | | | | | | | |
| | | | | | /5 An | | (SM | S 0728 | , or (| 0168) s'HA9 | | | | | | | | | | |
| | Z | | www. NS NI | | 5-39 | | | (1.4(|) g p | edb (Metho | | | | | | | | | | - |
| | | ς ΄ | awki | |)5-34 | | | (1.8 | l≯þ | odteM) H9T | | | | | | | | | | |
| | | | 101 H | - L | el. 5(| (0) | 1M / O | אם / סי י | ษอ) | 7PH 8015B | | | | | | | | | s: | |
| | | | 4 | : 1 | | (ʎļu | IO SED |) H9T - | 9E + | BTEX + MTI | | | | | | | | | smar | 1 |
| | | | | Т | | | 1208) | 2 | יבי קריי | TM + X∃T8 | | | | | | | | | N N | |
| | , 2-day | | 2 | | 19031-2 | | o hin so w | ita Ko W | .y | HEAL NO. | Į P | 102 | 102 | | | | | | Date Time 125/17) イイ | Date Time |
| | X Rust | | C#1 | | - 126 | ger: | 114 R | Vatt K | berature: | Preservative Type | Poly | H.Wd 3 | Hasey | - | | | | | e inhalte | he - |
| | □ Standard | Project Name | DW | Project #: | 0.4 | Project Mana | Ž | Sampler: 1/ | Sample Tem | Container Type and # | 1-500201 | 1-Secul | 1-1221-1 | | | | | | Received by: | |
| of-Custody Record | rn Refining | | 570 CK 4990 | | 22-637-4169 | | □ I evel 4 (Full Validation) | Other | | Matrix Sample Request ID | H20 DWD3 Formation where | | | | | | | | Relinquished by: Draft Mr. M. | Relinquished by: ///wetw.//bulle- |
| Chain- | West | | g Address | 0. | <u>にある</u> 注 に が 単 | or Fax#: |) Package: ndard | ditation LAP | D (Type)_ | Time | 00:11 | | | | | | | | Time: | Time: |
| - | Client | | Mailin | A | Phone | email | oA/QC ¥ Sta | Accre | | Date | 25-17 | | | | | | | | Date: 15/17 | N Date: |

1. 17

| All Anions | EPA Method 300.0 | 1-500ml unpreserved plastic 1-125 ml H2SO4 plastic |
|------------|------------------|---|
| Alkalinity | SM2320 B | Volume will come from the 500ml unpreserved plastic |
| eC | SM 2510B | Volume will come from the 500ml unpreserved plastic |
| TDS | SM 2540 C | Volume will come from the 500ml unpreserved plastic |
| Cations | EPA Method 200.7 | 1-500ml HNO3 Plastic |
| рН | EPA Method 9040 | Volume will come from the 500ml unpreserved plastic |

SM = Standard Methods

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

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

1-500ml unpreserved plastic

1-125ml H2SO4 Plastic

1-500ml HNO3 plastic

Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD |
|----------|---|
| Sent: | Tuesday, December 20, 2016 5:11 PM |
| То: | 'Hains, Allen' |
| Cc: | Griswold, Jim, EMNRD; Davis, Bruce; Schmaltz, Randy; Robinson, Kelly; Roberts, Dale; Dooling, Frank |
| Subject: | RE: WNR Bloomfield Terminal Injection Well (UICI-11) Surface Equipment |

Allen:

The New Mexico Oil Conservation Division (OCD) has completed its review of the attached drawings outlining planned construction of infrastructure near WDW-2.

Please be sure to construct a berm or firewall around the four 500 bbl. Capacity Tanks. OCD has recommended that tanks be placed on liner or impermeable material in the past. A sump to capture and dewater any leakage from tanks is also recommended.

Thank you.

From: Hains, Allen [mailto:Allen.Hains@wnr.com] Sent: Wednesday, December 14, 2016 6:14 PM To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us> Cc: Griswold, Jim, EMNRD < Jim.Griswold@state.nm.us>; Davis, Bruce < Bruce.Davis@wnr.com>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Robinson, Kelly <Kelly.Robinson@wnr.com>; Roberts, Dale <Dale.Roberts@wnr.com>; Dooling, Frank <Frank.Dooling@wnr.com>

Subject: WNR Bloomfield Terminal Injection Well Surface Equipment

Carl,

As we discussed a few weeks ago, Western is sending information about the surface equipment for the WDW #2 injection well for the purposes of the Facility's OCD Discharge Permit renewal.

As you are aware, the injection well is located across the highway from the abandoned WDW #1 injection well. The well is located close to the existing piping route from the Aeration Lagoons to the Evaporation Ponds. Western will be building the surface infrastructure in the vicinity to WDW #2 and the existing pipeline.

The surface infrastructure will include:

- a one pump and an additional pump to installed in the future,
- 4 tanks (to settle solids),
- Filtration,
- Insulated building, and
- Associated piping and instrumentation.

The attached documentation shows the location and preliminary design documents. After construction is complete, Western can provide as buils for your records.

Please Note: the Evaporation Pond Closure Plan is being reviewed by Western and should be submitted to you shortly.

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)

Chavez, Carl J, EMNRD

| From: | Hains, Allen <allen.hains@wnr.com></allen.hains@wnr.com> |
|--------------|---|
| Sent: | Wednesday, December 14, 2016 6:14 PM |
| То: | Chavez, Carl J, EMNRD |
| Cc: | Griswold, Jim, EMNRD; Davis, Bruce; Schmaltz, Randy; Robinson, Kelly; Roberts, Dale; Dooling, Frank |
| Subject: | WNR Bloomfield Terminal Injection Well Surface Equipment |
| Attachments: | WNR Bloomfield Terminal Injection Well Surface Equipment.pdf |

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Allen S. Hains Manager Remediation Projects

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



| | | | | | | | | | | SCALE |
|-----------------|-----|--|---------|-----|---------|-----|------|------|-------|------------|
| | | | | | | | | | | DRAWN BY |
| | | | | | | | | | | REDRAWN BY |
| | | | | | | | | | | FINAL CHK. |
| | 2 | Scanned & Redrawn, Added Injection Well, Tanks & Building. | | VC | [10/16] | | | | | ENIOD |
| | 1 | General Revision | | NHB | [3/04] | | | | | ENGR. |
| | Α | ADDED DHT & SULFEROX UNIT TO PLANT AREA | | BY | DATE | BY | DATE | BY. | DATE. | APPR. BY |
| REFERENCE DWGS. | NO. | REVISION | JOB No. | DR/ | \WN | CHE | CKED | APPF | ROVED | AFE/WO No. |
| 7 | | 8 9 10 | | 11 | | | | | 12 | |



EVAPORATION PONDS





| | | 14 15 16 17 | \checkmark |
|----------------|--------|---|---------------|
| lark | Ouan | Description | к |
| A | 1 | 500 BBL Steel Tank, 1/4" BCB, 3/16" Shell and Deck | |
| В | 1 | 500 BBL Steel Tank, 1/4" BCB, 3/16" Shell and Deck | |
| С | 1 | 500 BBL Steel Tank, 1/4" FB, 3/16" Shell and Deck | - |
| D | 1 | 500 BBL Steel Tank, 1/4" FB, 3/16" Shell and Deck | |
| E | 4 | 24" x 36" Cleanout with one piece cover | L |
| F | 4 | 8" Std. Thief Hatch | |
| н | 0 4 | Vent – 4" Coupling | |
| 1 | 4 | Aux 4" 150 Flanged Coupling | - |
| J | 4 | Aux. — 2" 150 Flanged Coupling | |
| К | 2 | Drain – 4" Coupling | I |
| L | 2 | Siphon Drain — 4" Coupling | |
| М | 2 | Siphon Drain - 4" Pipe to Center, braced to tank bottom | |
| N | 4 | Suction – 6" Flanged Connection, 6" Ext. Projection | |
| D | 2 | Inlet - 6 Flanged Connection with 6 Line I.D. as Shown | |
| г О | 1 | Inlet - 6" Flanged Conn. with 6" Line on I.D. as Shown | н |
| s | 1 | Outlet - 6" Flanged Conn. With 6" Line on I.D. as Shown | |
| Т | 1 | Inlet — 6" Flanged Conn. with 6" Line on I.D. as Shown | |
| U | 1 | Oil Skim – 4" Coupling | |
| ۷ | 4 | Splash Plate — 1/4" PL x 24" x 24", 5/8" Holes spaced at | |
| | | 2" Centers - 121 Holes | G |
| W V | 1 | 4" 150 4" Coupling | |
| ^ | 4 | | _ |
| lotes | s: | | |
|) All) All | interr | nal Welds—seal welded and ground for coating. nal piping braced to tank. | F |
|) All | splas | h plates welded to tank wall. | |
|) All \ All | Tanks | s to have removable Striker Plate for coating. | |
|) All | Tanks | s to have walkway clips - API Type | |
|) Ex | terior | painted white. | E |
| ,) Fu | rnish | the following Walkway and Stairway | |
| 1- | -26'S | Stairway, 1—21' Walkway, 3 — 18'—4" Extension | |
| | Walkw | ay, 6-Sets of Brackets | - |
| | | | |
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| DATE | | | |
| 0/2016 | T/ | ANKS A, B, C, & D | <u>ין –</u> ן |
| | | LAYOUT Bloomfield San Juan | |
| |] | DWG. NO. | • |
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| | | 14 15 16 17 | \mathbf{i} |





GENERAL STRUCTURAL NOTES

BUILDING CODE

2009 EDITION OF THE INTERNATIONAL BUILDING CODE, WITH STATE OF NEW MEXICO AMENDMENTS.

LOADS

GRAVITY:

ROOF:

ROOF LIVE LOAD = 20 PSF (REDUCIBLE). ROOF DEAD LOAD = 2.5 PSF. ROOF SNOW LOAD = 30 PSF. COLLATERAL LOAD = 2 PSF.

LATERAL:

WIND. 3 SECOND WIND GUST = 90MPH. WIND IMPORTANCE FACTOR = 1.0 EXPOSURE = C.

SEISMIC:

SEISMIC IMPORTANCE FACTOR = 1.0. SHORT PERIOD SPECTRAL ACCELERATION Ss = 0.178g. ONE SECOND SPECTRAL ACCELERATION S1 = 0.038g. SOIL SITE CLASS = D. Sds = 0.189g.Sd1 = 0.061g.SEISMIC DESIGN CATEGORY = B. BASIC SEISMIC-FORCE RESISTING SYSTEM = ORDINARY STEEL CONCENTRICALLY BRACED FRAMES AND LIGHT FRAMED WALLS SHEATHED WITH STEEL SHEETS. DESIGN BASE SHEAR = 0.6K RESPONSE MODIFICATION FACTOR (R) = 3.25 AND 7. ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE PROCEDURE.

FOUNDATIONS

DESIGN SOIL BEARING VALUE = 2500 PSF (CODE MAXIMUM).

CONCRETE

ALL EXTERIOR CONCRETE SLABS ARE TO SLOPE AWAY FROM BUILDINGS.

THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH IS AS FOLLOWS: FOOTINGS AND SLABS ON GRADE , F'c = 3000 PSI (DESIGN BASED ON 2500 PSI).

ALL CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE ACI. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED UNLESS NOTED OTHERWISE. ADMIXTURES CONTAINING CHLORIDES SHALL NOT BE USED. NO OTHER ADMIXTURES PERMITTED WITHOUT APPROVAL. FOR CONCRETE WITHOUT PLASTICIZER, MAXIMUM SLUMP 5 INCHES AT POINT OF PLACEMENT UNLESS NOTED OTHERWISE. IF PLASTICIZER IS USED, A HIGHER FINAL SLUMP MAY BE ALLOWED UPON ENGINEER'S APPROVAL. UNLESS NOTED OTHERWISE ON

THE DRAWINGS, THE EMBEDMENT OF CONDUITS, PIPES, SLEEVES, ETC. OF ANY MATERIAL SHALL NOT BE PERMITTED WITHIN ANY CONCRETE STRUCTURAL ELEMENT OR STRUCTURAL CONCRETE TOPPINGS WITHOUT THE APPROVAL OF THE ENGINEER. TEST DATA FOR EACH CONCRETE MIX SHALL BE SUBMITTED FOR REVIEW PER CHAPTER 5 OF ACI 318. REFERENCE FIGURE R5.3 FOR SUBMITTAL REOUIREMENTS AND OPTIONS. CONCRETE MIX DESIGNS THAT ARE SUBMITTED WITHOUT THE APPROPRIATE TEST DATA CANNOT BE REVIEWED.

REINFORCING

ALL REINFORCING PER CRSI SPECIFICATIONS AND HANDBOOK. NO TACK WELDING OF REINFORCING BARS ALLOWED WITHOUT PRIOR REVIEW OF PROCEDURE WITH THE ENGINEER. LATEST ACI CODE AND DETAILING MANUAL APPLY. CLEAR CONCRETE COVERAGES ARE 3 INCHES FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH, 1-1/2 INCHES FOR CONCRETE EXPOSED TO EARTH OR WEATHER.

ALL REINFORCING SHALL BE CHAIRED TO ENSURE PROPER CLEARANCES. SUPPORT OF FOUNDATION REINFORCING MUST PROVIDE ISOLATION FROM MOISTURE/CORROSION BY USE OF A PLASTIC OR CONCRETE CHAIR. DUCT-TAPE COVERED REINFORCING IS NOT AN ACCEPTABLE CHAIR.

ALL DIMENSIONS REFERENCED IN DRAWINGS AS "CLEAR" SHALL BE FROM FACE OF STRUCTURE TO EDGE OF REINFORCING, AND SHALL NOT BE LESS THAN STATED, NOR GREATER THAN "CLEAR" DIMENSION PLUS 3/8 INCHES. ALL OTHERS SHALL BE PLUS OR MINUS ¼ INCHES TYPICAL UNLESS NOTED OTHERWISE.

STEEL REINFORCING:

A.ALL PRINCIPAL LONGITUDINAL - ASTM A615 - GR 60. B. TIES, STIRRUPS, ETC. ASTM A615 - GR 40. C. WIRE PER ASTM A82.

LAP SPLICES IN CONCRETE:

PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS. REINFORCING BAR SPACING GIVEN ARE MAXIMUM ON CENTERS. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. LAP SPLICES, UNLESS NOTED OTHERWISE, SHALL BE CLASS "B" TENSION LAP SPLICES PER LATEST EDITION OF ACI 318.

DRYPACK:

DRYPACK SHALL BE 5000 PSI NON-SHRINK GROUT, FIVE STAR OR EQUIVALENTS. INSTALL DRYPACK UNDER COLUMN BASE PLATE AFTER COLUMN HAS BEEN PLUMBED BUT PRIOR TO SUPPORTED FRAMING BEING INSTALLED.

STRUCTURAL STEEL

ALL STEEL MEMBERS ARE TO BE PAINTED FOR RUSTPROOFING AND WEATHERPROOFING.

GENERAL:

ALL CONSTRUCTION PER LATEST AISC HANDBOOK. ALL WIDE FLANGE STEEL SHALL BE ASTM A992 (Fy = 50 KSI). ALL MISCELLANEOUS STEEL UNLESS NOTED OTHERWISE SHALL BE ASTM A36 (Fy = 36 KSI).

ALL STRUCTURAL ROLLED STEEL MEMBERS WITH Fy GREATER THAN 36 KSI ARE TO BE IDENTIFIED WITH AN ASTM SPECIFICATION MARK OR TAG PER IBC SEC. 2203.1.

UNLESS NOTED OTHERWISE, ALL BOLTS SHALL BE ASTM A307. ALL BOLTS SHALL BE INSTALLED WITH STEEL WASHERS AT SHORT SLOTTED HOLES USING SNUG TIGHT INSTALLATION, UNLESS NOTED OTHERWISE.

MATERIAL PROPERTIES OF COLD FORMED LIGHT GAGE STEEL MEMBERS CONFORM TO THE REOUIREMENTS OF ASTM A1011-06b GRADE 55 WITH A MINIMUM YIELD OF 55,000 PSI.

ANCHOR RODS:

ANCHOR RODS INCLUDE HOOKED, HEADED, AND THREADED AND NUTTED ANCHORS. THE TERMS ANCHOR BOLT AND ANCHOR ROD ARE USED SYNONYMOUSLY THROUGHOUT THESE DOCUMENTS. ALL ANCHOR ROD MATERIAL SHALL BE PER ASTM F1554 GRADE 55 - WELDABLE. ALL ANCHOR RODS SHALL BE INSTALLED WITH STEEL WASHERS AT SHORT SLOTTED HOLES USING SNUG TIGHT INSTALLATION UNLESS NOTED OTHERWISE.

STEEL ERECTION NOTE:

PER OSHA, STEEL MEMBERS AND DIAGONAL BRACING CANNOT BE RELEASED FROM HOISTING CABLES UNTIL ALL BOLTS OR WELDS AT MEMBER ENDS ARE COMPLETELY INSTALLED.



GENERAL STRUCTURAL NOTES

CERTIFICATES SHALL BE THOSE ISSUED BY AN ACCEPTED TESTING CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL AGENCY. ALL WELDING DONE BY E70 SERIES LOW HYDROGEN RODS UNLESS NOTED OTHERWISE. SHOP WELDS AND FIELD WELDS SHALL BE SHOWN ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

ROOF/WALL SHEATHING:

ALL ROOF AND WALL SHEATHING SHAL BE 26 GA. R-PANEL SHEATHING, 36 INCHES WIDE MANUFACTURED IN ACCORDANCE TO ASTM-A792 GRADE 80 WITH MINIMUM YIELD STRESS OF 80,000 PSI AND INSTALLED PER ER-5409P. ATTACH DECK TO FRAMING WITH 1¼" SELF DRILLING TEK SCREWS WITH WASHERS BY PROVIDING 3 SCREWS AT INTERMEDIATE SUPPORTS, 6 SCREWS AT SHEET ENDS AND AT 6" MAX ALONG PARALLEL SUPPORTS. PROVIDE ³/₄" SELF DRILLING TEK SCREWS WITH WASHERS AT 12" ON CENTER MAXIMUM ALONG SIDECAPS. ROOF SHEETS ARE TO BE INSTALLED AS A 4-SPAN MINIMUM.

PANEL CLOSURES SHALL BE PROVIDED AT ALL ROOF TO WALL TRANSITIONS. SIDE LAP SEALANT IS TO BE PROVIDED AT ROOF PANEL LAPS. SEALANT IS TO BE PROVIDED BETWEEN ROOF PANELS AND RIDGE CAP. RAKE TRIM AND OUTSIDE CORNER WALL TRIM ARE TO BE PROVIDED FOR WEATHERPROOFING. RAKE TRIM IS TO BE INSTALLED WITH SEALANT AND CLOSURES. ALL ROOF AND WALL PENETRATIONS SHALL BE SEALED ACCORDINGLY.

GENERAL NOTES:

THE STRUCTURAL CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE. EXCEPT WHERE NOTED, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. THE STRUCTURAL ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES FOR PROCEDURE OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND THE PROGRAMS INCIDENT THERETO (NOR SHALL OBSERVATION VISITS TO THE SITE INCLUDE INSPECTIONS FOR THESE ITEMS).

WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA. ANY ENGINEERING DESIGN, PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW, SHALL BEAR THE SEAL OF A REGISTERED ENGINEER RECOGNIZED BY THE BUILDING CODE JURISDICTION OF THIS PROJECT.

NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED OF IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL STRUCTURAL NOTES AND SPECIFICATIONS, THE GREATER REQUIREMENTS SHALL GOVERN.

DIMENSIONS WITH DRAWINGS PRIOR TO START OF CONSTRUCTION. RESOLVE ANY DISCREPANCY WITH THE ENGINEER. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL ITEMS WITH THE APPROPRIATE TRADE DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.

TYPICAL DETAILS MAY NOT NECESSARILY BE CUT ON PLANS, BUT APPLY UNLESS NOTED OTHERWISE.

CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED CONSTRUCTION. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT.

OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION IS CHOSEN, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES, APPROVALS AND THE COORDINATION OF THE WORK WITH ALL RELATED TRADES AND SUPPLIERS.

VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS (IF APPLICABLE) AND FIELD CONDITIONS.

THE ADEQUACY OF ENGINEERING DESIGNS AND LAYOUT PERFORMED BY OTHERS RESTS WITH THE DESIGNING OR SUBMITTING AUTHORITY.

REVIEWING IS INTENDED ONLY AS AN AID TO THE CONTRACTOR IN OBTAINING CORRECT SHOP DRAWINGS. RESPONSIBILITY FOR CORRECTNESS SHALL REST WITH THE CONTRACTOR.

MECHANICAL, ELECTRICAL, PLUMBING, SITE, EXISTING BUILDING PLANS AND WORK BY OTHERS. CONTRACTOR AND OWNER ARE **RESPONSIBLE FOR PROVIDING ADDITIONAL INFORMATION** INCLUDING, BUT NOT LIMITED TO, PREVIOUSLY MENTIONED ITEMS IF REQUIRED BY RELEVANT AUTHORITY.

CONSTRUCTION NOTES:

A. PER OSHA, STEEL MEMBERS AND DIAGONAL BRACING CANNOT BE RELEASED FROM HOISTING CABLES UNTIL ALL BOLTS OR WELDS AT MEMBER ENDS ARE COMPLETE. B. FOUNDATION FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL 18 INCHES MINIMUM BELOW ADJACENT FINISHED GRADE. FINISHED GRADE IS DEFINED AS TOP OF SLAB FOR INTERIOR FOOTINGS.

IF CLAY OR OTHER UNSUITABLE SOIL IS FOUND, THE FOLLOWING **GUIDELINES SHALL BE FOLLOWED:**

- 1. OVEREXCAVATE THE EXISTING SITE SOILS TO A MINIMUM DEPTH OF TWO FEET BELOW BOTTOM OF FOOTING ELEVATION SHOWN. THE OVEREXCAVATION SHALL EXTEND LATERALLY OUTSIDE PERIMETER WALL AND OUTSIDE OF FOOTING EDGES A MINIMUM OF 5 FEET.
- 2. THE EXPOSED OVEREXCAVATESD SURFACE SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES AND RECOMPACTED TO 95% OF MAXIMUM DENSITY AS ESTABLISHED BY ASTM D - 1557.
- 3. THE FOOTING BASE SHALL BE BROUGHT TO DESIGN ELEVATION UTILIZING ENGINEERED STRUCTURAL FILL PLACED AS NOTED BELOW.

C. ON SITE SOILS MAY BE SUITABLE FOR USE AS BACKFILL SOILS AND STRUCTURAL FILL, IF THEY MEET THE FOLLOWING REQUIREMENTS. ALL FILL MATERIAL SHALL BE FREE OF VEGETATION AND DEBRIS AND CONTAIN NO ROCKS LARGER THAN 4 INCHES. GRADATION OF THE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH ASTM D-442. SAND IS NOT AN ACCEPTABLE BACKFILL.

D. STRUCTURAL FILL AND BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 8 INCHES LOOSE WITH EACH LAYER BEING COMPACTED TO A MINIMUM DENSITY OF 95% OF LABORATORY DENSITY AS DETERMINED BY ASTM D-1557.

E. THE METHOD AND STABILITY OF THE FOUNDATION EXCAVATION IS THE RESPONSIBILITY OF THE CONTRACTOR, SEE SPECIFICATIONS AND NOTES HEREIN FOR ADDITIONAL INFORMATION.

F. CONTRACTOR TO VERIFY ROUGH OPENING REQUIREMENTS WITH DOOR AND/OR WINDOW MANUFACTURERS PRIOR TO INSTALLATION.

| | Lamb Engineering & Design | 2805 BANNOCK DR (575) 396-5377 LOVINGTON NM, 88260 dplambd3@gmail.com |
|----------------|--------------------------------|--|
| P (1) | B CHANNER C | SONAL EN 23-16 |
| PROJECT: | JNL 24X36X12 BLOOMFIELD, NM | |
| | | |
| DRAWN | BY: | DCL |
| CHECKE | D BY: | DPL |
| DATE: | | 11-23-16 |
| GENER NOTES | TITLE AL STRUCTI | JRAL |
| | | |
| | | |

NOTES:

A) CONCRETE CONTROL JOINTS REQUIRED IN SLAB.

- B) CONCRETE SLAB REINFORCEMENT (IF USED) SHALL BE PLACED AT MIDPOINT BETWEEN TOP OF CONCRETE SLAB AND BOTTOM OF CONCRETE SLAB. SUPPORT REINFORCEMENT WITH MATERIAL THAT DOES NOT RUST.
- C) NO CONCRETE SLAB ON GRADE SLOPE IS SHOWN ON PLAN. IF SLOPE IS REQUIRED, CONTACT ENGINEER.
- D) PLANS SHOWN PROVIDE CONCRETE SLAB ON GRADE CRACK CONTROL UTILIZING A MONOLITHIC CONCRETE POUR. IF CONCRETE CRACKING IS OF GREAT CONCERN, CONTACT ENGINEER FOR A 2 OR 3 CONCRETE POUR DESIGN.
- E) CONCRETE FOOTINGS AND TURNDOWNS SHALL BEAR EITHER ON UNDISTURBED SOIL OR ENGINEERED BACKFILL, COMPACTED PREPARED AND TESTED PER CONSTRUCTION NOTES WITHIN GENERAL FOUNDATION NOTES. IF FOOTINGS ARE CONSTRUCTED TO DEPTHS GREATER THAN PLANS SHOW, ADDITIONAL REINFORCING SHALL BE REQUIRED AND ENGINEER SHOULD BE NOTIFIED TO RESOLVE.



| | Lamb Engineering & Design | 2805 BANNOCK DR. (575) 396-5377 LOVINGTON NM, 88260 dplambd3@gmail.com |
|---|--|---|
| LEL P. | HILL OF THE CONTRACT OF THE CO | CONAL ET 1-23-16 |
| | , NM | |
| PROJECT: | JNL 24X36X BLOOMFIELD | |
| PROJECT: | JNL 24X36X BLOOMFIELD | |
| PROJECT: DRAWN | JNL 24X36X BLOOMFIELD | DCL |
| PROJECT DRAWN CHECKE | DINC 24X36X DINC 24X37X DINC 2 | DCL DPL |
| PROJECC DRAWN CHECKE DATE: | DINC 24X36X DINC 24X37X DINC 2 | DCL DPL 11-23-16 |
| PROJECI DRAWN CHECKE DATE: SHEET FOUNE | DATION PLAN | DCL DPL 11-23-16 |

NOTE:

CONTRACTOR TO MAINTAIN MIN OF 11/4" CLEARANCE OF ANCHORS FROM ALL EDGES OF BASE PLATES.



NOTES:

- 1. CONCRETE TURNDOWN BEYOND.
- 2. #4 CONTINUOUS REBAR.
- 3. CONCRETE SLAB ON GRADE. SLAB REINFORCING MAY OR MAY NOT OCCUR.
- 4. NOTCH SLAB EDGE AS REQUIRED TO ACCEPT
- METAL SIDING. 5. STEEL COLUMN - SEE DETAIL 4/S-202 FOR BASE PLATE OR
- EMBED INFO.
- 6. GRADE TO SLOPE AWAY FROM SLAB.
- 7. 18" MINIMUM BELOW LOWEST ADJACENT FINISH GRADE OR MINIMUM FROST DEPTH AS REQUIRED BY LOCAL JURISDICTION.
- 8. CONCRETE FOOTING.

В

6"

6"

6"

6

6

6'

TYPICAL STEEL COLUMN AT CONCRETE 3







PLATE WITH ANCHORS

| | | EN | IBED PLATI | E SCHEDULE | |
|------------------|---------|----------------------|---------------|------------|-----|
| FOR COLUM | IN SIZE | COLUMN | EMBED TYPE | С | D |
| * ^C * | c | W8X10 OR 4X4 T.S. | W12X26 | 10" | 8" |
| | | W8X15 | W12X26 | 10" | 8" |
| | | W10X12 | W12X26 | 12" | 10" |
| | | W12X14 | W12X26 | 14" | 12" |
| (4) | | W12X16 | W12X26 | 14" | 12" |
| | | W12X19 | W12X26 | 14" | 12" |
| | (3) | W14X22 | W16X36 | 16" | 14" |
| | | W16X26 | W16X36 | 18" | 16" |
| | | W16X31 | W16X36 | 18" | 16" |
| | | W18X35 | W12X40 | 20" | 18" |
| | | W21X44 | W12X40 | 23" | 21" |

W-SHAPED EMBED PLATE

4

TYPICAL BASE PLATE AND ANCHOR

No Scale



NOTES: 1. SLAB REINFORCING IF REQUIRED. 2. FILL SAWCUT JOINT WITH URETHANE SEALANT ON FOAM ROD IF CLIENT REQUIRES SMOOTH FINISH.

SAWED JOINT OR TOOLED GROOVE JOINT ¼ SLAB THICKNESS.
 2 #4 CONTINUOUS, EXTEND EACH END INTO TURNDOWN MINIMUM 24".

(1)-





NOTES 1. SLAB REINFORCING IF REQUIRED. 2. FILL SAWCUT JOINT WITH URETHANE SEALANT ON FOAM ROD IF CLIENT REQUIRES SMOOTH FINISH. 3. SAWED JOINT OR TOOLED GROOVE JOINT 1/4 SLAB THICKNESS.

6

5



TYPICAL CONCRETE CONTROL JOINT

| No Scale |
|---|
| #9, #10, AND ALL GRADE |
| ROUND 2" PIN BARS. |
| $ = \underbrace{ \begin{bmatrix} (6) & (7) \\ \hline \\ \hline \\ (5) \end{bmatrix} } $ |
| No Scale |
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| |
| AL BARS PLACED SO THAT MORE E IS CAST IN THE MEMBER BELOW |
| 'B" TENSION LAP SPLICES PER INLESS SPECIFICALLY NOTED 35 OR SCHEDULES. EER IF CLEAR SPACING OF N OR EQUAL TO 2 BAR DIAMETERS, HAN THE BAR DIAMETER. MAL WEIGHT CONCRETE. IN, SEE G.S.N., PLANS, SCHEDULES, |
| |



No Scale

















NO SCALE

Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD |
|--------------|--|
| Sent: | Wednesday, July 20, 2016 8:17 AM |
| То: | Davis, Bruce (Bruce.Davis@wnr.com) |
| Cc: | Griswold, Jim, EMNRD; Perrin, Charlie, EMNRD; Schmaltz, Randy |
| | (Randy.Schmaltz@wnr.com); Allen.Hains@wnr.com |
| Subject: | Western Refining Southwest, Inc. Approval of Discharge Permit (UICI-011) for the Class |
| | I (non-hazardous) Waste Injection Well "WDW-2" (API# 30-045-35747) UL: H of Section |
| | 27, Township 29 North, Range 11 West, NMPM, San Juan County |
| Attachments: | UICI-11 DP 7-20-2016.pdf |

Mr. Davis, et al.:

Please find attached the New Mexico Oil Conservation Division (OCD) above subject letter and discharge permit related to your recent Underground Injection Control Well Application. The hardcopy was placed in the U.S. Mail this morning.

Please contact me if you have questions. 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: <u>CarlJ.Chavez@state.nm.us</u> Website: <u>www.emnrd.state.nm.us/ocd</u>

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.

State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

David Martin Cabinet Secretary

Tony Delfin Deputy Cabinet Secretary David R. Catanach, Division Director Oil Conservation Division



JULY 20, 2016

CERTIFIED MAIL RETURN RECEIPT NO: 3771 5961

Mr. Bruce D. Davis Director Western Refining Southwest, Inc. P.O. Box 159 Bloomfield, New Mexico 87413

RE: Approval of Discharge Permit (UICI-011) for the Class I (non-hazardous) Waste Injection Well "WDW-2" (API# 30-045-35747) Western Refining Southwest, Inc.- Bloomfield Terminal, UL: H of Section 27, Township 29 North, Range 11 West, Lat. 36.69860, Long. 107.97035, NMPM, San Juan County, New Mexico

Dear Mr. Davis:

The discharge permit (UICI-011) for the Western Class I Non-Hazardous Waste Injection Well "WDW-2," located 2028 FNL and 111 FEL Unit Letter "H", Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico, is hereby approved under the terms and conditions specified in the enclosed discharge permit.

OCD approves this discharge permit renewal pursuant to 20.6.2.3109A NMAC. Please note 20.6.2.3109G NMAC, which provides for possible future amendment of the permit. Please be advised that approval of this discharge permit does not relieve Western of liability if operations result in pollution of surface water, ground water, or the environment.

Please note that 20.6.2.3104 NMAC specifies "When a permit has been issued, discharges must be consistent with the terms and conditions of the permit." Pursuant to 20.6.2.3107C NMAC, Western is required to notify the Director of any increase in the injection volume or injection pressure, or process modification that would result in any change in the water quality or volume of the discharge.

This discharge permit will expire on July 20, 2021, and Western should submit a discharge permit renewal application in ample time before this date. Note that under 20.6.2.3106F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved discharge permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit renewal application for the Western Class I Non-Hazardous Waste Injection Well is subject to 20.6.2.3114 NMAC. Every billable facility submitting a discharge permit renewal application is assessed a non-refundable filing fee of \$100.00. OCD has already received the required \$100.00 filing fee and the \$4,500.00 permit fee for a Class I non-hazardous waste injection well is now required by check made payable by Western to the "Water Quality Management Fund."

If you have any questions, please contact Carl Chavez of my staff at (505-476-3490) or email: <u>CarlJ.Chavez@state.nm.us</u>. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.
July 20, 2016 Page 2

Sincerely,

David R. Catanad

David R. Catanach Director

DRC/cc

xc: Aztec District Office Randy R. Schmaltz, Western Refining Southwest, Inc. Allen Hains, El Paso

DISCHARGE PERMIT UICI-011 (WDW-2)

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-011 (Discharge Permit) to WESTERN REFINING SOUTHWEST, INC., L.L.C. (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well "Waste Disposal Well No. 2 (WDW-2) API No. 30-045-35747, located 2028 FNL and 111 FEL, Unit Letter "H", Section 27, Township 29 North, Range 11 West, (Lat. 36.69860, Long. 107.97035), NMPM, San Juan County, New Mexico. WDW-2 is located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd.

The Permittee is permitted to dispose of only non-hazardous (RCRA exempt and RCRA nonexempt non-hazardous) oil field waste fluids into WDW-2. Groundwater that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 10 - 30 feet below ground surface and has a total dissolved solids (TDS) concentration of approximately 200 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (see Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (see 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well (WDW-2) is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil field waste, other than non-hazardous oil field waste fluids into its Class I non-hazardous waste injection well (WDW-2), including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, and wash-down water. The Permittee may not dispose of any industrial waste fluid that is not oil field waste that is generated at its terminal. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all industrial fluids that are not generated in the oil field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

- 1. The injection of fluids into a motor vehicle waste disposal well is prohibited.
- 2. The injection of fluids into a large capacity cesspool is prohibited.

3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.

4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified in 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject waste fluids into ground water containing 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (see Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT: This Discharge Permit (UICI-011) is a new UIC Class I (Non-hazardous) Discharge Permit due to the abandonment of the former San Juan Refining Company Disposal Well No. 1 (API# 30-045-29002) under former Discharge Permit UICI-009.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit

fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee shall submit the final \$4,500.00 permit fee for a Class I non-hazardous waste injection well to OCD with a check made payable to "Water Quality Management Fund" no later than thirty days after the date that this permit is issued.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective on the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit shall **expire on July 20, 2021.** The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (see Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD's Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2, or process modification that would result in any significant modification in the discharge of water contaminants (see 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well (WDW-2) that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

or,

a.

Noncompliance by Permittee with any condition of this Discharge Permit;

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge

permit modification or termination (see Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (see Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgment that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility;

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information related to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-

HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 - 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

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| EPA HW No. | Contaminant | SW-846 Methods | Regulatory Level (mg/L) |
|------------|----------------------|---------------------------------|----------------------------|
| D004 | Arsenic | 1311 | 5.0 |
| D005 | Barium | 1311 | 100.0 |
| D018 | Benzene | 8021B | 0.5 |
| D006 | Cadmium | 1311 | 1.0 |
| D019 | Carbon tetrachloride | 8021B 8260B | 0.5 |
| D020 | Chlordane | 8081A | 0.03 |
| D021 | Chlorobenzene | 8021B 8260B | 100.0 |
| D022 | Chloroform | 8021B 8260B | 6.0 |
| D007 | Chromium | 1311 | 5.0 |
| D023 | o-Cresol | 8270D | 200.0 |
| D024 | m-Cresol | 8270D | 200.0 |
| D025 | p-Cresol | 8270D | 200.0 |
| D026 | Cresol | 8270D | 200.0 |
| D027 | 1,4-Dichlorobenzene | 8021B 8121 8260B 8270D | 7.3 |
| D028 | 1,2-Dichloroethane | 8021B 8260B | 0.5 |
| D029 | 1,1-Dichloroethylene | 8021B 8260B | 0.7 |
| D030 | 2,4-Dinitrotoluene | 8091 8270D | 0.13 |
| D032 | Hexachlorobenzene | 8121 | 0.13 |
| D033 | Hexachlorobutadiene | 8021B 8121 8260B | 0.5 |
| D034 | Hexachloroethane | 8121 | 3.0 |
| D008 | Lead | 1311 | 5.0 |
| D009 | Mercury | 7470A 7471B | 0.2 |
| D035 | Methyl ethyl ketone | 8015B 8260B | 200.0 |
| D036 | Nitrobenzene | 8091 8270D | 2.0 |
| D037 | Pentrachlorophenol | 8041 | 100.0 |
| D038 | Pyridine | 8260B 8270D | 5.0 |

QUARTERLY MONITORING LIST

| D010 | Selenium | 1311 | 1.0 |
|------|-----------------------|-------|-------|
| D011 | Silver | 1311 | 5.0 |
| D039 | Tetrachloroethylene | 8260B | 0.7 |
| D040 | Trichloroethylene | 8021B | 0.5 |
| | | 8260B | |
| D041 | 2,4,5-Trichlorophenol | 8270D | 400.0 |
| D042 | 2,4,6-Trichlorophenol | 8041A | 2.0 |
| | | 8270D | |
| D043 | Vinyl chloride | 8021B | 0.2 |
| | | 8260B | |

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.

If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level. If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. Monitor and Piezometer Wells: Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

- 1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.
- 2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:
 - Name of facility;
 - Address of facility;
 - Name of Permittee (and owner or operator, if appropriate);

- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (e.g., sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, etc.);
- Proposed date of well closure;
- Name of Preparer; and
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon WDW-2, it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified in 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;

- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use C-141 Form with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.G. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Aztec District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well subsurface work, i.e., Mechanical Integrity Testing, well plugging, abandonment or decommissioning of any equipment associated with WDW-2.

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and EPA laboratory Quality Assurance/Quality Control (QA/QC) and Data Quality Objectives (DQOs) documentation to comply with OCD environmental sampling and analytical laboratory methods and data reporting requirements in New Mexico.

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated

with plugging and abandonment of WDW-2, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective action(s).

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances per Permit Condition 5.B. herein, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding or financial assurance requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein.

2.I. REPORTING:

1. Quarterly Reports: The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD's Environmental Bureau no later than 45 days following the end of each calendar quarter. The quarterly reports shall include the following:

a. Physical, chemical and other relevant characteristics of injection fluids;

b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure with any exceedances identified; and

c. Results of monitoring prescribed under Section 20.6.2.5207B NMAC with any exceedances of Permit Condition 2.A.

d. Piezometer and monitor well information from Permit Condition 2.A.1.

e. Continuous monitoring chart(s) and information from Permit Condition 3.C.

2. Annual Report: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by June 1st of the following year. The annual report shall include the following:

 Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well (WDW-2), Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;

- Summary of Class I non-hazardous waste injection well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Copy of Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- Copy of the quarterly chemical analyses shall be included with data summary and all QA/QC and DQO associated information;
- Copy of any mechanical integrity test (MIT) chart(s), including the type of test, *i.e.*, duration, gauge pressure, etc. unless OCD has approved Monthly Continuous Monitoring Charts for MITs in lieu of individual MITs;
- Copy of Fall-Off Test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports (include any C-141 reports);
- Area of Review (AOR) annual update summary with any new wells penetrating the injection zone within a 1-mile radius from WDW-2;
- Summary with interpretation of MITs, Fall-Off Tests, Bradenhead Tests, etc., with conclusion(s) and recommendation(s);
- Summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- Summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that WDW-2 is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall cease operations until proper

repairs are made, notify the OCD's Environmental Bureau and Aztec District office within 24 hours, and shall not resume injection until the Permittee has received approval from the OCD.

3. Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone.

4. The annulus between the injection tubing and the long string of injection casing shall be filled with a fluid approved by the OCD Director with an annulus pressure also approved rework by the OCD Director.

3.B. INJECTION OPERATIONS:

1. Injection Formation, Interval (Zone) and Waste Fluids: The Permittee shall determine whether the Total Dissolved Solids (TDS) within the injection zone is greater than 10,000 ppm before OCD will approve any injection into the Entrada Formation. The Permittee shall inject only non-hazardous (RCRA exempt and/or RCRA non-exempt) oil field waste fluids into the Entrada Sandstone Formation estimated to exist from ~ 7,316 feet to 7,482 feet below ground level (bgl) at WDW-2. The conductor casing will be set at 300 feet. The surface casing will be set at 3,600 feet. The intermediate protection or injection casing will be set at 7,500 feet. The injection tubing will be set in the injection packer at approximately 7,265 feet, which isolates WDW-2 into the perforated injection interval estimated to be between 7,316 and 7,482 feet bgl. The Permittee shall ensure that the injected non-hazardous waste fluids enter perforations only within the specified injection interval and are not permitted to escape into other formations or onto the land surface.

2. Well Injection Pressure Limits and Injection Flow Rate: The Permittee shall ensure that the maximum allowable surface injection pressure on WDW-2 shall not exceed 1,465 psig. A Step-Rate Test (SRT) shall be performed and submitted to OCD under Sundry before approval of any increase in the injection pressure. The Permittee shall inspect and monitor the pressure-limiting device daily and shall report any pressure exceedances within 24 hours of detection to OCD's Environmental Bureau and Aztec District Office.

3. **Pressure-Limiting Device:** The Permittee shall equip and operate its Class I non-hazardous waste injection well or system with a pressure limiting device, or equivalent (*i.e.*, Murphy switch), in working condition which shall at all times limit surface injection pressure to the maximum allowable surface injection pressure limit.

The Permittee shall inspect and monitor the pressure-limiting device daily and shall report any pressure exceedances within 24 hours of detection to OCD's Environmental Bureau and Aztec District Office. The Permittee shall take all steps necessary to ensure that the injected waste fluids enter only the permitted injection interval and not escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated under operational conditions, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize an increase in maximum surface injection pressure if the Permittee demonstrates that higher pressure will not result in migration of the injected fluid from the designated injection zone or interval using a valid Step-Rate Test (SRT) run preferably in coordination with a Fall-Off Test (FOT).

3.C. CONTINUOUS MONITORING DEVICE: The Permittee shall install a continuous monitoring device in advance of injection that records the monthly (hourly basis) real-time injection pressure, injection rate, injection volume, and pressure on the annulus between the injection tubing and the long string of casing. The Permittee shall implement a chart changing procedure that depressurizes and properly re-aligns the pens on the chart scale during changing to prevent anomalous pressure noise, i.e., MIT annulus pressure, etc. The Permittee shall notify OCD within 24 hours after having knowledge of the MIT failure. The Permittee shall not resume injection operations until approved by OCD.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for WDW-2 at least once every five years or more frequently as the OCD Director may require for good cause during the life of the well. In addition, an annual Bradenhead test shall be performed. The Permittee shall also demonstrate mechanical integrity for WDW-2 by completing an MIT after well workovers, including when it pulls the tubing or reseats the packer. The Permittee shall request MIT approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Aztec District Office. The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

The Permittee shall conduct a casing-tubing annulus MIT from the surface to the approved injection packer depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 500 psig measured at the surface. The Permittee shall follow OCD's 2004 New Mexico Oil Conservation Division Underground Injection Control Program Manual guidance when conducting a MIT. The Permittee shall submit the results of its MIT to OCD's Environmental Bureau and Aztec District Office within 30 days of completion. If any remedial work or any other workover operations are necessary, the Permittee shall comply with Permit Condition 3.F.

2. A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which OCD considers to be significant at maximum operating temperature and pressure, and no detectable conduit for fluid movement out of the injection zone through the well bore, or vertical channels adjacent to the well bore, which the OCD considers to be significant. The following criteria will determine if the Class I nonhazardous waste injection well has passed the MIT:

a. The MIT passes if there is zero bleed-off during the test;

b. The MIT passes if there is a less than a \pm 10% change in the final test pressure compared to the starting pressure, if approved by OCD;

c. The MIT fails if there is more than a 10% reduction in the final pressure compared to the starting pressure or that the pressure does not stabilize within 10% of the starting pressure before the end of the MIT. The Permittee shall immediately shut-in the well and investigate for leaks in accordance with Permit Conditions 3.B, 3.C, 3.D, and 3.F. The Permittee shall not resume injection operations until approved by OCD.

d. When the MIT is not witnessed by OCD and fails, the Permittee shall immediately shut-in the well and investigate for leaks in accordance with Permit Conditions 3.C, 3.D, and 3.F. The Permittee shall notify OCD within 24 hours after having knowledge of the MIT failure. The Permittee shall not resume injection operations until approved by OCD.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts an MIT.

3.E. FALL-OFF TEST: The Permittee shall submit an initial C-103 (Sundry Notice) form for the Fall-Off Test (FOT) to be completed within 90-days of well completion, which shall include a provision to evaluate injection zone (Entrada Formation) environmental laboratory water quality consistent with the water quality parameters in Permit Condition 2.A. The Permittee shall notify OCD within 24-hours of receipt of environmental laboratory quality data confirming total dissolved solids (TDS) are less than the protection limit of 10,000 ppm within the injection zone for further instruction. The minimum FOT frequency shall be at least annually before September 30th and comply with OCD's 2007 *New Mexico Oil Conservation Division UIC Class I Well Fall-Off Test Guidance* for conducting a FOT and for reporting FOT results. Historical FOT results shall be included with the FOT results to the OCD Environmental Bureau and Aztec District Office within 60 days of FOT completion.

3.F. WELL WORKOVER OPERATIONS: The Permittee shall pursuant to 20.6.2.5205A(5) NMAC, provide notice to and shall obtain approval from the OCD District Office prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) sent to the OCD District Office with copies sent to

the OCD's Environmental Bureau. After completing remedial work, pressure tests, or any other workover operations, the Permittee shall run an MIT in accordance with Permit Condition 3.D to verify that the remedial work has successfully repaired any problems.

3.G. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, and average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to OCD on a quarterly basis and in the annual report. The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch or equivalent, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.H. AREA OF REVIEW (AOR): The Permittee shall report to OCD's Environmental Bureau within 72 hours of discovery of any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well. Any un-cemented wells within the injection interval shall be identified by the Permittee and reported to OCD.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. QUARTERLY AND ANNUAL REPORTS: The Permittee shall submit its quarterly and annual reports to OCD as specified in Permit Condition 2.I.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit a cost estimate of the actual cost to properly close, restore land surface, plug and aban don its Class I non-hazardous waste injection well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC). The Permittee's financial assurance shall be based on third person estimates. OCD requires the Permittee to submit Financial Assurance based on the OCD approved cost estimate. Financial assurance shall be approved by OCD and executed prior to discharge permit issuance and shall become effective upon commencement of construction.

AFFIDAVIT OF PUBLICATION

RECEIVED OCCOPY OF PUBLICATION

Ad No. 72834

2016 JUN 29 P 1:39

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 English published at in circulation 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):

Sunday, June 19, 2016

And the cost of the publication is \$206.50

ON $\frac{\frac{\omega}{28}}{6}$ SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Christine Sellers



NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOUR-CES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3108 NMAC), the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division ("OCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(UICI-11) Western Refining Southwest, Inc. James R. Schmaltz, Refinery Environmental Manager, #50 Road 4990, P.O. Box 159, Bloomfield, New Mexico 87413, has submitted an application for a new Underground Injection Control (UIC) Class I Non-Hazardous Injection Well (API No. 30-045-35747) Discharge Permit for waste disposal located 2028 FNL and 111 FEL (SE/4, NE/4) in Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The injection well will be located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd. The San Juan River is within 1,320 ft. N-NW of the well at it closest point. Oil-field exempt and non-exempt, non-hazardous wastewater will be disposed into the Entrada Formation at an injection interval from 7,315 ft. to 7,483 ft. below ground surface at a daily rate not to exceed 8,500 barrels per day ~ (248 gpm) and at a maximum surface injection pressure of 1,465 psig. The injection fluid contains approximately 5,250 ppm total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of about 20 ft. below ground surface with a TDS concentration of approximately 200 ppm TDS. Water quality in the Entrada Formation at this location is currently not known, and OCD will require environmental analytical testing during well completion before authorizing injection into the formation. The discharge permit addresses well construction, operation, monitoring of the well, associated surface facilities, provides a contingency plan in the event of accidental spills, leaks and other accidental discharges in order to protect fresh water, and closure plan for proper plug and abandonment of the well and restoration of the land surface to its pre-existing condition.

The OCD has determined that the application is administratively complete and has prepared a draft permit. The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the OCD at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD web site <u>http://www.emnrd.state.nm.us/ocd/</u>. Persons interested in obtaining a copy of the application and draft permit may contact the OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta

olicitud en español, sirvase comunicarse por vor: New Mexico Energy, Minerals and Natu-I Resources Department (Depto. Del Energia, linerals y Recursós Naturales de Nuevo éxico), Oil Conservation Division (Depto. onservacio n Del Petróleo), 1220 South St. rancis Drive, Santa Fe, New México (Contacto: aura Tulk, 575-748-1283).

VEN under the Seal of New Mexico Oil Con-rvation Commission at Santa Re, New Mexi-s on this 19th day of June 2016.

STATE OF NEW MEXICO OIL CONSERVATION DIVISION

.3 David R. Catanach, Director EAL gal No. 72834 published in The Daily Times June 19, 2016.



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1220 S St. Francis [Sante Fe, NM 875

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NMED-Dil Conservation Division % Carlos Chavez

Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD | |
|----------|---|--|
| Sent: | Wednesday, June 15, 2016 2:15 PM | |
| To: | 'james.lane@state.nm.us'; Wunder, Matthew, DGF; 'arthur.allison@state.nm.us'; 'ddapr@nmda.nmsu.edu'; 'jjuen@blm.gov'; 'psisneros@nmag.gov'; 'r@rthicksconsult.com'; 'sric.chris@earthlink.net'; Parks, NM, EMNRD; 'Verhines, Scott, OSE'; 'peggy@nmbg.nmt.edu'; 'marieg@nmoga.org'; Fetner, William, NMENV; 'lazarus@glorietageo.com'; Wojahn, Beth, EMNRD; 'cnewman02@fs.fed.us'; Kieling, John, NMENV; 'bsg@garbhall.com'; 'Jerry.Schoeppner@state.nm.us'; | |
| | 'claudette.horn@pnm.com'; 'ekendrick@montand.com'; 'staff@ipanm.org'; 'maxey.brown@state.nm.us'; Bratcher, Mike, EMNRD; Perrin, Charlie, EMNRD; Jones, William V, EMNRD; Kelly, Jonathan, EMNRD; Powell, Brandon, EMNRD; Jones, William V, EMNRD; Griswold, Jim, EMNRD; Sanchez, Daniel J., EMNRD; Goetze, Phillip, EMNRD; Bayliss, Randolph, EMNRD | |
| Cc: | Schmaltz, Randy (Randy.Schmaltz@wnr.com); Allen.Hains@wnr.com | |
| Subject: | Western Refining Southwest, Inc. UIC Class I (Non-Hazardous) Disposal Well Draft Discharge Permit and Public Notice (UICI-011) Waste Disposal Well No. 2 (API# 30-045-35747) in Eddy County | |

Ladies and Gentlemen:

Please find below the New Mexico Oil Conservation Division (OCD) Public Notice (30-day public comment period begins Sunday, June 19, 2016) and Draft Discharge Permit for the above subject Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well.

Discharge Permit (UICI-011) Western Refining Southwest, Inc. Waste Disposal Well No. 2- "WDW-2" (6/14/16): The Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well (API#: 30-045-35747) is located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. in Bloomfield, NM (San Juan County) or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd.

Administrative Completeness Description Application(s) Discharge Permit (6/14/2016) Public Notice (6/19/2016)

The OCD Website for public notices is at <u>http://www.emnrd.state.nm.us/OCD/env-draftpublicetc.html</u> (see "Draft Permits and Public Notices" section).

Please contact me if you have questions. 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.

Chavez, Carl J, EMNRD

| From: | Donnelly, Patti <patti.donnelly@wnr.com></patti.donnelly@wnr.com> | |
|--------------|---|--|
| Sent: | Monday, May 16, 2016 1:08 PM | |
| То: | Chavez, Carl J, EMNRD | |
| Cc: | Schmaltz, Randy; Hains, Allen; Robinson, Kelly | |
| Subject: | Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well | |
| | Discharge Permit Application (UICI-011) | |
| Attachments: | Proof of Public Notice for WDW-2 Class 1 Injection Well Discharge Permit | |
| | Ap(UICI-011).pdf | |

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





May 12, 2016

Carl Chavez New Mexico Oil Conservation Division Environmental Bureau 1220 South St. Francis Dr Santa Fe, NM 87505

Certified Mail: 7015 1520 0001 8113 5666

RE: Proof of Public Notice for Western Refining Southwest, Inc. – Bloomfield Terminal's, Waste Disposal Well No. 2 "WDW-2" Class 1 (non-hazardous) Injection Well Discharge Permit Application (UICI-011).

Dear Mr. Chavez,

Western Refining Southwest, Inc. respectfully submits proof of public notice for the above subject's permit application as required by Oil Conservation Division and specified in NMAC 20.6.2.3108. The notice used was approved by the Oil Conservation Division.

Western provided notice by each of the following methods:

- The public notice was published in the Farmington Daily Times on Monday, April 11, 2016. Notice was published in both English and Spanish in a display ad. The Affidavit of Publication is attached.
- On April 7, 2016 the public notice was posted in both English and Spanish on a sign, 2 feet by 3 feet in size. The sign was placed at the entrance to the Bloomfield Terminal. The sign will be maintained in this location for a minimum of 30 days. A picture of the sign is attached.
- On April 7, 2016 Western mailed written notice to owners of properties within 1/3 mile of the proposed WDW-2 location. Copies of the certified letters are attached.
- On April 7, 2016 the notice was also placed at general public locations, being the Bloomfield US post office, and the Bloomfield public library. Posting of Public Notice - Certification is attached.

If you need additional information, please contact me at (505) 632-4171.

Sincerelv

Vames R. Schmaltz HSER Director Western Refining Southwest, Inc.

Cc: Allen Hains

COPY OF PUBLICATION

Ad No. 1107981

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, April 11, 2016

And the cost of the publication is \$525.92

ON <u>5/10/16</u> SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Amstine Sellers



NOTICE OF PUBLICATION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC); the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(UICI-11) Western Refining Southwest, Inc. - Bloomfield Crude Oil and Motor Fuel Bulk Storage and Transportation Terminal, # 50 Road 4990 or PO Box 159, Bloomfield, New Mexico 87413 has submitted an application for a new Underground Infection Control (UIC) Class I (non-hazardous) Injection Well Discharge Permit(UICI-11) for Waste Disposal Well No.2 (WDW-2), located 2028 FNL and 111 FEL (SE/4, NE/4) in Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The injection well is located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd. WDW-2 is proposed to be drilled to a total depth of 7500 ft. below ground level (bgl) into the Entrada Sandstone Formations The well replaces the previous Class I (non-hazardous) disposal well (UICI-9), which was plugged and abandoned in September of 2015. Wastewater to be disposed is derived from recovered ground water, water used for heating and cooling, boiler blowdown water, water entrained in crude supply, process equipment cleaning, waste water treatment system effluent, hydrotest water, and contact storm water. Oil field exempt and non-exempt, non-hazardous industrial wastewater will be injected at an average injection rate of 3,500 bbl/day (~100gpm). The Total Dissolved Solids (TDS) concentration of injected waste fluid is about 5,250 ppm. The TDS of the formation fluids is currently unknown and will be tested before final authorization is given by OCD to inject. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 10 to 30 ft bgl with a TDS concentration of about 3650 ppm. The discharge permit will address well construction, operation, monitoring of the well, and associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks and other accidental discharges in order to protect fresh water.

The owner and operator of the facility is:

Western Refining Southwest, Inc. #50 County Road 4990 P.O. Box 159 Bloomfield, New Mexico 87413 Telephone: (505) 632-8013

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMCOD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive further notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for persons who wish to receive further notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may be also be viewed at the NMOCD web site <u>http://www.emurd.state.nm.us/ocd/</u>. Persons interested in obtaining a copy of the application and draft permit may contact the address above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there id significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Comments and inquires on regulations should be directed:

Director New Mexico Oil Conservation Division (NMOCD) 1220 S. Saint Francis Drive Sante Fe, New Mexico 87505 Telephone: (505) 476-3440

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor:

New Mexico Energy, Mineral and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservació n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Laura Tulk, 575-748-1283).

COPY OF PUBLICATION

Ad No. 1107981

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 published English circulation \mathbf{in} 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, April 11, 2016

And the cost of the publication is \$525.92

ON $\frac{5/10}{10}$ SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Aristine Sellers



NOTICE OF PUBLICATION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC); the following discharge permit application(s) has been submitted to the Directo: of the New Mexico Oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(UICI-11) Western Refining Southwest, Inc. - Bloomfield Crude Oil and Motor Fuel Bull Storage and Transportation Terminal, # 50 Road 4990 or PO Box 159, Bloomfield, New Mexico 87413 has submitted an application for a new Underground Infection Control (UIC) Class I (non-hazardous) Injection Well Discharge Permit(UICI-11) for Waste Disposal Well No.2 (WDW-2), located 2028 FNL and 111 FEL (SE/4, NE/4) in Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The injection well is located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd. WDW-2 is proposed to be drilled to a total depth of 7500 ft. below ground level (bgl) into the Entrada Sandstone Formations The well replaces the previous Class I (non-hazardous) disposal well (UICI-9), which was plugged and abandoned in September of 2015. Wastewater to be disposed is derived from recovered ground water, water used for heating and cooling, boiler blowdown water, water entrained in crude supply, process equipment cleaning, waste water treatment system effluent, hydrotes water, and contact storm water. Oil field exempt and non-exempt, non-hazardous industria wastewater will be injected at an average injection rate of 3,500 bbl/day (~100gpm). The Total Dissolved Solids (TDS) concentration of injected waste fluid is about 5,250 ppm. The TDS of the formation fluids is currently unknown and will be tested before final authorization is given by OCD to inject. Groundwater most likely to be affected by a spill, leak or accidenta discharge is at a depth of approximately 10 to 30 ft bgl with a TDS concentration of about 3650 ppm. The discharge permit will address well construction, operation, monitoring o the well, and associated surface facilities, and provides a contingency plan in the event o accidental spills, leaks and other accidental discharges in order to protect fresh water.

The owner and operator of the facility is:

Western Refining Southwest, Inc. #50 County Road 4990 P.O. Box 159 Bloomfield, New Mexico 87413 Telephone: (505) 632-8013

The NMOCD has determined that the application is administratively complete and has prepared a draf permit. The NMCOD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive further notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Divisior at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may be also be viewed at the NMOCD web site <u>http://www.emurd.state.nm.us/ocd/</u>. Persons interested in obtaining a copy of the application and draft permit may contact the address above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least (30) days after the date of public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there id significant public interested

If no public hearing is held, the Director will approve or disapprove the proposed permit based or information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Comments and inquires on regulations should be directed:

Director New Mexico Oil Conservation Division (NMOCD) 1220 S. Saint Francis Drive Sante Fe, New Mexico 87505 Telephone: (505) 476-3440

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor:

New Mexico Energy, Mineral and Natural Resources Department (Depto. Del Energia, Minerals 3 Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservació n Del Petróleo) 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Laura Tulk, 575-748-1283). Ixconfigure10

COPY OF PUBLICATION

Ad No. 1107975

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 \mathbf{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, April 11, 2016

And the cost of the publication is \$525.92 _____

ON 5/10/16 SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Arustini Sellers

| A CARLO CARL | ÷, |
|--|---------------|
| OFFICIAL SEAL | |
| CHRISTINE SELLERS | ļ. |
|) (š(Policia)) Notary Public | |
| State of New Mexico, | |
| My Comm. Expires 1105/19 | |
| the second se | Σ_{ij} |

Aviso de Publicación

Se hace saber que en conformidad con los reglamentos de la Comisión de Control de la Ca dad dei Agua de Nuevo México (20.6.2.31 06 NMAC); la siguiente solicitud para un pmmiso d descarga ha sido presentado al Director de la División de Conservación del Petróleo de Nuev México (NMOCD por sus siglas en ingles), 1220 S. San Francisco Drive, Santa Fe, Nuevo Méxic 87505, teléfono (505) 476-3440:

(UICI -11) Western Refining Southwest, Inc.-Bloomfield Crude Oil and Motor I<nel Bu Storage and Transportation Terminal,# 50 Road 4990 o PO Box 159, Bloomfield, Nuev Mexico 87413 ha presentado una solicitud para un nuevo Pozo de Inyección Subterráne Controlado (UIC por sus siglas en ingles) de Clase I (no peligroso) para un Permiso del Poz de Inyección de IDescarga (UICI-11) para un Pozo de Descarga de Residuos No.2 (WDV 2), que se encuentra en 2028 FNL y 111 FEL (SE/4, NE/4) en la Sección 27, del Municip 29 Norte, Rango 11 Oeste, NMPM, en el Condado de San Juan, Nuevo México. El pozo c inyección se encuentra a unos 415 pies. N de la intersección de Sullivan Rd. y Wooten R o aproximadamente 1 milia E-NE de la intersección de la carretera 550 y Sullivan Rd. 5 propone WDW-2 para ser perforado anna profundidad total de 7,500 pies. debajo delniv del suelo (BGL por sus siglas en ingles) en una formacion de piedra arenada. El po sustituye al pozo anterior de Clase I (no peligroso) de descarga (UICI-9), que fuc sellado abandonado en septiembre del 2015. Las aguas residuales que deben eliminarse se deriv de agua subterránea recuperada, agua utilizada para calentamiento y enfriamiento, ag de boiler, agua separada del suministro de petróleo crudo, limpieza de equipos de proces efluente del sistema de tratamiento de aguas de desecho, agua utilizada para prueb hidrostática, y agua de lluvia. Aguas residuales industriales no peligrosas provenientes yacimientos de pertróleo exentos y no exentos, se inyectaran a una velocidad promet de 3,500 barriles I día (-100 gpm). La concentración de sólidos disueltos totales (TDS r sus siglas en ingleis) de fluido inyectado es de aproximadamente 5,250 ppm. El TDS de l fluidos de la forma cion es actualmente desconocido y se obtendran y analizaran muesti antes de la autorizacion final para inyectar sea aprobada por OCD. El agua subterran mas propensa a ser afectada por un derrame, fuga o descarga accidental esta a u profundidad de aproximada de entre 10 y 30 pies BGL con una concentracion de TDS aproximadamente 3650 ppm. La autorizacion de descarga iucluira información sobre construccion, oper acion, monitoreo del pozo, y las instalaciones en la snpcrficie asociac con el pozo, y proporcionara un plan de contingencia en caso de den ames accidental fugas y otras descargas accidentales con elfín de proteger el agua fresca.

El propletario y oper ador de la instalación es:

Western Refining Southwest, Inc. #50 County Road 4990 P.O. Box 159 Bloomfield, New Mexico 87413 Telephone: (505) 632-8013

El NMOCD ha deten ninado qne la solicitud es administrativamente completa y ha preparad borrador del permiso. El NMOCD aceptará comentarios y declaraciones de interés respect esta solicitud y creariá una lista de correo sobre una instalación especifica para las personas deseen recibir notificiaciones en el futuro. Las personas interesadas en obtener más informac enviar comentarios o solicitar que estar en una lista de correo sobre una instalación espec para futuras notificaciones pueden ponerse en contacto con el Jefe de la Oficina Ambiental c División de Conservación de Petróleo en la dirección indicada anteriormente. La determinaadministrativamente completa y el borrador del permiso puede ser visto en la dirección a mencionada de 8:00a.m. a 4:00pm, de lunes a viernes, o tambíen se puede consultar en la pá web de NMOCD http://www.emnrd.state.nm.us/ocd/. Las personas interesadas en obt una copia del permiso de solicitud y el proyecto pneden ponerso en contacto con la direc antes mencionada. Aintes de decidir sobre cualquier autorización del permiso de descar modificación mayor, el Director debera permitir un período de por lo monos (30) días despué la fecha de publicación del presente anuncio, durante el cual las personas interesadas pur presentar observaciones o solicitar gue NMOCD efectué una audiencia pública. En las solicitar de una audiencia pública se exponen las razonos por las que una audiencia debe ser rete Una audiencia se llevará a cabo si el Director determina que existe un interes público significa

Si no se realiza una aucliencia pública, el Director aprobara o rechazara la propuesta de per en base a la información disponible, incluyendo todos los comentarios recibidos. Si se lle cabo una audiencia pública, el director aprobara o rechazara la propuesta de permiso seg información de la solicitud de permiso y la información presentada en la audiencia.

Comentarios y preguntas sobre las regulaciones deben scr dirigidas a: Director New Mexico Oil Conservation Division (NMOCD)

1220 S. Saint Francis Drive Santa Fe, New Mexico 87505 Telephone (505) 476-3440

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Mir y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conserva Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura 575-748-1283).

AFFIDAVIT OF PUBLICATION

COPY OF PUBLICATION

Ad No. 1107975

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SAMMY LOPEZ, being duly sworn says: That he IS the PUBLISHER of THE DAILY TIMES, a daily newspaper of general published in English circulation 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):

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Christene Sellers



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El propietario y operador de la instalación es:

Western Refining Southwest, Inc. #50 County Road 4990 P.O. Box 159 Bloomfield, New Mexico 87413 Telephone: (505) 632-8013

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Posting of Public Notice – Certification

I, James Schmaltz, the undersigned, certify that on April 7, 2016, I posted a public notice for Western Refining Southwest, Inc submittal of a discharge permit application for an Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well in the following locations:

- Bloomfield Post Office
- Bloomfield Public Library

Signed this 13th day of April, 2016

Date 4/13/16 HSER DIRECTOR Signature _ Printed Name James R. SCHMALTZ Title



LOGISTICS



April 7, 2016

Bureau of Land Management 6251 College Blvd. Suite A Farmington, NM 87402

Certified Mail #: 7015 1520 0001 8113 5475

Re: Landowner Notification - Western Refining Southwest, Inc. – Bloomfield Crude Oil and Motor Fuel Bulk Storage and Transportation Terminal.

Pursuant to the requirements of the New Mexico Water Quality Control Commission regulation 20 NMAC 6.2.3108, Western Refining Southwest, Inc. announces that it is making application to the New Mexico Oil Conservation Division (NMOCD) – Environmental Bureau for a discharge permit to install a new Class I (Nonhazardous) Disposal Well (WDW#2) to replace the facilities previous Class I (Nonhazardous) Disposal Well (VICI-9) which was plugged and abandoned in September 2015.

The new Disposal Well (WDW-2) will be located at 2028 FNL and 111 FEL (SE/4, NE/4) in Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The injection well is located approximately 415 feet N of the intersection of Sullivan Road and Wooten Road or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Road. WDW-2 is proposed to be drilled to a total depth of 7500 feet below ground level (bgl) into the Entrada Sandstone Formations.

A copy of the public notice is attached. If you have any questions please feel free to contact me at (505) 632-4171.

Sincerely

James R. Schmaltz HSER Director

cc: Carl Chavez, NMOCD Allen Hains, Western Refining Kelly Robinson, Western Refining



PS Form 3811, July 2015 PSN 7530-02-000-9053





LOGISTICS



April 7, 2016

Mr. & Mrs. Carroll G. Wooten 103 Road 4990 P.O. Box 1841 Bloomfield, NM 87413

Certified Mail #: 7015 1520 0001 8113 5574

Re: Landowner Notification - Western Refining Southwest, Inc. – Bloomfield Crude Oil and Motor Fuel Bulk Storage and Transportation Terminal.

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Sincerely

James R. Schmaltz HSER Director

cc: Carl Chavez, NMOCD Allen Hains, Western Refining Kelly Robinson, Western Refining

| SENDER: COMPLETE THIS SECTION | COMPLETE THIS SECTION ON DELIVERY | | |
|--|--|--|--|
| Complete items 1, 2, and 3. 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 mailplece, or on the front if space permits. | A. Signature X. Multiple address different from item 1? Yes delivery address different from item 1? Yes | | |
| Mr. & Mrs. Carroll G. Wooten | | | |
| P.O. Box 1841 | | | |
| 103 Road 4990 | | | |
| Bloomfield, NM 87413 | Ce Type | | |
| 9590 9401 0154 5234 1250 30 | Adult Signature Adult Signature Restricted Delivery Certified Mail® Certified Mail® Certified Mail® Certified Mail Restricted Delivery Certified Mail Restricted Delivery | | |
| 2. Article Number (Transfer from service label) | Collect on Derivery Restricted Derivery Signature Confirmation | | |
| | 5574 Domestic Return Receipt | | |
| PS Form 3811, July 2015 PSN 7530-02-000-9063 | | | |





LOGISTICS



April 7, 2016

Mr. & Mrs. J.D. Wooten 103 Road 4990 P.O. Box 1841 Bloomfield, NM 87413

Certified Mail #: 7015 1520 0001 8113 5475

Re: Landowner Notification - Western Refining Southwest, Inc. – Bloomfield Crude Oil and Motor Fuel Bulk Storage and Transportation Terminal.

Pursuant to the requirements of the New Mexico Water Quality Control Commission regulation 20 NMAC 6.2.3108, Western Refining Southwest, Inc. announces that it is making application to the New Mexico Oil Conservation Division (NMOCD) – Environmental Bureau for a discharge permit to install a new Class I (Nonhazardous) Disposal Well (WDW#2) to replace the facilities previous Class I (Nonhazardous) Disposal Well (VICI-9) which was plugged and abandoned in September 2015.

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Sincerely

lames R. Schmaltz HSER Director

cc: Carl Chavez, NMOCD Allen Hains, Western Refining Kelly Robinson, Western Refining










Chavez, Carl J, EMNRD

| From: | Chavez, Carl J, EMNRD |
|----------|--|
| Sent: | Friday, March 18, 2016 3:24 PM |
| То: | 'Lane, James, DGF'; Wunder, Matthew, DGF; 'Allison, Arthur, DIA'; |
| | 'ddapr@nmda.nmsu.edu'; 'jjuen@blm.gov'; 'psisneros@nmag.gov'; |
| | 'r@rthicksconsult.com'; 'sric.chris@earthlink.net'; 'nmparks@state.nm.us'; Verhines, |
| | Scott, OSE; 'peggy@nmbg.nmt.edu'; 'marieg@nmoga.org'; Fetner, William, NMENV; |
| | 'lazarus@glorietageo.com'; 'cnewman02@fs.fed.us'; Kieling, John, NMENV; |
| | 'bsg@garbhall.com'; 'Schoeppner, Jerry, NMENV'; 'claudette.horn@pnm.com'; |
| | 'ekendrick@montand.com'; 'staff@ipanm.org'; Dade, Randy, EMNRD; Bratcher, Mike, |
| | EMNRD; Perrin, Charlie, EMNRD; Jones, William V, EMNRD; Kelly, Jonathan, EMNRD; |
| | Powell, Brandon, EMNRD; Wojahn, Beth, EMNRD; Griswold, Jim, EMNRD; Goetze, |
| | Phillip, EMNRD |
| Cc: | Schmaltz, Randy (Randy.Schmaltz@wnr.com); Robinson, Kelly |
| | (Kelly.Robinson@wnr.com); Allen.Hains@wnr.com |
| Subject: | Western Refining Southwest, Inc. Bloomfield UIC Class I (Non-hazardous) Disposal Well |
| | Discharge Permit Application (UICI-011) San Juan County |

Ladies and Gentlemen:

Please find below the New Mexico Oil Conservation Division (OCD) **initial** Public Notice for the above subject Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well Facility.

Discharge Permit (UICI-011) Western Refining Southwest, Inc. Waste Disposal Well No. 2- "WDW-2"

(3/18/16): The Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well (API#: *Currently Pending*) is located approximately 415 ft. N of the intersection of Sullivan Rd. and Wooten Rd. in Bloomfield, NM (San Juan County) or approximately 1 mile E-NE of the intersection of Hwy 550 and Sullivan Rd.

Administrative Completeness Description Application(s)

The OCD Website for public notices is at <u>http://www.emnrd.state.nm.us/OCD/env-draftpublicetc.html</u> (see "Draft Permits and Public Notices" section).

Please contact me if you have questions. 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: <u>CarlJ.Chavez@state.nm.us</u> Website: <u>www.emnrd.state.nm.us/ocd</u>

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.

State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

David Martin Cabinet Secretary

Tony Delfin Deputy Cabinet Secretary

David R. Catanach, Division Director Oil Conservation Division



MARCH 18, 2016

CERTIFIED MAIL RETURN RECEIPT NO: 3771 5916

Mr. James R. Schmaltz Western Refining Southwest, Inc. P.O. Box 159 Bloomfield, New Mexico 87413

Re: Discharge Permit (UICI-11) Class I Non-Hazardous Oil Field Waste Disposal Well No. 2 Unit Letter H of Section 27 in Township 29 North, Range 11 East, NMPM; San Juan County

Mr. Schmaltz:

The Oil Conservation Division (OCD) has received Western Refining Southwest, Inc.'s application for disposal well No. 2 to inject non-hazardous oil field wastes into the Bluff-Cow Springs Sandstone and Entrada Sandstone Formations at the above referenced location. The initial submittal on March 4, 2016 provided the required information in order to deem the application administratively complete.

As such, the Water Quality Control Commission regulations (WQCC) notice requirements of 20.6.2.3108 NMAC must be satisfied and demonstrated to the OCD. OCD will also provide public notice pursuant to WQCC requirements and determine if there is sufficient public interest.

Please contact me at (505) 476-3490 or <u>carlj.chavez@state.nm.us</u> if you have questions. Thank you for your cooperation throughout the discharge permit review process.

Sincerely,

Care J. Chives

Carl J. Chavez Environmental Engineer

xc: OCD District III Office, Aztec

Description:

A new Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well (UICI-11) or "WDW-2" located at latitude N 36.698607646066° and longitude W 107.9703543338° has been proposed to be drilled to a total depth of 7,500 ft. below ground level (bgl) into the Entrada Sandstone Formation within the property boundary of the former Bloomfield Refinery (GW-1). The well replaces the previous Class I (Non-hazardous) Disposal Well (UICI-9), which was plugged and abandoned in September of 2015.

An assemblage of cemented casing strings to surface are proposed to be set as follows: 1) 13-3/8 inch conductor casing will be set to 300 ft. bgl; 2) 9-5/8 inch surface casing will be set to 3,600 ft. bgl; and 3) 7 inch production casing will be set to 7,500 ft. bgl. A 4-1/2 inch plastic lined injection string will be set through the packer at 7,265 ft. bgl within the 7 inch casing slotted from 7,315 - 7,483 ft. bgl.

Oilfield wastewater (~ 5,250 mg/L TDS) will be injected at an average injection rate of 3,500 bbl/day (~ 100 gpm) below a permitted maximum surface injection pressure (MSIP) of ~ 1,460 psig. A step-rate pressure test will be completed on the well shortly after well construction to determine the actual allowable fracture pressure and final MSIP for the well. A Fall-Off Test (FOT) on the well will also be performed shortly after well construction to verify the baseline injection zone hydrogeologic characteristics, i.e., permeability, aerial extent of the injection zone, fracture growth, etc. for future required annual FOTs to monitor the ability of the injection zone to accept wastewater over the operational life of the disposal well.

1X. 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.

XIII. Public Notice will follow NMOCD review of this application.

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) | With the south of | 1/23/2014 | والعصار المعاد | 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 | па | < 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 | па | < 2.0 | < 5.0 |
| 1,2-Dichloroethane (EDC) | 500 | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloropropane | Contract according | < 10 | па | < 2.0 | < 5.0 |
| 1,3,5-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichlorobenzene | | < 10 | па | < 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 | па | < 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 | па | < 2.0 | < 5.0 |
| Bromobenzene | | < 10 | na | < 2.0 | < 5.0 |
| Bromodichloromethane | | < 10 | па | < 2.0 | < 5.0 |
| Bromoform | | < 10 | na | < 2.0 | < 5.0 |
| Bromomethane | | < 30 | па | < 6.0 | <15 |
| Carbon disulfide | 999316 (1893)9(1299 (1994))0000000000000000000000000000000000 | < 100 | na | < 20 | < 50 |
| Carbon Tetrachloride | 500 | < 10 | па | < 2.0 | < 5.0 |
| Chlorobenzene | 100000 | < 10 | na | < 2.0 | < 5.0 |
| Chloroethane | | < 20 | па | < 4.0 | < 10 |
| Chloroform | 6000 | < 10 | na | < 2.0 | < 5.0 |
| Chloromethane | | < 30 | па | < 6.0 | < 15 |
| cis-1.2-DCE | | < 10 | па | < 2.0 | < 5.0 |
| cis-1.3-Dichloropropene | | < 10 | па | < 2.0 | < 5.0 |
| Dibromochloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Dibromomethane | | < 10 | па | < 2.0 | < 5.0 |
| Dichlorodifluoromethane | ······ | <10 | na | < 2.0 | < 5.0 |
| Ethylbenzene | | <10 | па | < 2.0 | < 5.0 |
| Hexachlorobutadiene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Isopropylbenzene | end all following the first second | < 10 | па | < 2.0 | < 5.0 |
| Methyl tert-butyl ether (MTBE) | | < 10 | na | < 2.0 | < 5.0 |
| Methylene Chloride | | < 30 | ра | < 6.0 | <15 |
| Naphthalene | · · · · · · · · · · · · · · · · · · · | < 30 | | <4.0 | <10 |
| n-Butylbenzene | | <10 | ра | <60 | < 15 |
| n-Propylbenzene | | < 2.0 | ра | < 2.0 | < 5.0 |
| sec-Butylbenzene | 0-4847 (4014)-4016 - (11 - 014) (11 - 014) (14 - 16) (14 - 16) | < 10 | na na | < 2.0 | < 5.0 |
| Styrene | | < 10 | ря | < 2.0 | < 5.0 |
| tert-Butylbenzene | | < 10 | ря | < 2.0 | < 5.0 |
| Tetrachloroethene (PCE) | | < 10 | .1a na | < 2.0 | < 5.0 |
| Toluene | | <10 | 10 10 | <20 | < 5.0 |
| trans-1 2-DCE | | < 10 | pa | <20 | < 5.0 |
| trans-1.3-Dichloropropene | | <10 | na | <2.0 | < 5.0 |
| Trichloroethene (TCF) | 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - | < 10 | na | < 2.0 | < 5.0 |
| Trichlorofluoromethane | | <10 | na | <20 | < 5.0 |
| Vinyl chloride | 200 | <10 | na | <20 | < 5.0 |
| Xylenes Total | 200 | <15 | na | < 3.0 | <75 |

Table 3

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity | P. S | | | |
|--|--|-------------|------------------|-------------|-------------|
| | Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
| Semi-Volatile Organic Compounds (ug/L) | | | CERTIFICATION PE | | |
| 1,2,4-Trichlorobenzene | and the first state of the second state of the | < 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 | 2000 | < 50 | na | < 100 | < 10 |
| 2,4,6-Trichlorophenol | 2000 | < 50 | na | < 100 | < 10 |
| 2,4-Dichlorophenol | | < 100 | na | < 100 | < 10 |
| 2,4-Dimethylphenol | | < 100 | na | < 200 | < 20 |
| 2,4-Dimitrophenol | 130 | < 50 | na | < 100 | < 10 |
| 2,4-Dimitrotoluene | 150 | < 50 | na | <100 | < 10 |
| 2.Chloropaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Chlorophenol | | < 50 | па | <100 | < 10 |
| 2-Methylnaphthalene | | < 50 | na | <100 | < 10 |
| 2-Methylphenol | | < 50 | na | < 200 | < 20 |
| 2-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 2-Nitrophenol | | < 50 | па | < 100 | < 10 |
| 3,3'-Dichlorobenzidine | | < 50 | na | 210 | < 10 |
| 3+4-Methylphenol | | < 50 | na | < 100 | < 10 |
| 3-Nitroaniline | | < 50 | па | < 100 | < 10 |
| 4,6-Dinitro-2-methylphenol | | < 100 | na | < 200 | < 20 |
| 4-Bromophenyl phenyl ether | non and a second se | < 50 | па | < 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 |
| Repartement | | < 50 | na | < 100 | <10 |
| Benze(a)antinacene | | < 50 | 110 | < 100 | < 10 |
| Benzo(b)fluoranthene | | < 50 | na | < 100 | < 10 |
| Benzo(g h i)pervlene | | < 50 | na | < 100 | < 10 |
| Benzo(k)fluoranthene | Construction and a second second second | < 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 | 10.000 00.000 00 1 (1 1 0.000 1 (0 0.000 0 0 0.000 0 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0.0000 0 0.000 | < 50 | na | <100 | <10 |
| Dibenz(a,h)anthracene | | < 50 | na | < 100 | < 10 |
| Dibenzofuran | | < 50 | na | < 100 | < 10 |
| Diethyl phthalate | | < 50 | па | < 100 | < 10 |
| Dimethyl phthalate | | < 50 | na | <100 | < 10 |
| Di-n-butyl phthalate | | < 50 | na | < 100 | < 20 |
| Di-n-octyl phthalate | | < 50 | na | < 100 | < 10 |
| Fluorante | | < 50 | na | <100 | < 10 |
| Heyechlorobenzenc | 130 | < 50 | na | <100 | < 10 |
| Vevechlorobutadiana | 500 | < 50 | na | <100 | < 10 |
| Heyachlorocyclonentadiene | 500 | < 50 | na | < 100 | < 10 |
| Hexachloroethane | 3000 | < 50 | na | < 100 | < 10 |
| Indeno(1,2,3-cd)pyrene | | < 50 | па | < 100 | < 10 |
| Isophorone | | < 50 | na | < 100 | <10 |
| Naphthalene | | < 50 | па | < 100 | < 10 |
| Nitrobenzene | 2000 | < 50 | na | < 100 | < 10 |
| N-Nitrosodimethylamine | | < 50 | па | < 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 otherwis | se stated) | | | a fill the second | |
| Specific Conductance (umhos/cm) | | 7100 | na | 1900 | 1100 |
| Chloride | | 2400 | na | 510 | 220 |
| Sulfate | | 35 | па | 41 | 26 |
| Total Dissolved Solids | | 5240 | na | 1380 | 742 |
| pH (pH Units) | | 6.25 | па | 7.10 | 7.08 |
| Bicarbonate (As CaCO3) | | 380 | na | 220 | 150 |
| Carbonate (As CaCO3) | | <2.0 | na | <2.0 | <2.0 |
| Calcium | | 490 | па | 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) | a load and the second | Minter | Search Sector | | |
| Arsenic | 5.0 | < 0.020 | na | < 0.020 | < 0.020 |
| Barium | 100.0 | 0.56 | па | 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 | | No. Jan - A | | 6 CALLER AND | |
| 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 |

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| CLIENT: | Western Refining Southwest, I | nc. | | Client Sa | mple ID: Inje | ection Well | |
|-----------|-------------------------------|---------|--------|------------|---------------|-----------------------|--------|
| Project: | Injection Well 1-23-2014 | | | Collecti | on Date: 1/2 | 3/2014 8:35:00 AM | |
| Lab ID: | 1401A07-001 | Matrix: | AQUEOU | S Receiv | ed Date: 1/2 | 4/2014 10:15:00 AM | |
| Analyses | | Result | RL | Qual Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 300.0: ANIONS | | | | | Analyst | JRR |
| Chloride | | 2400 | 100 | ma/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 MET | HOD 7470: MERCURY | | | | | Analyst | DBD |
| Mercury | | ND | 0.0010 | mg/L | 5 | 1/30/2014 1:52:43 PM | 11463 |
| EPA 6010 | B: TOTAL RECOVERABLE M | ETALS | | | | 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 |
| Cadmiun | n | 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 |
| Chromiu | m | ND | 0.0060 | ma/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 |
| Magnesi | um | 75 | 1.0 | ma/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Potassiu | m | 37 | 1.0 | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Selenium | 1 | 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 MET | HOD 8270C: SEMIVOLATILES | 5 | | | | Analyst | DAM |
| Acenaph | thene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Acenaph | thylene | 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 |
| Anthrace | ne | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Azobenz | ene | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benz(a)a | Inthracene | 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 a | lcohol | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chl | oroethoxy)methane | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chl | oroethyl)ether | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chl | oroisopropyl)ether | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-eth | ylhexyl)phthalate | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Bromo | phenyl phenyl ether | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Butyl ber | nzyl phthalate | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Carbazol | е | 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-Chloro | aniline | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |

Hall Environmental Analysis Laboratory, Inc.

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

| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detect |
|-------------|---|--|----|----------------|
| | Е | Value above quantitation range | Н | Holding times |
| | J | Analyte detected below quantitation limits | ND | Not Detected a |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH gre |
| | | | | |

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits ed in the associated Method Blank

for preparation or analysis exceeded

at the Reporting Limit Page 1 of 17

eater than 2.

RL Reporting Detection Limit

Analytical Report Lab Order 1401A07 Date Reported: 2/13/2014

| Hall Environmental Analysis | Labora | tory, Inc. | | Lab Order 1401A07 Date Reported: 2/13/2014 |
|---|---------------|------------|-----------------------------------|--|
| CLIENT: Western Refining Southwest, Inc Project: Injection Well 1-23-2014 Lab ID: 1401A07-001 | e. Matrix: | AQUEOUS | lient San Collectio Receive | nple ID: Injection Well on Date: 1/23/2014 8:35:00 AM ed 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 |
| Hexachiorocyclopentadiene | 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 |

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 Page 2 of 17

Analytical Report

- P Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Environmental Analysis | Labora | tory, Inc. | | | Lab Order 1401A07 Date Reported: 2/13/201 | .4 |
|--|---------|------------|------------------------------|--------------------------|--|--------|
| CLIENT: Western Refining Southwest, Inc Project: Injection Well 1-23-2014 | | (| Client Sampl Collection 1 | e ID: Inje Date: 1/2: | ection Well 3/2014 8:35:00 AM | |
| Lab ID: 1401A07-001 | Matrix: | AQUEOUS | Received I | Date: 1/24 | 4/2014 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-Nitrophenoi | 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 |
| | | | | | | |

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 Page 3 of 17

Analytical Report

- P Sample pH greater than 2.
- RL Reporting Detection Limit

| CLIENT: | : Western Refining Southwest, | Inc. | w | Client Sam | ple ID: Inje | ection Well | |
|-----------|-------------------------------|-----------|--------|------------|------------------|----------------------|--------|
| Project: | Injection Well 1-23-2014 | | | Collection | Date: 1/2 | 5/2014 8:55:00 AM | |
| Lab ID: | 1401A07-001 | Matrix: A | QUEOUS | Received | Date: 1/2 | 4/2014 10:15:00 AM | |
| Analyses | | Result | RL Qua | l Units | DF | Date Analyzed | Batch |
| EPA ME | THOD 8260B: VOLATILES | | | | | Analyst | DJF |
| Chlorofo | orm | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Chlorom | nethane | ND | 30 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Chloro | otoluene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Chloro | otoluene | 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-Dibr | omo-3-chloropropane | ND | 20 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dibromo | ochloromethane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dibromo | omethane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dich | lorobenzene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,3-Dich | lorobenzene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,4-Dich | lorobenzene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dichloro | odifluoromethane | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dich | nloroethane | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dich | nloroethene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dich | nloropropane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,3-Dich | nloropropane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2,2-Dich | nloropropane | ND | 20 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dich | loropropene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Hexachl | lorobutadiene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Hexar | one | ND | 100 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| lsopropy | ylbenzene | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Isopro | pyitoluene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Methy | 1-2-pentanone | ND | 100 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Methyle | ne Chloride | ND | 30 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| n-Butylb | enzene | ND | 30 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| n-Propyi | lbenzene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| sec-Buty | ylbenzene | 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-Buty | ylbenzene | 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 |
| Tetrachl | loroethene (PCE) | ND | 10 | μg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| trans-1,2 | 2-DCE | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| trans-1,3 | 3-Dichloropropene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,3-Tri | ichlorobenzene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,4-Tr | ichlorobenzene | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,1-Tr | ichloroethane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,2-Tri | ichloroethane | ND | 10 | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |

Hall Environmental Analysis Laboratory, Inc.

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

| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte |
|-------------|---|--|----|---------|
| | E | Value above quantitation range | Н | Holdin |
| | J | Analyte detected below quantitation limits | ND | Not De |
| | 0 | RSD is greater than RSDlimit | Р | Sample |
| | Ð | RPD outside accepted recovery limits | RL | Report |

RPD outside accepted recovery limits R

S Spike Recovery outside accepted recovery limits

- te detected in the associated Method Blank
- ig times for preparation or analysis exceeded

etected at the Reporting Limit Page 4 of 17

e pH greater than 2.

RL Reporting Detection Limit

Analytical Report Lab Order 1401A07

Date Reported: 2/13/2014

Analytical Report Lab Order 1401A07

Date Reported: 2/13/2014

| CLIENT: Western Refining Southwest, I | nc. | | Client Sample I | D: Inj | ection Well | |
|---------------------------------------|---------|---------|----------------------|----------------|----------------------|--------|
| Project: Injection Well 1-23-2014 | | | Collection Da | te: 1/2 | 23/2014 8:35:00 AM | |
| Lab ID: 1401A07-001 | Matrix: | AQUEOUS | Received Da | te: 1/2 | 24/2014 10:15:00 AM | |
| Analyses | Result | RL Qua | l Units | DF | Date Analyzed | Batch |
| EPA METHOD 8260B: VOLATILES | | | | | Analys | t 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 | | | | | Analys | t: SRM |
| Conductivity | 7100 | 0.010 | µmhos/cm | 1 | 1/24/2014 5:53:17 PM | R16304 |
| SM4500-H+B: PH | | | | | Analys | t: SRM |
| рН | 6.25 | 1.68 H | pH units | 1 | 1/24/2014 5:53:17 PM | R16304 |
| SM2320B: ALKALINITY | | | | | Analys | t: 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 SC | DLIDS | | | | Analys | t: KS |
| Total Dissolved Solids | 5240 | 100 * | mg/L | 1 | 1/28/2014 5:33:00 PM | 11406 |

Hall Environmental Analysis Laboratory, Inc.

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

| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detected in the associated Meth | od Blank | |
|-------------|---|---|----|--|--------------|--|
| | Е | Value above quantitation range | Н | Holding times for preparation or analysis exceeded | | |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 5 of 17 | |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | 14605 0117 | |
| | 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: Address: | HALL ENVIRONMENTAL ANALYSIS LAB 4901 HAWKINS NE SUITE D | Batch #: Project Name: | 140128036 1401A07 |
|---------------------|--|---------------------------|----------------------|
| | ALBUQUERQUE, NM 87109 | | |
| Attn: | ANDY FREEMAN | | |

Analytical Results Report

| Sample Number Client Sample ID | 140128036-001 1401A07-001E / INJE | Samp CTION WELL | ling Date | 1/23/2014 | Date/ Samp | Time Receive | ed 1/28/2014 8:35 AM | 12:18 PM |
|-----------------------------------|--------------------------------------|--------------------|-------------|-----------|---------------|--------------|-------------------------|-----------|
| Matrix | Water | Samp | le Location | t | | | | |
| Comments | | | | | | | | |
| Parameter | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
| Cvanide (reacti | ve) | ND | mg/L | 1 | 2/12/2014 | CRW | SW846 CH7 | |
| Flashpoint | | >200 | °F | | 2/4/2014 | KFG | EPA 1010 | |
| ρΗ | | 5.89 | ph Units | | 1/31/2014 | AJT | EPA 150.1 | |
| Reactive sulfid | e | 1.57 | mg/L | 1 | 1/29/2014 | АJT | 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. Soli/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EFA:ID00013; A2:0701; 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:Cen0086; FL(NELAP): E871089

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

.....

| Sample ID | МВ | Samp1 | Type: MI | зlk | Tes | tCode: E | PA Method | 300.0: Anion | s | | |
|--|--------------------------|--|--|---|--|--|--|--|------------------------|----------|------|
| Client ID: | PBW | Batcl | h ID: R1 | 6313 | 리 | RunNo: 1 | 6313 | | | | |
| Prep Date: | | Analysis E | Date: 1 | 24/2014 | S | SeqNo: 4 | 70380 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Sulfate | | ND | 0,50 | | | | | | | | |
| Sample ID | LCS | SampT | Type: LC | s | Tes | tCode: E | PA Method | 300.0: Anion | s | | |
| Client ID: | LCSW | Batcl | h ID: R1 | 6313 | F | RunNo: 1 | 6313 | | | | |
| Prep Date: | | Analysis D | Date: 1 | 24/2014 | 5 | SeqNo: 4 | 70381 | 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 | МВ | Sampï | ype: MI | BLK | Tes | tCode: E | PA Method | 300.0: Anion | s | | |
| Sample ID Client ID: | MB PBW | Samp'i Batcl | ïype: Mi h ID: R1 | BLK 6337 | Tes F | tCode: E RunNo: 1 | PA Method 6337 | 300.0: Anion | \$ | | |
| Sample ID Client ID: Prep Date: | MB PBW | SampT Batcl Analysis D | Type: MI h ID: R1 Date: 1/ | BLK 6337 /27/2014 | Tes F S | tCode: E RunNo: 1 SeqNo: 4 | PA Method 6337 71000 | 300.0: Anion Units: mg/L | <u> </u> | | |
| Sample ID Client ID: Prep Date: Analyte | MB PBW | SampT Batcl Analysis D Result | Type: Mi h ID: R1 Date: 1/ PQL | BLK 6337 27/2014 SPK value | Tes F SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC | PA Method 6337 71000 LowLimit | 300.0: Anion Units: mg/L HighLimit | s %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | MB PBW | SampT Batcl Analysis D Result ND | Type: MI h ID: R1 Date: 1/ PQL 0.50 | BLK 6337 27/2014 SPK value | Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC | PA Method 6337 71000 LowLimit | 300.0: Anion Units: mg/L HighLimit | s %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | MB PBW LCS | Samp'i Batcl Analysis D Result ND Samp'i | Type: MI h ID: R1 Date: 1/ PQL 0.50 | BLK 6337 127/2014 SPK value | Tes F SPK Ref Val Tes | tCode: E RunNo: 1 SeqNo: 4 %REC tCode: E | PA Method 6337 71000 LowLimit PA Method | 300.0: Anion Units: mg/L HighLimit 300.0: Anion | s %RPD s | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: | MB PBW LCS LCSW | Samp'i Batcl Analysis D Result ND Samp'i Batcl | Fype: MI h ID: R1 Date: 1/ PQL 0.50 Fype: LC h ID: R1 | BLK 6337 /27/2014 SPK value :S 6337 | Tes F SPK Ref Val Tes F | tCode: E RunNo: 1 SeqNo: 4 %REC tCode: E RunNo: 1 | PA Method 6337 71000 LowLimit PA Method 6337 | 300.0: Anion Units: mg/L HighLimit 300.0: Anion | s %RPD s | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: | MB PBW LCS LCSW | Samp'i Batcl Analysis D Result ND Samp'i Batcl Analysis D | Type: MI h ID: R1 Date: 1, PQL 0.50 0.50 0.50 Type: LC LC h ID: R1 Date: 1, Date: 1, | BLK 6337 27/2014 SPK value SS 6337 27/2014 | Tes F SPK Ref Val Tes F S | tCode: El RunNo: 1 SeqNo: 4 %REC tCode: El RunNo: 1 SeqNo: 4 | PA Method 6337 71000 LowLimit PA Method 6337 71001 | 300.0: Anion Units: mg/L HighLimit 300.0: Anion Units: mg/L | s %RPD s | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: Analyte | MB PBW LCS LCSW | Samp'i Batcl Analysis D Result ND Samp'i Batcl Analysis D Result | Fype: MI h ID: R1 Date: 1, PQL 0.50 Fype: LC h ID: R1 Date: 1, PQL | BLK 6337 27/2014 SPK value SS 6337 27/2014 SPK value | Tes F SPK Ref Val Tes F SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC tCode: E RunNo: 1 SeqNo: 4 %REC | PA Method 6337 71000 LowLimit PA Method 6337 71001 LowLimit | 300.0: Anion Units: mg/L HighLimit 300.0: Anion Units: mg/L HighLimit | s %RPD s %RPD | RPDLimit | Qual |

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

Page 6 of 17

1401A07 13-Feb-14

WO#:

Client: Western Refining Southwest, Inc.

Injection Well 1-23-2014

Project:

| Sample ID 5ml rb | SampT | ype: M | BLK | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | |
|--------------------------------|------------|----------------|-----------|-------------|-----------|-----------|-------------|--------|----------|------|
| Client ID: PBW | Batch | ID: R 1 | 6441 | F | lunNo: 1 | 6441 | | | | |
| Prep Date: | Analysis D | ate: 1 | /31/2014 | S | eqNo: 4 | 74209 | 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 | | | | | | | | |

Qualifiers:

2,2-Dichloropropane

* Value exceeds Maximum Contaminant Level.

ND

2.0

- Е Value above quantitation range
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
 - р Sample pH greater than 2.
 - RL Reporting Detection Limit

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13-Feb-14

WO#:

1401A07

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Western Refining Southwest, Inc.

Injection Well 1-23-2014 **Project:**

| Sample ID 5ml rb | SampTy | ype: MB | 3LK | Test | tCode: EF | PA Method | 8260B: VOLA | TILES | | |
|----------------------------|------------|--------------------|-----------|-------------|---|-----------|-------------|--------|-----------------|------|
| Client ID: PBW | Batch | ID: R1 | 6441 | R | unNo: 10 | 3441 | | | | |
| Prep Date: | Analysis D | ate: 1/: | 31/2014 | S | eqNo: 4 | 74209 | Units: µɑ/L | | | |
| Analyte | Result | | SPK value | SPK Ref Val | %REC | LowLimit | Hight imit | %RPD | RPDLimit | Qual |
| 1.1-Dichloronronene | ND | <u>, u</u> ∟ 1∩ | | STATIST VOI | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | | |
| Hexachlorobutadiene | ND | 10 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isonronylhenzene | ND | 10 | | | | | | | | |
| 4-Isonroovitokiene | | 1.0 | | | | | | | | |
| 4-Methyl-2-nentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | | 3.0 | | | | | | | | |
| n-Butylbenzene | | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 10 | | | | | | | | |
| sec-Butvlhenzene | ND | 10 | | | | | | | | |
| Styrene | ND | 10 | | | | | | | | |
| tert-Butylhenzene | 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-DCF | ND | 1.0 | | | | | | | | |
| trans-1.3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1.2.3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1 2 4-Trichlorohenzene | ND | 1.0 | | | | | | | | |
| 1.1.1-Trichloroethane | ND | 10 | | | | | | | | |
| 1 1 2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1.2.3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinvi chloride | ND | 10 | | | | | | | | |
| Xvlenes Total | ND | 1.5 | | | | | | | | |
| Sur: 12-Dichloroethane-d4 | 10 | 1.0 | 10.00 | | 101 | 70 | 130 | | | |
| Sur: 4-Bromofiliorobenzene | 84 | | 10.00 | | 84.4 | 70 | 130 | | | |
| Surr: Dibromofluoromothana | 0.3 | | 10.00 | | 93.4 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.3 | | 10.00 | | 93.0 | 70 | 130 | | | |
| | | | | | 10 | | 00003 | ATU 50 | | |
| Sample ID 100ng Ics | SampT | ype: LC | s | Tes | tuode: E | PA Method | SZEOB: VOL | ATTLES | | |
| Client ID: LCSW | Batch | h ID: R1 | 6441 | - Fr | RunNo: 1 | 6441 | | | | |
| Prep Date: | Analysis D | Date: 1/ | 31/2014 | S | SeqNo: 4 | 74213 | 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. *

Е Value above quantitation range

- Analyte detected below quantitation limits Ĵ
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- Reporting Detection Limit RL

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13-Feb-14

WO#:

1401A07

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID 100ng Ics | SampT | ype: LC | S | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | | |
|-----------------------------|------------|-----------------|-----------|-------------|-----------------|-----------|-------------|--------|----------|------|--|
| Client ID: LCSW | Batch | n ID: R1 | 6441 | F | RunNo: 1 | 6441 | | | | | |
| Prep Date: | Analysis D | ate: 1/ | 31/2014 | S | SeqNo: 4 | 74213 | 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

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1401A07 13-Feb-14

WO#:

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID mb-11420 | SampT | уре: М | BLK | Tes | tCode: El | PA Method | 8270C: Semi | volatiles | | |
|-----------------------------|------------|--------|-----------|-------------|-----------|-----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch | ID: 11 | 420 | F | RunNo: 1 | 6402 | | | | |
| Prep Date: 1/27/2014 | Analysis D | ate: 1 | /30/2014 | ę | SeqNo: 4 | 73422 | 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 | | | | | | | | |
| 3,31-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

WO#: 1401A07 13-Feb-14

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Western Refining Southwest, Inc. **Client:**

Injection Well 1-23-2014 **Project:**

| Sample ID mb-11420 | SampType | B: MBLK | Tes | tCode: EP | A Method | 8270C: Semi | volatiles | | |
|----------------------------|---------------|--------------|----------------|-----------|----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch IC |)· 11420 | F | RunNo: 16 | 402 | | | | |
| Prep Date: 1/27/2014 | Analysis Date | e: 1/30/2014 | ę | SeqNo: 47 | 3422 | Units: µg/L | | | |
| Analyte | Result F | PQL SPK valu | ue 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 | NÐ | 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-Trichiorobenzene | ND | 10 | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 10 | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | | | | | | | |
| Surr: 2-Fluorophenol | 120 | 200 | 0.0 | 60.4 | 22.7 | 98 | | | |
| Surr: Phenol-d5 | 91 | 200 | 0.0 | 45.4 | 23.4 | 74.9 | | | |
| Surr: 2,4,6-Tribromophenol | 150 | 200 | 0.0 | 74.9 | 23.3 | 111 | | | |
| Surr: Nitrobenzene-d5 | 81 | 100 | 0.0 | 80.7 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 77 | 100 | 0.0 | 76.6 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 74 | 100 | 0.0 | 73.9 | 52.1 | 116 | | | |

Qualifiers:

Value exceeds Maximum Contaminant Level. *

Value above quantitation range Е

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- RL Reporting Detection Limit

13-Feb-14

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Client:

Project:

Western Refining Southwest, Inc.

Injection Well 1-23-2014

| Sample ID Ics-11420 | | ype: LC | S | Tes | tCode: EF | PA Method | 8270C: Semi | volatiles | | |
|---|--|---|---|--|--|--|--|--|----------|---------|
| Client ID: LCSW | Batch | D: 11 | 420 | F | RunNo: 16 | 6402 | | | | |
| Prep Date: 1/27/2014 | Analysis D | ate: 1 / | 30/2014 | 8 | SeqNo: 4 | 73423 | 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 | SampT | ype: ME | BLK | Tes | tCode: El | PA Method | 8270C: Semi | volatiles | | |
| Sample ID mb-11513 Client ID: PBW | SampT Batch | ype: ME 1 ID: 11 | 3LK 513 | Tes F | tCode: El RunNo: 1 | PA Method 5496 | 8270C: Semi | volatiles | | |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 | SampT Batch Analysis D | ÿpe: ME 1 ID: 11)ate: 2 / | 3LK 513 3/2014 | Tes F S | tCode: El RunNo: 11 SeqNo: 41 | PA Method 5496 75097 | 8270C: Semí Units: %RE | volatiles C | | <u></u> |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte | SampT Batch Analysis D Result | ype: ME 1D: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value | Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4 %REC | PA Method 6496 75097 LowLimit | 8270C: Semi Units: %RE HighLimit | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Sur: 2-Fluorophenol | SampT Batch Analysis D Result 110 | ype: ME 1 ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 | Tes F S SPK Ref Val | tCode: EF RunNo: 11 SeqNo: 4 %REC 54.9 | PA Method 6496 75097 LowLimit 22.7 | 8270C: Semi Units: %RE4 HighLimit 98 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Sur: 2-Fluorophenol Sur: Phenol-d5 | SampT Batch Analysis D Result 110 93 | ype: ME 1 ID: 11 9ate: 2/ PQL | BLK 513 3/2014 SPK value 200.0 200.0 | Tes F SPK Ref Val | tCode: El RunNo: 11 SeqNo: 4 %REC 54.9 46.5 | PA Method 5496 75097 LowLimit 22.7 23.4 | 8270C: Semi Units: %RE0 HighLimit 98 74.9 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 110 93 130 | ype: ME 1 ID: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 | Tes F SPK Ref Val | tCode: El RunNo: 11 SeqNo: 4 <u>%REC</u> 54.9 46.5 65.6 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 | 8270C: Semi Units: %RE0 HighLimit 98 74.9 111 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | SampT Batch Analysis D Result 110 93 130 77 | ype: ME 1D: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 | Tes F SPK Ref Val | tCode: EI RunNo: 11 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 | 8270C: Semi Units: %RE0 HighLimit 98 74.9 111 111 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl | SampT Batch Analysis D Result 110 93 130 77 71 | ype: MF 1 ID: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 | Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 111 110 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 | SampT Batch Analysis D Result 110 93 130 77 71 71 72 | ype: MF 1D: 11 21 PQL | BLK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 | Tes F SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT | ype: ME 1D: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 | Tes F SPK Ref Val | tCode: El RunNo: 11 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi | volatiles C %RPD volatiles | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch | ype: ME 1 ID: 11 20 PQL 9 PQL 1 ID: 11 | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 5513 | Tes F SPK Ref Val | tCode: EF RunNo: 11 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: EF RunNo: 10 | PA Method 5496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 5496 | 8270C: Semi Units: %RE0 HighLimit 98 74.9 111 111 110 116 8270C: Semi | volatiles C %RPD volatiles | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D | ype: ME a ID: 11 PQL PQL ype: LC a ID: 11 pate: 2/ | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 55 513 3/2014 | Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 10 SeqNo: 4 | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 5496 75098 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE | volatiles C %RPD volatiles C | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result | ype: ME 1 ID: 11 PQL PQL ype: LC 1 ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 5513 3/2014 SPK value | Tes F SPK Ref Val Tes SPK Ref Val | tCode: El RunNo: 11 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC | PA Method 5496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit | 8270C: Semi Units: %RE0 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE0 HighLimit | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 | ype: ME i ID: 11 PQL PQL i JD: 11 Date: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 55 513 3/2014 SPK value 200.0 | Tes F SPK Ref Val Tes SPK Ref Val | tCode: El RunNo: 11 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC 49.8 | PA Method 5496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE4 HighLimit 98 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 | ype: ME 1 ID: 11 Pate: 2/ PQL 1 D: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 100.0 3/2014 SPK value 200.0 200.0 | Tes F SPK Ref Val Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 10 SeqNo: 4 %REC 49.8 42.3 | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 23.4 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE4 HighLimit 98 74.9 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 150 | ype: ME 1 ID: 11 Pate: 2/ PQL PQL 1 ID: 11 PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 100.0 S 513 3/2014 SPK value 200.0 200.0 200.0 | Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 10 SeqNo: 4 %REC 49.8 42.3 77.3 | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 23.4 23.3 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 150 82 | ype: ME a iD: 11 PQL PQL ype: LC a iD: 11 PQL PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 SS 513 3/2014 SPK value 200.0 200.0 200.0 100.0 200.0 200.0 100.0 | Tes F SPK Ref Val | tCode: El RunNo: 10 SeqNo: 4' %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 10 SeqNo: 4' %REC 49.8 42.3 77.3 81.7 | PA Method 5496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 5496 75098 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 | 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE4 HighLimit 98 74.9 111 111 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |

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

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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.

RL Reporting Detection Limit

WO#: 1401A07 13-Feb-14

WO#: 1401A07

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID Ics-11513 | SampType | E LCS | TestCode | EPA Method | 8270C: Sem | ivolatiles | | |
|---|-----------------|-------------------------|-----------------|-------------------------------|-------------------|-------------|-------------|------|
| Client ID: LCSW | Batch ID: | : 11513 | RunNo | 16496 | | | | |
| Prep Date: 1/31/2014 | Analysis Date: | : 2/3/2014 | SeqNo | 475098 | Units: %RE | C | | |
| Analyte | Result P | QL SPK value | SPK Ref Val %RE | C LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 4-Terphenyl-d14 | 61 | 100.0 | 61 | .4 52.1 | 116 | | | |
| Sample ID Icsd-11513 | SampType | : LCSD | TestCode | EPA Method | 8270C: Sem | ivolatiles | | |
| Client ID: LCSS02 | Batch ID: | 11513 | RunNo | 16496 | | | | |
| Prep Date: 1/31/2014 | Analysis Date: | 2/3/2014 | SeqNo | 475099 | Units: %RE | C | | |
| Analyte | Result P | QL SPK value | SPK Ref Val %RE | C 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: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | 160 89 | 200.0 100.0 | 79 88 | .0 23.3 .8 36.8 | 111 111 | 0 0 | 0 0 | |
| Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl | 160 89 83 | 200.0 100.0 100.0 | 79 88 83 | .0 23.3 .8 36.8 .1 38.3 | 111 111 110 | 0 0 0 | 0 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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | Western F Injection | Refining Well 1-2 | Southw 3-2014 | vest, Inc. | | | | | | | |
|---------------------|------------------------|----------------------|------------------|-------------|-------------|----------|-----------|--------------|------|----------|------|
| Sample ID | MB-11463 | Samp | Туре: М | MBLK | Test | tCode: E | PA Method | 7470: Mercun | y | | |
| Client ID: | PBW | Bat | ch ID: 1 | 1463 | R | tunNo: 1 | 6401 | | | | |
| Prep Date: | 1/29/2014 | Analysis | Date: | 1/30/2014 | S | SeqNo: 4 | 173049 | Units: mg/L | | | |
| Analyte | | Result | PQL | . SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | ND | 0.0002 | 0 | | | | | | | |
| Sample ID | LCS-11463 | Samp | Туре: 1 | LCS | Tesi | tCode: E | PA Method | 7470: Mercur | у | | |
| Client ID: | LCSW | Bat | ch ID: 1 | 11463 | F | RunNo: 1 | 6401 | | | | |
| Prep Date: | 1/29/2014 | Analysis | Date: | 1/30/2014 | S | SeqNo: 4 | 473050 | Units: mg/L | | | |
| Analvte | | Result | PQL | . SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0047 | 0.0002 | 0.005000 | 0 | 94.3 | 80 | 120 | | | |
| Sample ID | 1401A07-001CMS | Samp | Type: I | WS | Tes | tCode: E | PA Method | 7470: Mercur | у | | |
| Client ID: | Injection Well | Bat | ch ID: 1 | 11463 | F | RunNo: 1 | 16401 | | | | |
| Prep Date: | - 1/29/2014 | Analysis | Date: | 1/30/2014 | S | SeqNo: 4 | 473069 | Units: mg/L | | | |
| Analyte | | Result | PQI | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0046 | 0.001 | 0 0.005000 | 0 | 91.0 | 75 | 125 | | | |
| Sample ID | 1401A07-001CMS | D Sam | Type: I | MSD | Tes | tCode: E | PA Method | 7470: Mercur | у | | |
| Client ID; | Injection Well | Bat | ch ID: ' | 11463 | F | RunNo: 1 | 16401 | | | | |
| Prep Date: | 1/29/2014 | Analysis | Date: | 1/30/2014 | S | SeqNo: 4 | 473070 | Units: mg/L | | | |
| Analyte | | Result | POI | SPK value | SPK Ref Val | %REC | LowLimit | HiahLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0045 | 0.001 | 0 0.005000 | 0 | 90.1 | 75 | 125 | 1.02 | 20 | B*** |

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

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WO#:

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID MB-11432 | Samp | Гуре: МВ | LK | Test | Code: EF | PA 6010B: 1 | Fotal Recover | able Meta | Is | |
|---|--|---|---|---|--|--|---|-----------|-------------------------|------|
| Client ID: PBW | Batc | h ID: 114 | 132 | R | unNo: 10 | 5372 | | | | |
| Prep Date: 1/28/2014 | Analysis [| Date: 1/2 | 29/2014 | S | eqNo: 4 | 72096 | 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 | | | | | | | | |
| | | | | | 1.1000 1.002 | 19.11 A A A A A A A A A A A A A A A A A A | Line Contractory | | | |
| Sample ID LCS-11432 | Samp | Type: LC | S | Tes | Code: El | PA 6010B: ` | Total Recover | able Meta | als | |
| Sample ID LCS-11432 Client ID: LCSW | Samp Bato | Type: LC | S 432 | Tes F | tCode: El tunNo: 1 | PA 6010B: ` 6372 | Total Recover | able Meta | als | |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 | Samp Bato Analysis | Type: LC :h ID: 11 4 Date: 1 / | S 432 29/2014 | Tesi R S | tCode: El RunNo: 1 SeqNo: 4 | PA 6010B: ` 6372 72097 | Total Recover | able Meta | als | |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte | Samp Bato Analysis Result | Type: LC h ID: 11 Date: 1 PQL | S 432 29/2014 SPK value | Tesi R SPK Ref Val | Code: El RunNo: 1 SeqNo: 4 %REC | PA 6010B: ` 6372 72097 LowLimit | Total Recover Units: mg/L HighLimit | able Meta | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte | Samp Batc Analysis Result 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 | S 432 29/2014 SPK value 0.5000 | Tes R S SPK Ref Val 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 | PA 6010B: ` 6372 72097 LowLimit 80 | Total Recover Units: mg/L HighLimit 120 | able Meta | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium | Samp Bato Analysis Result 0.43 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 | S 432 29/2014 SPK value 0.5000 0.5000 | Tes F S SPK Ref Val 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 | PA 6010B: ` 6372 72097 LowLimit 80 80 | Total Recover Units: mg/L HighLimit 120 120 | able Meta | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium | Samp Bato Analysis Result 0.43 0.43 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 | Tesi F S SPK Ref Val 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 | PA 6010B: ` 6372 72097 LowLimit 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium | Samp Bato Analysis Result 0.43 0.43 0.43 0.42 45 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 50.00 | Tesi R SPK Ref Val 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium | Samp Bato Analysis Result 0.43 0.43 0.43 0.42 45 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 50.00 0.5000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead | Samp Batc Analysis 0.43 0.43 0.42 45 0.43 0.42 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 0.0050 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 50.00 0.5000 0.5000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 | ICode: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium | Samp Batc Analysis 0.43 0.43 0.42 45 0.43 0.42 45 0.43 0.42 45 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 90.0 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium | Samp Bato Analysis 0.43 0.43 0.43 0.42 45 0.43 0.42 45 0.43 0.42 45 44 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 90.0 88.6 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Caloium Chromium Lead Magnesium Potassium Selenium | Samp Bato Analysis 0.43 0.43 0.43 0.42 45 0.43 0.42 45 0.43 0.42 45 44 0.42 | Type: LC th ID: 114 Date: 11 PQL 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 1.0 0.050 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 50.00 0.5000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 89.1 85.3 84.4 90.0 88.6 83.4 | PA 6010B: ` 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | R PDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium Silver | Samp Bato Analysis 0.43 0.43 0.43 0.42 45 0.43 0.42 45 44 0.42 0.089 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 0.050 0.050 0.0050 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 50.00 0.5000 0.5000 0.5000 0.1000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 89.1 85.3 84.4 90.0 88.6 83.4 88.7 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | R PDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium Silver Sodium | Samp Bato Analysis 0.43 0.43 0.43 0.42 45 0.43 0.42 45 44 0.42 0.089 45 | Type: LC th ID: 114 Date: 11 PQL 0.020 0.0020 0.0020 1.0 0.0060 0.0050 1.0 0.050 0.0050 1.0 0.0050 1.0 0.0050 1.0 0.0050 0.0050 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 0.5000 0.5000 0.5000 0.5000 0.1000 50.00 | Tesi R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 1 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 89.1 85.3 84.4 90.0 88.6 83.4 88.6 83.4 88.7 89.3 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | als RPDLimit | Qual |

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

Page 15 of 17

1401A07 13-Feb-14

WO#:

| Client: Project: | Western Refining South Injection Well 1-23-2014 | west, Inc. 4 | | | | | | | |
|---------------------------|--|-----------------|-------------|-----------------|------------|-------------|-------|----------|------|
| Sample ID mb-1 | SampType: | MBLK | Test | Code: SN | 12320B: Al | kalinity | | | |
| Client ID: PBW | Batch ID: | R16304 | R | unNo: 16 | 304 | | | | |
| Prep Date: | Analysis Date: | 1/24/2014 | S | eqNo: 47 | 0197 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQ | L SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO | 3) ND : | 20 | | | | | | | |
| Sample ID 1cs-1 | SampType: | LCS | Test | Code: SN | 12320B: Al | kalinity | | | |
| Client ID: LCSW | Batch ID: | R16304 | R | unNo: 16 | 304 | | | | |
| Prep Date: | Analysis Date: | 1/24/2014 | S | eqNo: 47 | 70198 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQ | L SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Quai |
| Total Alkalinity (as CaCO | 3) 82 | 20 80.00 | 0 | 103 | 90 | 110 | | | |

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Value above quantitation range Ε
- Analyte detected below quantitation limits ſ
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Ħ
- Not Detected at the Reporting Limit ND
- Ρ Sample pH greater than 2.
- Reporting Detection Limit RL

Page 16 of 17

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID MB-11406 | SampType: MBLK | TestCode: SM2540C MOD: Total Dissolv | ed 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 Dissolv | ed Solids |
| Sample ID LCS-11406 Client ID: LCSW | SampType: LCS Batch ID: 11406 | TestCode: SM2540C MOD: Total Dissolv RunNo: 16349 | ed Solids |
| Sample ID LCS-11406 Client ID: LCSW Prep Date: 1/27/2014 | SampType: LCS Batch ID: 11406 Analysis Date: 1/28/2014 | TestCode: SM2540C MOD: Total Dissolv RunNo: 16349 SeqNo: 471303 Units: mg/L | ed Solids |
| Sample ID LCS-11406 Client ID: LCSW Prep Date: 1/27/2014 Analyte | SampType: LCS Batch ID: 11406 Analysis Date: 1/28/2014 Result PQL SPK value | TestCode: SM2540C MOD: Total Dissolv RunNo: 16349 SeqNo: 471303 Units: mg/L SPK Ref Val %REC LowLimit HighLimit % | ed Solids RPD RPDLimit Qual |

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

Page 17 of 17

WO#: 1401A07

13-Feb-14

| HALL ENVIRONMENTAL ANALYSIS LABORATORY | Hall Environmental A Albug TEL: 505-345-3975 F Website: www.halle | nalysis Laborata 4901 Hawkins 1 uerque, NM 871 AX: 505-345-41 environmental.co | NE 09 Samp 07 07 | ble Log-In Ch | eck List |
|---|--|--|----------------------------------|----------------------------|---|
| Client Name: Western Refining Southw | Work Order Number: 7 | 1401A07 | | RcptNo: | 1 |
| Received by/date: LM 6 | 1/24/14 | | | | - , ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, |
| Logged By: Michelle Garcla | 1/24/2014 10:15:00 AM | | Michells Gare | un | |
| Completed By: Micheile Garcia | 1/24/2014 12:54:49 PM | | Minul Gan | uie | |
| Reviewed By: ATO//27/14 | l | | | | |
| 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 🗌 | | |
| 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) properl | y 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 broke | n? | Yes 🗌 | No 🗹 🛛 | # of preserved | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | | Yes 🗹 | No 🖂 | bottles checked for pH: | 12 unless noted) |
| 13, Are matrices correctly identified on Chain of | Custody? | Yes 🖌 | No | Adjusted | NO |
| 14 is it clear what analyses were requested? | | Yes 🖌 | No | | .X |
| 15. Were all holding times able to be met? (if no, notify customer for authorization.) | | Yes 🗹 | No | Checked by: | |
| Special Handling (if applicable) | | | | | |
| 16. Was client notified of all discrepancies with t | his order? | Yes 🗌 | No 🗌 | NA 🗹 | |
| Person Notified: By Whom: Regarding; Client Instructions: | Date: | ¦eMail (〔] Pl | hone Fax | [] In Person | |
| 17. Additional remarks: | | | · | | |
| 18. <u>Cooler Information</u> | | | | | |
| Cooler No Temp C Condition Se 1 1.2 Good Yes | al Intact Seal No Se | al Date | Signed By | | |

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Page 1 of 1

| | FAL | ORY | | | | | | | | 52 | N) IQ | ע סו ין רך אוג, | Hoples () | Ec, I Bulfa Air B | 21 | УG | | | | | | 1 | × | | | | | | | | |
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| | _ | Well | | 11.2 | | | | | | | NO | C 1 | HEAL No. | LOV/1971 | 1001 | 100- | | | | -00- | - 00 - | - (a) - | - 00 - | | | | | Date Time | . Date Time | City HILIN | . This serves as notice of th |
| l Time: | d 🗆 Rush | e: Injection | 1 03 | | | | ager: |) . | | Sol. | D/Yes | perature: | Preservativ e Type | | HCI | Amber | Amber | Amber | US H | LINO | LINO3 | Na OH | Zn Acutate | · | | | | | C NWLAN | | dredited laboratories |
| Tum-Around | - X Standard | Project Nam | -1 | Disting # | | | Project Mana | 1 | | Sampler | On loe: | Sample Tem | Container Type and # | | 5-VOA | 1 - liter | 1-500 ml | 1-500 ml | 1-250 ml | | | 1-500 ml | 1-500 ml | | | | | Received by | Received by: | 7 | intracted to other ac |
| istody Record | ing . | | 1 4990 | | M 8/413 | 22 | | | I Level 4 (Full Validation) | | | | Sample Request ID | Taita attain 1812.0 | Injection Well | Injection Well | Injection Well | Injection Well | Injection Well | Injection Wall | | Injection Well | Injection Well | | | | | the las | 1 by: | the harle | ted to Hall Environmental may be subco |
| -of-Cu | ern Refir | | s: 50 CR | | TITICIO, N | -632-413 | | | D | | | | Matrix | | 22 | H ₂ 0 | H₂0 | H ₂ 0 | H ₅ 0 | 0'H | | 0 ² L | μ ₂ υ | ŀ | | | Detroit of the | A share | Relinquished | CAN | amples submit |
| Chain | Weste | | 3 Addres | ī | | #. 502 | or Fax#: | Package. | ndard | er I | (Type) | | Time | 0 | 2:22 | | | | | | | | - | | | | Timar | 2/2 2 | Time: | SE | necessary, \$ |
| Ň | Client | | Mailing | | i | Phone | emailo | QA/QC | X Star | | X EDI | | Date | | 1-5F-1 | | | | | | | | - | | | | Date: | -23-14 | Date: | 23/14 | 1 JI |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| CLIENT: | Western Refining Southwest, Inc | | | Client Sam | ple ID: Inj | ection Well | |
|-----------|---------------------------------|---------|-----------|------------|--------------------|----------------------|--------|
| Project: | Injection Well 7-28-14 3rd OTR | | | Collection | - 1 Date: 7/2 | 8/2014 9:30:00 AM | |
| Lab ID: | 1407D12-001 | Matrix: | AQUEOUS | Received | l Date: 7/2 | 9/2014 7:55:00 AM | |
| Analyses | | Result | RL Qual | Units | DF | Date Analyzed | Batch |
| | | | | | | Analyst: | I GP |
| | TIOD SULU: ANIONS | E10 | 05 | mail | 50 | 9/4/2014 5:04:00 DM | D20262 |
| Sulfata | | 210 | ∡0 2.5 | mg/L | 50 | 7/20/2014 5.04.09 PM | R20303 |
| Sullate | | 41 | 2.0 | mg/L | 5 | 112012014 4.11.401 W | 120200 |
| EPA MET | HOD 7470: MERCURY | | | | | Analyst: | MMD |
| Mercury | | ND | 0.00020 | mg/L | 1 | 8/4/2014 2:43:32 PM | 14571 |
| EPA 6010 | B: TOTAL RECOVERABLE MET | ALS | | | | 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 |
| Cadmiun | n | 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 |
| Chromiu | m | 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 |
| Magnesi | um | 99 | 1.0 | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Potassiu | m | 36 | 1.0 | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Seleniun | 1 | 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 MET | HOD 8270C: SEMIVOLATILES | | | | | Analyst: | DAM |
| Acenaph | thene | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Acenaph | thylene | 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 |
| Anthrace | ne | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Azobenz | ene | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benz(a)a | Inthracene | 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 a | Icohol | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroethoxy)methane | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroethyl)ether | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroisopropyl)ether | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-eth | ylhexyl)phthalate | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Bromo | phenyl phenyl ether | ND | 100 | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Butyl ber | nzyl phthalate | ND | 100 | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Carbazol | e | 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 |

Hall Environmental Analysis Laboratory, Inc.

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

100

µg/L

ND

* Value exceeds Maximum Contaminant Level.E Value above quantitation range

E Value above quantitation rangeJ Analyte detected below quantitation limits

O RSD is greater than RSDlimit

4-Chloroaniline

Qualifiers:

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank

1

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit Page 1 of 20

7/31/2014 8:37:47 PM

14520

P Sample pH greater than 2.

RL Reporting Detection Limit

Analytical Report Lab Order 1407D12

Date Reported: 8/15/2014

Hall Environmental Analysis Laboratory, Inc.

Matrix: AQUEOUS

Analytical Report Lab Order 1407D12 Date Reported: 8/15/2014

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

1407D12-001

Lab ID:

Client Sample ID: Injection Well Collection Date: 7/28/2014 9:30:00 AM Received Date: 7/29/2014 7:55:00 AM

| Analyses | Result | RL Qu | al Units | DF | Date Analyzed | Batch |
|-----------------------------|--------|-------|----------|----|----------------------|-------|
| EPA METHOD 8270C: SEMIVOLA | TILES | | | | 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-Nitroanlline | 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 | ua/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. | В | Analyte detected in the associated Meth | od Blank | |
|-------------|---|---|----|--|---------------|--|
| | Е | Value above quantitation range | Н | Holding times for preparation or analysis exceeded | | |
| J | | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 2 of 20 | |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | 1 uge 2 01 20 | |
| R | | RPD outside accepted recovery limits | RL | Reporting Detection Limit | | |
| | S | Spike Recovery outside accepted recovery limits | | | | |

| Hall Er | nvironmental Analysis | Labora | ntory, Inc | c. | | | Analytical Report Lab Order 1407D12 Date Reported: 8/15/20 | 014 |
|------------|---------------------------------|-------------|--------------|---------|---------------|------------------|--|----------|
| CLIENT: | Western Refining Southwest, Inc | • | | C | lient Sampl | e ID: Inj | ection Well | |
| Project: | Injection Well 7-28-14 3rd OTR | | | | Collection] | Date: 7/2 | 8/2014 9:30:00 AM | |
| Lab ID: | 1407D12-001 | Matrix: | AQUEOUS | | Received 1 | Date: 7/2 | 9/2014 7:55:00 AM | |
| Analyses | | Result | RL (| Qual | Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 8270C: SEMIVOLATILES | | | | | | Analys | t: DAM |
| Nitrobenz | zene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Nitroph | enol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Nitroph | enol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Pentachl | orophenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Phenanti | hrene | 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-Trie | chlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2 4 5-Tri | shlaraphenol | ND | 100 | | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 246-Tri | chloropheng | ND | 100 | | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr 2 | 2-Fluorophenol | 0 | 12.1-85.8 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr F | Phenol-d5 | 0 | 17.7-65.8 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr' 2 | 2 4 6-Tribromophenol | 0 | 26-138 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Sur 1 | vitrobenzene-d5 | 0 | 47.5-119 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr 2 | 2-Eluorobiphenyl | 0 | 48,1-106 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 4 | 1-Terphenyl-d14 | 0 | 44-113 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| EPA MET | HOD 8260B: VOLATILES | | | | | | Analys | st: DJF |
| Benzene | 1 | 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 |
| Ethylben | zene | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Methyl te | ert-butyl ether (MTBE) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2,4-Tri | methylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.3.5-Tri | methylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dich | ioroethane (EDC) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dibro | omoethane (EDB) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Naphtha | lene | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1-Methvl | naphthalene | ND | 8.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Methyl | naphthalene | ND | 8.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | I R20298 |
| Acetone | | 85 | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PN | I R20298 |
| Bromobe | enzene | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | I R20298 |
| Bromodi | chloromethane | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PN | I R20298 |
| Bromofo | rm | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PN | I R20298 |
| Bromom | ethane | ND | 6.0 | | μg/L | 2 | 7/31/2014 1:41:17 PN | R20298 |
| 2-Bufano | one | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PN | I R20298 |
| Carbon | disulfide | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PN | R20298 |
| Carbon | Tetrachloride | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | 1 R20298 |
| Chlorobe | enzene | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | 1 R20298 |
| Chloroet | hane | ND | 4.0 | | μg/L | 2 | 7/31/2014 1:41:17 PN | 1 R20298 |
| | | l comple la | oin checklic | t for f | PO hennel | lata and i | preservation informati | on |

Qualifiers: * Value exceeds Maximum Contaminant Level.

- E Value above quantitation range
- Analyte detected below quantitation limits J
- O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

Spike Recovery outside accepted recovery limits S

Analyte detected in the associated Method Blank В

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit Page 3 of 20
- Р Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Env | ironmental Analysis | Labora | tory, Inc. | | | Lab Order 1407D12 Date Reported: 8/15/201 | (4 |
|--------------------------|--|---------|--|-------------------------|------------------------------|--|--------|
| CLIENT: W Project: Ir | Vestern Refining Southwest, Inc njection Well 7-28-14 3rd QTR | • | na mangan kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana Mangan kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa kana sa k | Client San Collectio | nple ID: Inj on Date: 7/2 | ection Well 28/2014 9:30:00 AM | |
| Lab ID: 1- | 407D12-001 | Matrix: | AQUEOUS | Receive | d Date: 7/2 | 29/2014 7:55:00 AM | |
| Analyses | | Result | RL Qua | ıl Units | DF | Date Analyzed | Batch |
| EPA METH | OD 8260B: VOLATILES | | | | | Analyst | DJF |
| Chloroform | | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Chlorometh | ane | ND | 6.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Chlorotolu | uene | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Chlorotol | Jene | 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-Dich | nloropropene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dibrom | o-3-chloropropane | ND | 4.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dibromochl | oromethane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dibromome | ethane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dichlor | obenzene | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.3-Dichloro | obenzene | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.4-Dichloro | obenzene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dichlorodifi | uoromethane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.1-Dichlor | pethane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.1-Dichlor | pethene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dichlor | opropane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.3-Dichlor | opropane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2.2-Dichlor | opropane | ND | 4.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.1-Dichlor | enegora | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Hexachloro | butadiene | ND | 2,0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Hexanon | e | ND | 20 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Isopropylbe | enzene | ND | 2,0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-lsopropyl | toluene | ND | 2,0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Methvl-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-Butviben; | zene | ND | 6.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| n-Propylbe | nzene | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| sec-Butylbe | enzene | 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-Butvlbe | nzene | ND | 2,0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.1.1.2-Tet | rachloroethane | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1 1 2 2-Tet | rachloroethane | ND | 4.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Tetrachloro | ethene (PCE) | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| trans-1 2-D | | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| trans-1.3-D | Vichloropropene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2.3-Trich | lorobenzene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2.4-Trich | lorobenzene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1 1 1-Trich | loroethane | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1,2-Trich | loroethane | ND | 2.0 | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |

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 Page 4 of 20

Analytical Report

P Sample pH greater than 2.

RL Reporting Detection Limit

| Hall Environmental Analysi | s Labora | ntory, Inc. | | | Lab Order 1407D12 Date Reported: 8/15/20 | [4 | | | | |
|---|----------|-------------|-----------------------------------|-------------------------|---|--------|--|--|--|--|
| CLIENT: Western Refining Southwest, I Project: Injection Well 7-28-14 3rd QT | nc. R | AOUTOUS | Client Sample I Collection Dat | D: In te: 7/2 | Injection Well 7/28/2014 9:30:00 AM | | | | | |
| Lab ID: 1407D12-001 | Matrix: | RL On | Received Dat | DF | Date Analyzed | Batch | | | | |
| Analyses | Kesuit | | | | | | | | | |
| 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 PN | R20245 | | | | |
| SM4500-H+B: PH | | | | | Analyst | : JRR | | | | |
| pН | 7.10 | 1.68 | H pH units | 1 | 7/29/2014 12:08:01 PN | R20245 | | | | |
| SM2320B: ALKALINITY | | | | | Analyst | : JRR | | | | |
| Bicarbonate (As CaCO3) | 220 | 20 | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PN | R20245 | | | | |
| Carbonate (As CaCO3) | ND | 2.0 | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PN | R20245 | | | | |
| Total Alkalinity (as CaCO3) | 220 | 20 | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PM | R20245 | | | | |
| SM2540C MOD: TOTAL DISSOLVED S | OLIDS | | | | Analysi | : KS | | | | |
| Total Dissolved Solids | 1380 | 200 | * mg/L | 1 | 7/30/2014 5:19:00 PM | 14475 | | | | |

| | | Autor Autor Contra | | | | | |
|-------------|---|---|----|---|--------------|--|--|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detected in the associated Method Blank | | | |
| | Е | Value above quantitation range | Н | Holding times for preparation or analysi | is exceeded | | |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 5 of 20 | | |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | * "8 | | |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit | | | |
| | S | Spike Recovery outside accepted recovery limits | | | | | |
| | | | | | | | |

Analytical Report

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

Analytical Results Report

| Sample Number Client Sample ID Matrix Comments | 140730036-001 1407D12-001E / INJE0 Water | Sampling Date 7/28/2014 IJECTION WELL | | Date/Time Received 7/30/2014 Sampling Time 9:30 AM | | | 12:25 PM | |
|---|--|--|----------|---|---------------|---------|-------------|-----------|
| Parameter | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
| Cuenido (react | (va) | ND | ma/L | 1 | 8/12/2014 | CRW | SW846 CH7 | |
| Elashooiot | 146) | >200 | °F | | 8/5/2014 | KFG | EPA 1010 | |
| nH | | 7.44 | ph Units | k a | 8/5/2014 | AJT | SM 4500pH-B | |
| Reactive sulfid | e | ND | mg/L | 1 | 8/1/2014 | AJT | SW846 CH7 | |

Authorized Signature

w. Carth 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/solld 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 Cartifications held by Anatek Labs WA: EPA:WA00169; ID:WA00189; WA:C586; MT:Cert0095; FL(NELAP): E871099
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 | Project Name: | 1 407D12 |
| | ALBUQUERQUE, NM 87109 | | |
| Attn: | ANDY FREEMAN | | |
| | Analytical Results R | leport | |

Quality Control Data

| Lab Control Sa | mple | | | | | | | | | | | |
|--------------------|--------------------|------------|------------------|--------|------------|-------|-------|-------|-----------|-----------|---------------|--|
| Parameter | | LCS Result | Units | LCS | Spike | %Rec | AR | %Rec | Prep | Date / | Analysis Date | |
| Reactive sulfide | | 0.16 | mg/L | | D.2 | 80.0 | 70 | -130 | 8/1/2 | 2014 | 8/1/2014 | |
| Cyanide (reactive) | | 0.505 | mg/L | mg/L 0 | | 101.0 | 80 | -120 | 8/12/ | 2014 | 8/12/2014 | |
| Lab Control Sa | mple Duplicate | LCSD | | LCSD | | | | AR | | | | |
| Parameter | | Result | Units | Spike | Spike %Rec | | %RPD | | Prep Date | | Analysis Date | |
| Reactive sulfide | | 0.18 | mg/L | 0.2 | 90.0 | 11.8 | 3 | 0-25 | 8/1/20 |)14 | 8/1/2014 | |
| Matrix Spike | | | 01- | NO | | / | MC | - | | | | |
| Somnle Number | Parameter | | Sample Result | Result | Unit | ts S | Spike | %Rec | %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 D | uplicate | MSD | | MSD | | | | AR | | | | |
| Parameter | | Result | Units | Spike | %F | Rec 9 | 6RPD | %RP |) Pre | p Date | Analysis Date | |
| Cyanide (reactive) |) | 0.906 | mg/L | 1 | 90 |).6 | 1,4 | 0-25 | 8/1 | 2/2014 | 8/12/2014 | |
| Method Blank | | | | | | | | | | | | |
| Parameter | | | Re | sult | U | nits | | PQL | Pi | rep Date | Analysis Date | |
| Cvanide (reactive) | } | | ٨ | ١D | π | ng/L | | 1 | 8/1 | 2/2014 | 8/12/2014 | |
| Reactive sulfide | T | | ٢ | 1D | n | ng/L | | 1 | 8/ | 1/2014 | 8/1/2014 | |
| | | | · | | | | | | | | | |

AR Acceptable Range ND Not Detected PQL Practical Quantitation Limit

RPD Relative Percentage Difference

Comments:

Certifications held by Anstek 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 Anstek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099 Western Refining Southwest, Inc.

Client:

15-Aug-14

| Project: | | Injection Well 7-28-14 3rd | QTR | | | | | | | |
|--|--------------------------|---|--|---|---|--|--|---------|---------------------------------------|------|
| Sample ID | МВ | SampType: MI | BLK | Test | Code: EF | PA Method | 300.0: Anions | | · · · · · · · · · · · · · · · · · · · | |
| Client ID: | PBW | Batch ID: R2 | 0236 | R | unNo: 20 | 0236 | | | | |
| Prep Date: | | Analysis Date: 7/ | 29/2014 | S | eqNo: 58 | 88153 | 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: LC | S | Test | tCode: EF | PA Method | 300.0: Anions | | | |
| Client ID: | LCSW | Batch ID: R2 | 0236 | R | lunNo: 20 | 0236 | | | | |
| Prep Date: | | Analysis Date: 7 | 29/2014 | S | eqNo: 51 | 88154 | 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 | MВ | SampType: MI | BLK | Test | tCode: EF | PA Method | 300.0: Anions | : | | |
| Client ID: | PBW | Batch ID: R2 | 20236 | R | tunNo: 20 | 0236 | | | | |
| Prep Date: | | Analysis Date: 7 | /29/2014 | S | eqNo: 51 | 88211 | 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: LC | s | Test | tCode: EF | PA Method | 300.0: Anions | i | | |
| Client ID: | LCSW | Batch ID: R2 | 20236 | R | tunNo: 2 | 0236 | | | | |
| Prep Date: | | Analysis Date: 7/ | /29/2014 | S | eqNo: 51 | 88212 | Units: mg/L | | | |
| Analyte | | Result PQL | SPK value | SPK Ref Val | W REC | مئمينا الديسا | | %PPD | | Qual |
| Sulfate | | | OF IC VAIDO | or a nor vur | | LOWLIMIE | HighLimit | | RPDLINII | Quai |
| | | 9.6 0.50 | 10.00 | 0 | 95.6 | LOWLIMIA 90 | HighLimit 110 | 7013 12 | RPDLIAIII | Quai |
| Sample ID | МВ | 9.6 0.50 SampType: MI | 10.00 | 0 Tesi | 95.6 ICode: EF | 90 PA Method | HighLimit 110 300.0: Anions | | | |
| Sample ID Client ID: | MB PBW | 9.6 0.50 SampType: MI Batch ID: R2 | 10.00 BLK 20363 | 0 Tesi | 95.6 tCode: EF | 90 PA Method 0363 | HighLimit 110 300.0: Anions | | RPDLINIL | |
| Sample ID Client ID: Prep Date: | MB PBW | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8 | 10.00 BLK 20363 /4/2014 | 0 Tesi R | 95.6 tCode: EF tunNo: 20 GegNo: 55 | 90 PA Method 0363 92146 | HighLimit 110 300.0: Anions Units: mg/L | | RPDLIMIL | |
| Sample ID Client ID: Prep Date: Analyte | MB PBW | 9.6 0.50 SampType: Mil Batch ID: R2 Analysis Date: 8, Result PQL | 10.00 BLK 20363 /4/2014 SPK value | 0 Tesi R SPK Ref Val | 95.6 tCode: EF tunNo: 20 SeqNo: 50 %REC | 90 PA Method 0363 92146 LowLimit | HighLimit 110 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | MB PBW | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8, Result PQL ND 0.50 | 10.00 BLK 20363 /4/2014 SPK value | 0 Tesi R SPK Ref Val | 95.6 tCode: EF tunNo: 20 SeqNo: 50 %REC | 90 PA Method 0363 92146 LowLimit | HighLimit 110 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | MB PBW LCS | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8, Result PQL ND 0.50 SampType: LC | 10.00 BLK 20363 /4/2014 SPK value | 0 Tesi SPK Ref Val Tesi | 95.6 tCode: EF tunNo: 20 SeqNo: 50 %REC | PA Method 0363 92146 LowLimit | HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: | MB PBW LCS LCSW | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8, Result PQL ND 0.50 SampType: LC Batch ID: R2 | 10.00 BLK 20363 /4/2014 SPK value 20363 | 0 Tesi SPK Ref Val Tesi Tesi | 95.6 tCode: El tunNo: 20 SeqNo: 59 %REC tCode: El | PA Method 0363 92146 LowLimit PA Method 0363 | HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: | MB PBW LCS LCSW | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8, Result PQL ND 0.50 SampType: LC Batch ID: R2 Analysis Date: 8, | 10.00 BLK 20363 /4/2014 SPK value SS 20363 /4/2014 | 0 Tesi SPK Ref Val Tesi Fi S | 95.6 tCode: EI tode: EI tode: 5 %REC tCode: EI tcode: EI tode: EI | 90 PA Method 0363 92146 LowLimit PA Method 0363 92147 | HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: Analyte | MB PBW LCS LCSW | 9.6 0.50 SampType: MI Batch ID: R2 Analysis Date: 8, Result PQL ND 0.50 SampType: LC Batch ID: R2 Analysis Date: 8, Result PQL | 10.00 BLK 20363 /4/2014 SPK value 20363 /4/2014 SPK value | 0 Tesi SPK Ref Val Tesi SPK Ref Val | 95.6 tCode: El tunNo: 20 SeqNo: 59 %REC tCode: El tCode: El tunNo: 20 SeqNo: 59 %REC | 2000 2010 2010 2010 2010 2010 2010 2010 | HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Value above quantitation range Е
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Ρ Sample pH greater than 2.
- Reporting Detection Limit RL

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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 | R20363 RunNo: 20363 | | | | | | | |
| Prep Date: | Analysis Date: | 8/5/2014 | 8/5/2014 SeqNo: 592208 U | | | | Units: mg/L | | | |
| Analyte | Result PC | L SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Chloride | ND 0 | .50 | | | | | | | | |
| | | | | | | | | | | |
| Sample ID LCS | SampType: | LCS | Tes | tCode: El | PA Method | 300.0: Anions | 5 | | | |
| Sample ID LCS Client ID: LCSW | SampType: Batch ID; | LCS R20363 | Tes | tCode: El | PA Method 0363 | 300.0: Anion: | 5 | | | |
| Sample ID LCS Client ID: LCSW Prep Date: | SampType: Batch ID: Analysis Date: | LCS R20363 8/5/2014 | Tes F | tCode: EF RunNo: 2 SeqNo: 5 | PA Method 0363 92209 | 300.0: Anions Units: mg/L |) | | | |
| Sample ID LCS Client ID: LCSW Prep Date: Analyte | SampType: Batch ID: Analysis Date: Result PC | LCS R20363 8/5/2014 QL SPK value | Tes F S SPK Ref Val | tCode: EF RunNo: 20 SeqNo: 59 %REC | PA Method 0363 92209 LowLimit | 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual | |

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

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1407D12 15-Aug-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 7-28-14 3rd QTR Sample ID 5mL rb TestCode: EPA Method 8260B: VOLATILES SampType: MBLK Client ID: PBW Batch ID: R20230 RunNo: 20230 Prep Date: Analysis Date: 7/29/2014 SeqNo: 587928 Units: %REC %REC HighLimit %RPD Analyte Result PQL SPK value SPK Ref Val LowLimit 10.00 91.3 70 130 Surr: 1,2-Dichloroethane-d4 9.1 70 10.00 93.2 130 9.3 Surr: 4-Bromofluorobenzene 130 10.00 102 70 Surr: Dibromofluoromethane 10 Su San Clie Pre Ana Sι SL Su Su Sar Clie Рге Ana Benz Tolue Ethyll Methy 1,2,4

Qualifiers:

Carbon Tetrachloride Chlorobenzene

* Value exceeds Maximum Contaminant Level.

NÐ

ND

1.0

1.0

- Value above quantitation range Е
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit ND
- P Sample pH greater than 2.
- RL Reporting Detection Limit

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15-Aug-14

Qual

RPDLimit

| Surr: Toluene-d8 | 9.7 | | 10.00 | | 96.7 | 70 | 130 | | | |
|--------------------------------|------------------|---------------|-----------|-------------|---------------------------------------|-----------|-------------|--------|----------|------|
| Sample ID 100ng Ics | SampTy | /pe: LC | S | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | |
| Client (D: LCSW | Batch | ID: R2 | 0230 | F | RunNo: 2 | 0230 | | | | |
| Prep Date: | Analysis Da | ate: 7/ | 29/2014 | S | eqNo: 5 | 87930 | Units: %RE | 0 | | |
| 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 | | | Tes | TestCode: EPA Method 8260B: VOLATILES | | | | | |
| Client ID: PBW | Batch ID: R20298 | | | F | RunNo: 20298 | | | | | |
| Prep Date: | Analysis Da | ate: 7/ | 31/2014 | S | SeqNo: 5 | 89943 | 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 | | | | | | | | |

WO#: 1407D12

Client: Western Refining Southwest, Inc.

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

| Sample ID 5ml rb | SampType: MBLK TestCode: EPA Method | | | | | PA Method | 8260B: VOL/ | TILES | | |
|-----------------------------|-------------------------------------|----------------|-----------|-------------|--------------------|-----------|-------------|-------|----------|------|
| Client ID: PRW | Rater | ים ים ר | 0298 | , 30 F | RunNo: 2 | 0298 | | | | |
| Bron Data: | | ister T | 21/2014 | r | Sention F | 89942 | Inite unit | | | |
| riep Date. | Audiysis D | a.c. // | 5172014 | 2 | . Ойнуол, Э | | ornio, 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-isopropyitoluene | 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:

- * 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

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1407D12 15-Aug-14

Client: Western Refining Southwest, Inc.

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

| Sample ID 5ml rb | SampT | ype: ME | зік | Tes | tCode: EPA Method 8260B: VOLATILES | | | | | |
|-----------------------------|------------|---------|-----------|-------------|------------------------------------|-----------|-------------|--------|----------|------|
| Client ID: PBW | Batch | 1D: R2 | 0298 | R | lunNo: 2 | 0298 | | | | |
| Prep Date: | Analysis D | ate: 7/ | 31/2014 | S | eqNo: 5 | 89943 | 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 Ics | SampT | ype: LC | s | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSW | Batch | 1D: R2 | 0298 | F | RunNo: 20298 | | | | | |
| Prep Date: | Analysis D | ate: 7/ | 31/2014 | S | eqNo: 5 | 89945 | 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

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- 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

WO#: 1407D12

Western Refining Southwest, Inc. **Client:**

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

| Sample ID mb-14520 | SampT | SampType: MBLK TestCode: EPA Method 8270C: Semivol | | | | | | volatiles | | |
|-----------------------------|------------|--|-----------|-------------|----------|----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch | ID: 14 | 520 | F | RunNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis D | ate: 7/ | 31/2014 | 5 | SegNo: 5 | 90031 | 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-chloroethyi)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 ohthalate | ND | 10 | | | | | | | | |
| 2.4-Dichlorophenol | ND | 20 | | | | | | | | |
| 2.4-Dimethylphenol | ND | 10 | | | | | | | | |
| 4 6-Dinitro-2-methylphenol | ND | 20 | | | | | | | | |

Qualifiers:

2,4-Dinitrophenol

* Value exceeds Maximum Contaminant Level.

ND

20

- Value above quantitation range Е
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
 - Ρ Sample pH greater than 2.
 - RĽ Reporting Detection Limit

Western Refining Southwest, Inc. **Client:**

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

| Sample ID mb-14520 | SampTyp | e: Mi | BLK | TestCode: EPA Method 8270C | | | | volatiles | | |
|----------------------------|--------------|-------|-----------|----------------------------|----------|----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch II |): 14 | 520 | F | RunNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis Dat | e: 7. | /31/2014 | ş | SegNo: 5 | 90031 | 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 | | | | | | | | |
| lsophorone | 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 | ł | | | | | | | |
| 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-Terphenvi-d14 | 94 | | 100.0 | ł | 94.5 | 44 | 113 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Value above quantitation range Έ
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Sample pH greater than 2. Р
- RL Reporting Detection Limit

Client: Western Refining Southwest, Inc.

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

| Sample ID Ics-14520 | SampType: LCS TestCode: EPA Method 8270C: Semivolatiles | | | | | | | | | |
|--|--|--|--|--------------------------------------|--|--|---|--|---|------|
| Client ID: LCSW | Batch | 1D: 14 | 520 | R | tunNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis D | ate: 7/ | 31/2014 | S | ieqNo: 5 | 90032 | 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-Fluorobiphenvl | 96 | | 100.0 | | 96.0 | 48.1 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 91 | | 100.0 | | 90.9 | 44 | 113 | | | |
| | | | ~~ | T | | | | | | |
| Sample ID Icsd-14520 | Sampl | ype: LC | SD | les | Code: El | PA Method | 82/0C: Semi | volatiles | | |
| Client ID: LCSS02 | Batch | 1 ID: 14 | 520 | F | lunNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis D | ate: 7/ | 31/2014 | S | eqNo: 5 | 90033 | 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 | 40 | 000.0 | 0 | | | | | | |
| | + | 10 | 200.0 | 0 | 84.4 | 48.5 | 104 | 11.7 | 22.5 | |
| 1,4-Dichlorobenzene | 73 | 10 | 200.0 | 0 | 84.4 73.3 | 48.5 39.5 | 104 106 | 11.7 8.19 | 22.5 24.6 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene | 73 73 | 10 10 10 | 200.0 100.0 100.0 | 0 0 | 84.4 73.3 73.1 | 48.5 39.5 45.4 | 104 106 107 | 11.7 8.19 11.9 | 22.5 24.6 25.3 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine | 73 73 85 | 10 10 10 10 | 100.0 100.0 100.0 100.0 | 0 0 0 | 84.4 73.3 73.1 84.9 | 48.5 39.5 45.4 50.4 | 104 106 107 119 | 11.7 8.19 11.9 6.98 | 22.5 24.6 25.3 23.6 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol | 73 73 85 110 | 10 10 10 10 10 | 100.0 100.0 100.0 200.0 | 0 0 0 0 | 84.4 73.3 73.1 84.9 52.7 | 48.5 39.5 45.4 50.4 15.5 | 104 106 107 119 62.2 | 11.7 8.19 11.9 6.98 1.69 | 22.5 24.6 25.3 23.6 34.7 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol | 73 73 85 110 150 | 10 10 10 10 20 | 200.0 100.0 100.0 200.0 200.0 | 0 0 0 0 0 | 84.4 73.3 73.1 84.9 52.7 72.9 | 48.5 39.5 45.4 50.4 15.5 23.5 | 104 106 107 119 62.2 93.5 | 11.7 8.19 11.9 6.98 1.69 0.275 | 22.5 24.6 25.3 23.6 34.7 32.8 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol | 73 73 85 110 150 100 | 10 10 10 10 20 10 | 200.0 100.0 100.0 200.0 200.0 200.0 | 0 0 0 0 0 0 | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 | 104 106 107 119 62.2 93.5 65.6 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene | 73 73 85 110 150 100 89 | 10 10 10 10 20 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 | 0 0 0 0 0 0 0 0 | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 | 104 106 107 119 62.2 93.5 65.6 108 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene | 73 73 85 110 150 100 89 68 | 10 10 10 10 20 10 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 100.0 | | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 | 104 106 107 119 62.2 93.5 65.6 108 106 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol | 73 73 85 110 150 100 89 68 140 | 10 10 10 10 20 10 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 100.0 200.0 | | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.4 68.8 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 | 104 106 107 119 62.2 93.5 65.6 108 106 85.8 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 | 73 73 85 110 150 100 89 68 140 110 | 10 10 10 10 20 10 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 100.0 200.0 200.0 | | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 53.9 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 | 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 0 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | 73 73 85 110 150 100 89 68 140 110 170 | 10 10 10 10 20 10 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 | | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 53.9 86.5 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 26 | 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 138 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 0 0 0 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 0 | |
| 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | 73 73 85 110 150 100 89 68 140 110 170 88 | 10 10 10 10 20 10 10 10 | 200.0 100.0 100.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 | | 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 53.9 86.5 88.1 | 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 26 47.5 | 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 138 138 119 | 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 0 0 0 0 | 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 0 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

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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

WO#: 1407D12

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

| Sample ID Icsd-14520 | SampType | Code: El | ode: EPA Method 8270C: Semivolatiles | | | | | | |
|-----------------------|----------------|--------------|--------------------------------------|---------|----------|-------------|------|----------|------|
| Client ID: LCSS02 | Batch ID: | : 14520 | R | unNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis Date: | : 7/31/2014 | S | eqNo: 5 | 90033 | Units: µg/L | | | |
| Analyte | Result P | QL 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

15-Aug-14

1407D12

WO#:

ed

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

| Sample ID | 1407d12-001b dup | SampType | DUP | Tes | Code: | SM2510B: Sp | pecific Condu | uctance | | |
|--------------|------------------|----------------|--------------|-------------|-------|-------------|---------------|---------|----------|------|
| Client ID: | Injection Well | Batch ID: | R20245 | F | unNo: | 20245 | | | | |
| Prep Date: | | Analysis Date: | 7/29/2014 | S | eqNo: | 588403 | Units: µmho | os/cm | | |
| Analyte | | Result P | QL SPK value | SPK Ref Val | %REC | C LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Conductivity | L. | 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

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1407D12

15-Aug-14

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | West Injec | ern Refining Southwest, Inc. tion 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
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- Reporting Detection Limit RL

| Client: Project: | Western Injection | Refining S 1 Well 7-28 | Southwes 3-14 3rd | st, Inc. QTR | | | | | | | |
|---------------------|----------------------|---------------------------|----------------------|-----------------|-------------|----------|-------------|---------------|-----------|----------|------|
| Sample ID | MB-14549 | Samp | Type: ME | BLK | Test | Code: E | PA 6010B: " | Total Recover | able Meta | lls | |
| Cilent ID: | PBW | Batc | h ID: 14 | 549 | R | unNo: 2 | 0323 | | | | |
| Prep Date: | 8/1/2014 | Analysis I | Date: 8 / | 2/2014 | s | eqNo: 5 | 90696 | 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 | | | | | | | | |
| Maanesium | | ND | 1.0 | | | | | | | | |
| Potassium | | ND | 1.0 | | | | | | | | |
| Selenium | | ND | 0.050 | | | | | | | | |
| Silver | | ND | 0.0050 | | | | | | | | |
| Sodium | | ND | 1.0 | | | | | | | | |
| Sample ID | LCS-14549 | Samp | Туре: LC | S | Tes | tCode: E | PA 6010B: | Total Recover | able Meta | als | |
| Client ID: | LCSW | Bato | h ID: 14 | 549 | F | lunNo: 2 | 0323 | | | | |
| Prep Date: | 8/1/2014 | Analysis I | Date: 8/ | 2/2014 | S | SeqNo: 5 | 90697 | 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 | Samp | Type: LC | s | Tes | tCode: E | PA 6010B: | Total Recover | able Meta | als | |
| Client ID: | LCSW | Bato | ch ID: 14 | 549 | F | RunNo: 2 | 20323 | | | | |
| Prep Date: | 8/1/2014 | Analysis | Date: 8/ | 2/2014 | 2 | SeqNo: 5 | 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 Lovel.
- Value above quantitation range Е
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Н

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- Not Detected at the Reporting Limit ND
- Ρ Sample pH greater than 2.
- Reporting Detection Limit RL

WO#: 15-Aug-14

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

| Sample ID | 1407d12-001b dup | SampType | : DU | Р | Test | Code: | SM4500-H+E | 3: pH | | | |
|------------|------------------|---------------|--------------|-----------|-------------|-------|------------|--------------------|------|----------|------|
| Client ID: | Injection Well | Batch ID | : R2 | 0245 | R | unNo: | 20245 | | | | |
| Prep Date: | | Analysis Date | : 7 E | 29/2014 | S | eqNo: | 588388 | Units: pH u | nits | | |
| Analyte | | Result P | QL | SPK value | SPK Ref Val | %RE | C LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| pН | | 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

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- 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

)#: 1407D12 15-Aug-14

WO#: 1407D1

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | Western Refining Southwest Injection Well 7-28-14 3rd Q | t, Inc. QTR | | | | |
|-------------------------------------|--|-----------------------|----------------------|-------------------|------------|------|
| Sample ID mb-1 | SampType: MBL | LK Te | stCode: SM2320B: A | lkalinity | | |
| Client ID: PBW | Batch ID: R20 | 245 | RunNo: 20245 | | | |
| Prep Date: | Analysis Date: 7/2 | 9/2014 | SeqNo: 588355 | Units: mg/L CaCO3 | | |
| Analyte Total Alkalinity (as CaC | Result PQL 3 | SPK value SPK Ref Va | %REC LowLimit | HighLimit %RPI | D RPDLimit | Qual |
| Sample ID Ics-1 | SampType: LCS | s Te | stCode: SM2320B: A | Ikalinity | | |
| Client ID: LCSW | Batch ID: R20 | 245 | RunNo: 20245 | | | |
| Prep Date: | Analysis Date: 7/2 | 9/2014 | SeqNo: 588356 | Units: mg/L CaCO3 | | |
| Analyte | Result PQL | SPK value SPK Ref Val | %REC LowLimit | HighLimit %RPI | D RPDLimit | Qual |
| Total Alkalinity (as CaC | O3) 80 20 | 80.00 0 | 100 90 | 110 | | |
| Sample ID mb-2 | SampType: MBL | L K Te | stCode: SM2320B: A | Ikalinity | | |
| Client ID: PBW | Batch ID: R20 | 245 | RunNo: 20245 | | | |
| Prep Date: | Analysis Date: 7/2 | 9/2014 | SeqNo: 588376 | Units: mg/L CaCO3 | i | |
| Analyte | Result PQL | SPK value SPK Ref Va | %REC LowLimit | HighLimit %RPI | D RPDLimit | Qual |
| Total Alkalinity (as CaC | 03) ND 20 | | | | | |
| Sample ID Ics-2 | SampType: LCS | 3 Te | stCode: SM2320B: A | lkalinity | | |
| Client ID: LCSW | Batch ID: R20 | 245 | RunNo: 20245 | | | |
| Prep Date: | Analysis Date: 7/2 | 9/2014 | SeqNo: 588377 | Units: mg/L CaCO3 | \$ | |
| Analyte | Result PQL | SPK value SPK Ref Va | 8 WREC LowLimit | HighLimit %RPI | D RPDLimit | Qual |
| Total Alkalinity (as CaC | 03) 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

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1407D12 15-Aug-14

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: | Western Refining Southwest, Inc. |
|-----------|----------------------------------|
| Developed | Introduce Wall 7 09 14 2nd OTD |

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

| Sample ID MB-14475 | SampType: MBLK | TestCode: SM2540C M | OD: 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 M | OD: 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.
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
 - Sample pH greater than 2. Ρ
 - RL Reporting Detection Limit

Page 20 of 20

| HALL ENVIRONMENTAL ANALYSIS LABORATORY | Hall Environmental A Albua TEL: 505-345-3975 I Website: www.hal | Analysis Laborato 4901 Hawkins I querque, NM 871 FAX: 505-345-41 lenvironmental.co | NE 09 Sam 07 07 | ole Log-In Che | eck List |
|---|--|--|---------------------------------|----------------|------------------|
| Client Name: Western Refining Southw | Work Order Number: | 1407D12 | | RoptNo: 1 | |
| Received by/date: A-07/29/19 | | | <u> </u> | | |
| Logged By: Anne Thorne 7 | /29/2014 7:55:00 AM | | ami Im | - | |
| Completed By: Anne Thorne 7 | /29/2014 | | anne Sham | ~ | |
| Reviewed By: MA 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 | of >0° C to 6.0°C | Yes 🔽 | No 🗌 | | |
| 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 viais have zero headspace? | | Yes 🗹 | No 🗌 | No VOA Viais | |
| 11. Were any sample containers received broker | 1? · | Yes | No 🗹 | # of preserved | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | | Yes 🗹 | No 🗌 | for pH: | 12 uhless noted) |
| 13. Are matrices correctly identified on Chain of C | Sustody? | Yes 🗹 | No 🗌 | Adjusted? | 0 |
| 14. Is it clear what analyses were requested? | | Yes 🗹 | No | | 08 |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | | Yes 🗹 | No 🗌 | Checked by: | |
| Special Handling (if applicable) | | | | | |
| 19 Was diant patified of all discrepancies with th | is order? | Yes 🗌 | No | NA 🔽 | |

| Person Notified: | | Date | an star the star star | |
|---------------------|---|--|---|---|
| By Whom: | B | Via: 🗌 eMail [| Phone 🗌 Fax | In Person |
| Regarding: | م ال الم المركز الم الم الم الم الم الم الم الم الم الم | na an an an an an an an an an an an an a | Selection and the state of the second second second | ng a sigar sa sa sa sa sa sa sa sa sa sa sa sa sa |
| Client Instructions | : | | | |

17. Additional remarks:

18. Cooler Information

| ľ | Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1 | | 1.0 | Good | Yes | | | |

.

| | | www.hallenvironmental.com | 4901 Hawkins NE - Albuquerque, NM 87109 | Tel. 505-345-3975 Fax 505-345-4107 | Analysis Request | 1 1 1 2 2 3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | 5 2 2 3 2 5 5 5 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | | | ВТЕХ + МТ ТРН 8015В РАН'5 (8310 8270 (56mi 8270 (56mi 8270 (56mi 8270 (56mi 8270 (56mi | | | | | | X | | | | arks: | | | itty. Any sub-contracted data will be clearly notated on the analytical report. |
|-------------------------|-------------------------|---------------------------|---|------------------------------------|----------------------|---|--|--|-------------------------------|---|------------------------------------|-----------------|--------|-------------|-------------------|-----------------|-------------------|-----------------------|--|------------------------------|--------------------------|---|---|
| im-Around Time: | Standard 🗆 Rush | oject Name: | Trijection-Well 3mgTR | oject#: | | oject Manager: | 208) |) \$,{ | ampler: Bob | Container Preservative | 3-VOA Hel -cui | -liter amber 00 | -500-1 | -500ml -201 | -250-1 H2 SON 201 | -500ml HNO3 201 | -520ml Na OH -201 | -Storm Acetate -201 | | teceived by: Date Time Ren | Mistry Web, 1/28/4 1452 | teceivedroy. Langer 11 and 11 | tracted to other accredited laboratories. This serves as notice of this possi |
| Chain-of-Custody Record | Cliente Western Reguiug | J- | Mailing Address: #56 CP 4990 | Rhom Field, NN BYH/3 Pr | Phone # 505-632-4/35 | email or Fax#: | QA/QC Package: | 🗶 Standard 🛛 🗆 Level 4 (Full Validation) | Accreditation Si NELAP Dother | Date Time Matrix Sample Request ID | 236-10 9; 30 Ha O Idjection Well 2 | | | | | · · | | | | Date: Time: Relinquished by: | 29.14 1452 Robert Kaleon | Date: Time: Relinquished by: | If necessary cannot submitted to Hall Environmental may be subcon |

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109



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

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 | Labora | ntory, Inc. | | , | Lab Order 1410102 Date Reported: 10/23/20 | 14 |
|--|---------------------|-------------|---------------------------------------|---|--|--------|
| CLIENT: Western Refining Southwest, In Project: Injection Well 4th QTR 10-1-14 Lab ID: 1410102-001 | ic. 4 Matrix: | AQUEOUS | Client Samp Collection Received | l e ID: Injo Date: 10/ Date: 10/ | ection Well 1/2014 10:00:00 AM 2/2014 6:50:00 AM | |
| Analyses | Result | RL Qu | al 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 |
| FPA 6010B: TOTAL RECOVERABLE ME | TALS | | | | Analyst: | ELS |
| Arsonic | ND | 0.020 | ma/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Arachio | 0.20 | 0.020 | ma/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 | ma/L | 5 | 10/10/2014 9:28:28 AM | 15825 |
| Chromium | ND | 0.0060 | ma/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Lead | ND | 0.0050 | ma/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 |
| Acepaphthylene | 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(a,h,i)pervlene | 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 |
| Benzvi 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 |
| | | | ~ 100 | | | |

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 Page 2 of 18

Analytical Report

P Sample pH greater than 2.

RL Reporting Detection Limit

| - | ······································ | | | 1 | | |
|-----------------|--|----------|----------|------------|-------------------------------|------|
| CLIENT: | Western Refining Southwest, Inc | . | C | lient Sam | ple ID: Injection Well | |
| Project: | Injection Well 4th OTR 10-1-14 | | | Collection | n Date: 10/1/2014 10:00:00 AM | |
| Lab ID: | 1410102-001 | Matrix: | AQUEOUS | Received | d Date: 10/2/2014 6:50:00 AM | |
| Analyses | | Result | RL Qual | Units | DF Date Analyzed Ba | atch |
| EPA MET | HOD 8270C: SEMIVOLATILES | | 4.000.00 | | Analyst: D/ | AM |
| 2-Chloro | naphthalene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 2-Chloro | phenol | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 4-Chloro | phenyl phenyl ether | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Chrysen | 8 | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Di-n-buty | /i phthalate | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Di-n-octy | /i phthalate | ND | 20 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Dibenz(a | i,h)anthracene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Dibenzof | furan | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 1,2-Dichl | lorobenzene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 1,3-Dichl | lorobenzene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 1,4-Dichl | lorobenzene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 3,3'-Dich | lorobenzidine | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Diethyl p | hthalate | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Dimethyl | phthalate | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 2,4-Dichl | lorophenol | ND | 20 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 2,4-Dime | ethylphenol | ND | 10 | μg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 4,6-Diniti | ro-2-methylphenol | ND | 20 | μg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 2,4-Diniti | rophenol | ND | 20 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| 2,4-Diniti | rotoluene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| 2,6-Diniti | rotoluene | ND | 10 | μg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Fluoranti | nene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Fluorene | | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Hexachio | probenzene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Hexachic | probutadiene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Hexachic | procyclopentadiene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 0/4/ |
| Hexachic | proethane | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 0/4/ |
| Indeno(1 | ,2,3-cd)pyrene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| Isophoro | ne | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 747 |
| 1-Methyl | naphthalene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PW 15 | -747 |
| 2-Methyl | naphthalene | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PW 15 | -747 |
| 2-Methyl | phenol | ND | 20 | µg/L | 1 10/9/2014 9:16:21 PW 15 | 5/4/ |
| 3+4-Meth | nylphenol | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PW 15 | 747 |
| N-Nitros | odi-n-propylamine | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 747 |
| N-Nitros | odimethylamine | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 747 |
| N-Nitroso | oaipnenylamine | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| Naphthal | | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | -747 |
| 2-Nitroar | | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5747 |
| 3-Nitroar | niline | ND | 10 | µg/L | 1 10/9/2014 9:16:21 PM 15 | 5/4/ |
| 4-Nitroar | niline | ND | 10 | րց/բ | 1 10/9/2014 9:16:21 PM 15 | 0/4/ |

Hall Environmental Analysis Laboratory, Inc.

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

| Kele | IUU | le QC Summary report and sample login check | list for hage | ged QC data and preservation |
|-------------|-----|---|---------------|--------------------------------------|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detected in the associated M |
| | E | Value above quantitation range | H | Holding times for preparation or an |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. |
| | | | | |

R RPD outside accepted recovery limits

Spike Recovery outside accepted recovery limits S

Method Blank

alysis exceeded

Page 3 of 18

RL Reporting Detection Limit

Lab Order 1410102 Date Reported: 10/23/2014

Analytical Report

| Hall Ei | nvironmental Analysis | s Labora | ntory, Inc. | | | Lab Order 1410102 Date Reported: 10/23/20 |)14 |
|-----------|--------------------------------|----------|-------------|--------------|------------|--|--------|
| CLIENT: | Western Refining Southwest, Ir | nc. | | Client Sampl | e ID: Inje | ection Well | |
| Project: | Injection Well 4th QTR 10-1-1- | 4 | | Collection] | Date: 10/ | 1/2014 10:00:00 AM | |
| Lab ID: | 1410102-001 | Matrix: | AQUEOUS | Received 1 | Date: 10/ | 2/2014 6:50:00 AM | |
| Analyses | | Result | RL Qua | al Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 8270C: SEMIVOLATILES | | | | | Analyst: | DAM |
| Nitroben | zene | ND | 10 | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Nitroph | nenol | ND | 10 | μg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Nitroph | nenol | ND | 10 | μg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Pentachl | orophenol | ND | 20 | μg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Phenanti | hrene | 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-Tri | chlorobenzene | ND | 10 | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4,5-Tri | chlorophenol | ND | 10 | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4,6-Tri | chlorophenol | ND | 10 | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2 | 2-Fluorophenol | 59.4 | 12.1-85.8 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: I | Phenol-d5 | 52.8 | 17.7-65.8 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2 | 2,4,6-Tribromophenol | 83.8 | 26-138 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 1 | Nitrobenzene-d5 | 76.3 | 47.5-119 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2 | 2-Fluorobiphenyl | 68.0 | 48.1-106 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 4 | 1-Terphenyl-d14 | 69.3 | 44-113 | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| EPA MET | HOD 8260B: VOLATILES | | | | | Analyst: | RAA |
| Benzene | 1 | 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 |
| Ethylben | zene | ND | 5.0 | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Methyl te | ert-butyl ether (MTBE) | ND | 5.0 | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2,4-Tri | methylbenzene | ND | 5.0 | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1.3.5-Tri | methylbenzene | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dichl | oroethane (EDC) | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dibro | omoethane (EDB) | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Naphtha | lene | ND | 10 | ug/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1-Methyl | naphthalene | ND | 20 | ug/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Methyl | naphthalene | 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 |
| Bromobe | enzene | ND | 5.0 | ug/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromodi | chloromethane | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromofo | rm | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromom | ethane | ND | 15 | µq/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Butanc | one | ND | 50 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Carbon o | lisulfide | ND | 50 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Carbon 7 | Fetrachloride | ND | 5.0 | ug/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Chlorohe | enzene | ND | 5.0 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Chloroet | hane | ND | 10 | μg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| | | | | , v - | | | |

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

 $B \quad \ \ Analyte \ detected \ in \ the \ associated \ Method \ Blank$

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit Page 4 of 18

Analytical Report

P Sample pH greater than 2.

RL Reporting Detection Limit

| Hall Environmental Analysi | | Lab Order 1410102 Date Reported: 10/23/2014 | | | | |
|---|-----------------------|---|-------|----|-----------------------|--------|
| CLIENT: Western Refining Southwest, In Project: Injection Well 4th QTR 10-1-1 Lab ID: 1410102-001 | nc. 4 Matrix: A | Client Sample ID: Injection Well Collection Date: 10/1/2014 10:00:00 AM 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 Page 5 of 18

Analytical Report

- P Sample pH greater than 2.
- RL Reporting Detection Limit

Analytical Report
Lab Order 1410102

Date Reported: 10/23/2014

Hall Environmental Analysis Laboratory, Inc.

| CLIENT: Western Refining Southwest, Inc. | 2. | | C | lient Sample I | D: Inj | jection Well | | | | |
|--|---------|--|------|----------------|---------------|-----------------------|--------|--|--|--|
| Project: Injection Well 4th QTR 10-1-14 | | Collection Date: 10/1/2014 10:00:00 AM | | | | | | | | |
| Lab ID: 1410102-001 | Matrix: | AQUEOU | S | Received Da | te: 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 | | | |
| рН | 7.08 | 1.68 | Н | 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 SO | IDS | | | | | 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. | В | 3 Analyte detected in the associated Method Blank | | | |
|-------------|---|---|----|--|---------------|--|--|
| | Е | Value above quantitation range | Н | Holding times for preparation or analysis exceeded | | | |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 6 of 18 | | |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | 1 450 0 01 10 | | |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit | | | |
| | S | Spike Recovery outside accepted recovery limits | | | | | |
| | | | | | | | |

Anatek Labs, Inc.

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

Analytical Results Report

| Sample Number Client Sample ID Matrix Comments | 141003043-001 1410102-001E / INJE(Water | Sampi CTION WELL Samp | ing Date | 10/1/2014 | Date/ Samp | ling Time | 1:30 PM | |
|---|--|-----------------------------|--------------------------------|-----------|---|--------------------------|---|-----------|
| B | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
| Cyanide (react Flashpoint pH Reactive sulfid | ivə) | ND >200 6.82 3.01 | mg/L °F ph Units mg/L | 1 | 10/15/2014 10/15/2014 10/8/2014 10/15/2014 | CRW KFG KJS HSW | SW846 CH7 EPA 1010 SM 4500pH-B SW846 CH7 | |

Authorized Signature

John Coddingtoy, Lab Manager

MCL EPA's Maximum Contaminant Level

ND Not Detected

PQ1. 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.

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:C595; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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

| Client: Address: | HALL ENVIRONMENTAL ANALYSIS LAB 4901 HAWKINS NE SUITE D | Batch #: Project Name: | 141003043 1410102 | |
|---------------------|--|---------------------------|----------------------|--|
| | ALBUQUERQUE, NM 87109 | | · · | |
| Attn: | ANDY FREEMAN Analytical Results F | Report | | |

Quality Control Data

| Lab Control Sa | mple | | | | | | | | | | |
|---|---|------------------------------|--------------------------------|------------------------------|-------------------|-----------------------|-----------------------------|----------------------|--------------------------------|---------------------------------------|---|
| Parameter Reactive sulfide CyanIde (reactive) | | LCS Result 0.180 0.519 | Units mg/L mg/L | LCS S 0.2 0.2 | pike | %Rec 90.0 103.8 | AR 1 70 80 | %Rec -130 -120 | Prep 10/15 10/15 | Date //2014 //2014 | Analysis Date 10/15/2014 10/15/2014 |
| Matrix Spike Sample Number 141003043-001 141003043-001 | Parameter Reactive sulfide Cyanide (reactive) | | Sample Result 3.01 ND | MS Result 3.77 2.41 | Uni mga mga | ts /L /L | MS Spike 0.767 2.5 | %Rec 99.1 96.4 | AR %Rec 70-130 80-120 | Prep Date 10/15/2014 10/15/2014 | Analysis Date 4 10/15/2014 4 10/15/2014 |
| Matrix Spike Do Parameter Cyanide (reactive) | uplicate | MSD Result 2.41 | Units mg/L | MSD Spike 2.5 | %l 9 | Rec 6.4 | %RPD 0.0 | AR %RPI 0-25 |) Pre 10/ | ep Date 15/2014 | Analysis Date 10/15/2014 |
| Method Blank Parameter Cyanlde (reactive) Reactive sulfide |) | | Re N | sult. ND ND | L r | Inits ng/L ng/L | | PQL 1 1 | P 10 10 | rep Date /15/2014 /15/2014 | Analysis Date 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:ID200301-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cen0095; FL(NELAP); E871099

| Client: | Western Refining Southwest | , Inc. | |
|---------|----------------------------|--------|--|

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

| Sample ID | MB | SampT | ype: ME | BLK | Test | tCode: El | PA Method | 300.0: Anion | 6 | | |
|--|-------------|---|--|---|-----------------------------------|---|--|---|-----------|----------|------|
| Client ID: | PBW | Batch | i ID: R2 | 1640 | R | lunNo: 2 | 1640 | | | | |
| Prep Date: | | Analysis D | ate: 10 |)/2/2014 | S | SeqNo: 6 | 34799 | 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 | SampT | ype: LC | S | Tes | tCode: El | PA Method | 300.0: Anion | 5 | | |
| Sample ID Client ID: | LCS LCSW | SampT Batch | ype: LC | S 1640 | Tes F | tCode: El RunNo: 2 | PA Method 1640 | 300.0: Anion | 5 | | |
| Sample ID Client ID: Prep Date: | LCS LCSW | SampT Batch Analysis D | ype: LC 1 ID: R2 ate: 10 | S 1640)/2/2014 | Tes F S | tCode: El RunNo: 2 GeqNo: 6 | PA Method 1640 34800 | 300.0: Anion Units: mg/L | 5 | | |
| Sample ID Client ID: Prep Date: Analyte | LCS LCSW | SampT Batch Analysis D Result | ype: LC n ID: R2 vate: 10 PQL | S 1640 5/2/2014 SPK value | Tes F S SPK Ref Val | tCode: El RunNo: 2 SeqNo: 6 %REC | PA Method 1640 34800 LowLimit | 300.0: Anion Units: mg/L HighLimit | s %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | LCS LCSW | SampT Batch Analysis D Result 4.7 | ype: LC 1D: R2 Pate: 10 PQL 0.50 | S 1640 0/2/2014 SPK value 5.000 | Tes F S SPK Ref Val 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 94.0 | PA Method 1640 34800 LowLimit 90 | 300.0: Anion Units: mg/L HighLimit 110 | s %RPD | RPDLimit | Qual |

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

Page 7 of 18

1410102 23-Oct-14

Client: Western Refining Southwest, Inc.

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

| ····· | · | | | | | · · · · | | | | |
|--------------------------------|------------|----------|-----------|-------------|-------------------|-----------|-------------|-------|----------|------|
| Sample ID 5ml-rb | SampT | ype: ME | 3LK | Test | tCode: El | PA Method | 8260B: VOLA | TILES | | |
| Client ID: PBW | Batch | 1 ID: R2 | 1653 | R | tunNo: 2 1 | 1653 | | | | |
| Prep Date: | Analysis D | ate: 10 |)/3/2014 | S | eqNo: 6 | 36225 | 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 | | | | | | | | |

Qualifiers:

2,2-Dichloropropane

* Value exceeds Maximum Contaminant Level.

ND

2.0

- Е Value above quantitation range
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - Р Sample pH greater than 2.
 - Reporting Detection Limit RL

Page 8 of 18

1410102

WO#:

23-Oct-14

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

| Sample ID 5ml-rb | SampTy | ype: ME | BLK | Test | tCode: El | PA Method | 8260B: VOLA | TILES | | |
|-----------------------------|------------|---------------|-----------|-------------|-----------|------------|-------------|--------|----------|------|
| Client ID: PBW | Batch | ID: R2 | 1653 | Я | lunNo: 2 | 1653 | | | | |
| Prep Date: | Analysis D | ate: 10 | 0/3/2014 | S | SeqNo: 6 | 36225 | 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 Ics | Samp1 | Type: LO | CS | Tes | stCode: E | EPA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSW | Batcl | h ID: R | 21653 | 1 | RunNo: : | 21653 | | | | |
| Prep Date: | Analysis D | Date: 1 | 0/3/2014 | | 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. *
- Value above quantitation range E
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- Sample pH greater than 2. Р
- RL Reporting Detection Limit

23-Oct-14

Client: Western Refining Southwest, Inc.

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

| Sample ID 100ng Ics | SampT | ype: LC | s | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
|-----------------------------|------------|----------|-----------|-------------|----------|-----------|-------------|--------|----------|------|
| Client ID: LCSW | Batch | 1 ID: R2 | 1653 | F | RunNo: 2 | 1653 | | | | |
| Prep Date: | Analysis D | ate: 10 | 0/3/2014 | 8 | SeqNo: 6 | 36227 | 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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Western Refining Southwest, In- | c. |
|---|----|
|---|----|

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

| Sample ID mb-15747 | SampType | : MBLK | Tes | tCode: EP/ | A Method | 8270C: Semiv | olatiles | | |
|-----------------------------|---------------|--------------|-------------|------------|----------|--------------|----------|----------|------|
| Client ID: PBW | Batch ID | : 15747 | R | RunNo: 218 | B03 | | | | |
| Prep Date: 10/7/2014 | Analysis Date | : 10/9/2014 | S | BeqNo: 64(| 0784 | Units: µg/L | | | |
| Analyte | Result P | QL 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

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Client: Western Refining Southwest, Inc.

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

| Sample ID mb-15747 | SampTy | ype: MI | 3LK | Tes | tCode: El | PA Method | 8270C: Semi | volatiles | | |
|----------------------------|-------------|---------|-----------|-------------|-----------|-----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch | ID: 15 | 747 | F | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis Da | ate: 1 | 0/9/2014 | S | GeqNo: 6 | 40784 | 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. *
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
 - Р Sample pH greater than 2.
- RL Reporting Detection Limit

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Western Refining Southwest, Inc. **Client:**

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

| Sample ID Ics-15747 | SampT | ype: LC | S | Tes | tCode: El | PA Method | 8270C: Semi | /olatiles | | |
|----------------------------|------------|----------|-----------|-------------|-----------|-----------|-------------|-----------|----------|------|
| Client ID: LCSW | Batch | 1D: 15 | 747 | F | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis D | ate: 10 |)/9/2014 | S | GeqNo: 6 | 40785 | 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 Icsd-15747 | SampT | ype: LC | SD | Tes | tCode: E | PA Method | 8270C: Semi | volatiles | | |
| Client ID: LCSS02 | Batch | 1 ID: 15 | 747 | F | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis D | ate: 10 |)/9/2014 | 5 | SeqNo: 6 | 40786 | Units: µg/L | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |

| 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 | |
| Phenoi | 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.

Value above quantitation range Е

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Page 13 of 18

- Р Sample pH greater than 2.
- Reporting Detection Limit RL

1410102 23-Oct-14

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

| Sample ID Icsd-15747 | SampType: | LCSD | Tes | tCode: E | PA Method | 8270C: Semi | volatiles | | |
|-----------------------|----------------|-------------|-------------|----------|-----------|-------------|-----------|----------|------|
| Client ID: LCSS02 | Batch ID: | 15747 | R | lunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis Date: | 10/9/2014 | S | SeqNo: 6 | 40786 | Units: µg/L | | | |
| Analyte | Result PC | L SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Quai |
| Surr: 4-Terphenyl-d14 | 81 | 100.0 | | 80.9 | 44 | 113 | 0 | 0 | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Value above quantitation range Е
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- в Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
 - р Sample pH greater than 2.
 - Reporting Detection Limit RL

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1410102

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 RPDL | imit Qual |
| Мегсигу | ND 0.00020 | | | |
| | | | | |
| Sample ID LCS-15770 | SampType: LCS | TestCode: EPA Method | 7470: Mercury | |
| Sample ID LCS-15770 Client ID: LCSW | SampType: LCS Batch ID: 15770 | TestCode: EPA Method RunNo: 21753 | 7470: Mercury | |
| Sample ID LCS-15770 Client ID: LCSW Prep Date: 10/7/2014 | SampType: LCS Batch ID: 15770 Analysis Date: 10/8/2014 | TestCode: EPA Method RunNo: 21753 SeqNo: 639034 | 7470: Mercury Units: mg/L | |
| Sample ID LCS-15770 Client ID: LCSW Prep Date: 10/7/2014 Analyte | SampType: LCS Batch ID: 15770 Analysis Date: 10/8/2014 Result PQL SPK value | TestCode: EPA Method RunNo: 21753 SeqNo: 639034 SPK Ref Val %REC LowLimit | I 7470: Mercury Units: mg/L HighLimit %RPD RPDL | .imit Qual |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
 - Sample pH greater than 2. Р
 - RL Reporting Detection Limit

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Western Refining Southwest, Inc.

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

| Sample ID MB-15825 | Samp | Туре: МВ | LK | Test | Code: EF | PA 6010B: 1 | Fotal Recover | able Meta | ls | |
|---|--|--|--|---|--|--|---|-------------------|-------------------------|------|
| Client ID: PBW | Bato | h ID: 158 | 325 | R | tunNo: 2' | 1801 | | | | |
| Prep Date: 10/9/2014 | Analysis | Date: 10 | /10/2014 | s | eqNo: 64 | 40639 | 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-15828 | 5 Samp | Type: LC | S | Tes | tCode: El | PA 6010B: 1 | Fotal Recover | able Meta | lls | |
| Sample ID LCS-15828 Client ID: LCSW | 5 Samp Bato | Type: LC | S 825 | Tes R | tCode: El RunNo: 2' | PA 6010B: 1 1801 | Fotal Recover | able Meta | lls | |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 | 5 Samp Bato Analysis | Type: LC ch ID: 15 Date: 10 | S 825 0/10/2014 | Tes R S | tCode: El RunNo: 2 SeqNo: 6 | PA 6010B: 1 1801 40640 | Total Recover | able Meta | lls | |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte | 5 Samp Bato Analysis Result | Type: LC ch ID: 15 Date: 10 PQL | S 325 0/10/2014 SPK value | Tesi R SPK Ref Val | tCode: El RunNo: 2 SeqNo: 6 %REC | PA 6010B: T 1801 40640 LowLimit | Total Recover Units: mg/L HighLimit | able Meta %RPD | I IS RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic | 5 Samp Bato Analysis Result 0.52 | Type: LC ch ID: 15 Date: 10 PQL 0.020 | S 825 0/10/2014 SPK value 0.5000 | Tesi R S SPK Ref Val 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 | PA 6010B: 1 1801 40640 LowLimit 80 | Total Recover Units: mg/L HighLimit 120 | able Meta %RPD | n ls RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium | 5 Samp Bato Analysis Result 0.52 0.49 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 | S 325 3/10/2014 SPK value 0.5000 0.5000 | Tesi R SPK Ref Val 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 | PA 6010B: 1 1801 40640 LowLimit 80 80 | Total Recover Units: mg/L HighLimit 120 120 | able Meta | n ls RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium | 5 Samp Bato Analysis Result 0.52 0.49 0.49 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 0.0020 | S 325)/10/2014 SPK value 0.5000 0.5000 0.5000 | Tesi F SPK Ref Val 0 0 0 0 | tCode: El RunNo: 2 SegNo: 6 %REC 104 98.9 98.9 98.9 | PA 6010B: 1 1801 40640 LowLimit 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 | able Meta | n ls RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium | 5 Samp Bato Analysis Result 0.52 0.49 0.49 0.49 52 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 0.0020 1.0 | S 325 3/10/2014 SPK value 0.5000 0.5000 0.5000 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 | PA 6010B: 1 1801 40640 LowLimit 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 | able Meta | l is RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium | 5 Samp Bato Analysis <u>Result</u> 0.52 0.49 0.49 52 0.48 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 | S 325 325 325 325 325 325 325 325 325 325 | Tesi SPK Ref Val 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 | PA 6010B: 1 1801 40640 LowLimit 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 | able Meta | lls RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead | 5 Samp Bato Analysis <u>Result</u> 0.52 0.49 0.49 52 0.48 0.49 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 | S 325 325 325 325 325 325 325 325 325 325 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 98.9 104 96.8 97.6 | PA 6010B: 1 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 | able Meta | lls RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium | 5 Samp Bate Analysis Result 0.52 0.49 0.49 0.49 52 0.48 0.49 51 | Type: LC th ID: 151 Date: 10 PQL 0.020 0.0020 1.0 0.0060 0.0050 1.0 | S 325 0/10/2014 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 | PA 6010B: 1 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 | able Meta | RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium | 5 Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 | S 825 9/10/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 | PA 6010B: 7 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 | able Meta | RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium | 5 Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 0.50 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 1.0 0.050 | S 325 325 325 325 325 325 325 325 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 100 | PA 6010B: 7 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | able Meta | RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium Silver | 5 Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 0.50 0.10 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0050 1.0 1.0 1.0 0.050 0.0050 | S 325 325 327 325 325 325 325 325 325 325 325 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 100 102 | PA 6010B: 7 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | able Meta | RPDLimit | Qual |

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

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23-Oct-14

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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

| Sample ID mb-1 | SampType: MBLK | TestCode: SM2320B: A | kalinity | |
|---|--|--|--|---------------|
| 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 Ics-1 | SampType: LCS | TestCode: SM2320B: A | kalinity | |
| 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: A | kalinity | |
| Sample ID mb-2 Client ID: PBW | SampType: MBLK Batch ID: R21715 | TestCode: SM2320B: A RunNo: 21715 | kalinity | |
| Sample ID mb-2 Client ID: PBW Prep Date: | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 | kalinity Units: mg/L CaCO3 | |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit | kalinity Units: mg/L CaCO3 HighLimit %RPD | RPDLimit Qual |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte Total Alkalinity (as CaCO3) | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value ND 20 | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit | kalinity Units: mg/L CaCO3 HighLimit %RPD | RPDLimit Qual |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte Total Alkalinity (as CaCO3) | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value ND 20 SampType: LCS | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit TestCode: SM2320B: A | kalinity Units: mg/L CaCO3 HighLimit %RPD Ikalinity | RPDLimit Qual |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte Total Alkalinity (as CaCO3) Sample ID Ics-2 Client ID: LCSW | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value ND 20 SampType: LCS Batch ID: R21715 | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit TestCode: SM2320B: A RunNo: 21715 | kalinity Units: mg/L CaCO3 HighLimit %RPD Ikalinity | RPDLimit Qual |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte Total Alkalinity (as CaCO3) Sample ID Ics-2 Client ID: LCSW Prep Date: | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value ND 20 SampType: LCS Batch ID: R21715 Analysis Date: 10/6/2014 | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit TestCode: SM2320B: A RunNo: 21715 SeqNo: 637475 | kalinity Units: mg/L CaCO3 HighLimit %RPD Ikalinity Units: mg/L CaCO3 | RPDLimit Qual |
| Sample ID mb-2 Client ID: PBW Prep Date: Analyte Total Alkalinity (as CaCO3) Sample ID Ics-2 Client ID: LCSW Prep Date: Analyte | SampType: MBLK Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value ND 20 SampType: LCS Batch ID: R21715 Analysis Date: 10/6/2014 Result PQL SPK value | TestCode: SM2320B: A RunNo: 21715 SeqNo: 637474 SPK Ref Val %REC LowLimit TestCode: SM2320B: A RunNo: 21715 SeqNo: 637475 SPK Ref Val %REC LowLimit | kalinity Units: mg/L CaCO3 HighLimit %RPD kalinity Units: mg/L CaCO3 HighLimit %RPD | RPDLimit Qual |

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

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1410102 23-Oct-14

WO#:

QC SUMMARY REPORT

WO#: 1410102

23-Oct-14

| Hall | Environmenta | l Analysis | Laboratory, | Inc. |
|------|--------------|------------|-------------|------|
| | | ~ | U / | |

| 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 |
| Sample ID LCS-15759 Client ID: LCSW | SampType: LCS Batch ID: 15759 | TestCode: SM2540C MOD: Total Dissolved Solids RunNo: 21752 |
| Sample ID LCS-15759 Client ID: LCSW Prep Date: 10/7/2014 | SampType: LCS Batch ID: 15759 Analysis Date: 10/8/2014 | TestCode: SM2540C MOD: Total Dissolved Solids RunNo: 21752 SeqNo: 638742 Units: mg/L |
| Sample ID LCS-15759 Client ID: LCSW Prep Date: 10/7/2014 Analyte | SampType: LCS Batch ID: 15759 Analysis Date: 10/8/2014 Result PQL SPK value | TestCode: SM2540C MOD: Total Dissolved Solids RunNo: 21752 SeqNo: 638742 Units: mg/L SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual |

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

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| | 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 | | RoptNo: 1 | |
|---|-----------------------|------------|----------------|--|
| Received by/date: LM10/02/14 | | | | |
| Logged By: Anne Thorne 10/2/20 | 14 6:50:00 AM | anne Am | - | |
| Completed By: Anne Thorne 10/2/20 | 14 | Dune Alum | ~ | |
| Reviewed By: | N2 rel | States 201 | | |
| 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 | | | |
| | | | | |
| <u>Log In</u> | | | [7] | |
| 4. Was an attempt made to cool the samples? | Yes 🗹 | No 🗀 | | |
| 5. Were all samples received at a temperature of $>0^\circ$ (| C to 6.0°C Yes 🖌 | No 🗆 | | |
| | | | | |
| 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 preser | rved? Yes 🗹 | No 🗖 | | |
| 9. Was preservative added to bottles? | Yes 🗌 | No 🗹 | NA 🗆 | |
| 10 yrs () , , , , , , , , , , , , , , , , , , | Voc. M | No | No VOA Vials | |
| 10. VOA viais have zero neadspace? | | No 🔽 | | |
| 11. Were any sample containers received broken? | 165 | | # of preserved | 2.2 |
| 12. Does paperwork match bottle labels? | Yes 🗹 | No 🗔 | for pH: | STO . |
| (Note discrepancies on chain of custody) | | | (R2 g) | 12 unless noted |
| 13. Are matrices correctly identified on Chain of Custody | y? Yes 🗹 | No 🛄 | Adjusted | NU |
| 14. Is it clear what analyses were requested? | Yes 🔽 | No 🗌 | | t |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes 🗹 | No | Checked by: | A |
| <u>Special Handling (if applicable)</u> | | | | |
| 16 Was client notified of all discrepancies with this orde | er? Yes 🗌 | No 🗔 | NA 🗹 | |

| Person Notified: | Date |
|----------------------|--|
| By Whom: | Via: 🗌 eMail 📄 Phone 🗍 Fax 📋 In Person |
| Regarding: | |
| Client Instructions: | and the second second second second second second second second second second second second second second second |

4

17. Additional remarks:

18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1 | 1.3 | Good | Yes | | | |

| Editivity With Editorial Ruth Project Name: Project Name: Project Name: Project Name: Project Name: Project Name: NN Project Name: Sample: Project Name: | of-Custody Record | Im-Around Time: | HALI | L ENVIRONMENTAL |
|---|----------------------------|--|--|---|
| Turie Turie <th< td=""><td>FINING D</td><td>Standard 🗆 Rush</td><td></td><td>LYSIS LABORATORY</td></th<> | FINING D | Standard 🗆 Rush | | LYSIS LABORATORY |
| AC HORE ALL A | <u> </u> | oject Name: | www.ha | allenvironmental.com |
| Project #: Project With With With With With With With Wit | CR 4990 | INJECTION Well Por | 4901 Hawkins NE | - Albuquerque, NM 87109 |
| And Manager: And His Hubbles Y or NI And Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And His Hubbles Y or NI Project Manager: And Hubbles Y or NI Project Manager: And Hubbles Y or NI Project Manager: And Hubbles Y or NI Project Manager: And Hubbles Y or NI Project Manager: And Hubbles Y or NI Project Manager: And Hubbles Y or NI Provent Hubbles Y or NI And Hubbles Y or NI Provent Hubbles Y or NI And Hubbles Y or NI Provent Hubbles Y or NI And Hubbles Y or NI Provent Hubble And Hubble Provent Hubble And Hubble Provent Hubble And | JN 87413 PI | oject #: | Tel. 505-345-3975 | 5 Fax 505-345-4107 |
| Project Manager: Proj | 4135 | | | Analysis Request |
| Line | <u>0</u> _ | oject Manager: | b (O) (J) (J) | (†0) |
| Parter H.Lul Vandadori) Sample Request ID Sample Request ID Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID Type and # Type and # Sample Request ID The And # Sample Request Reporter Repo | | | (SM) | 5000 51000 51700 |
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| 1-Liter amber 2C(1) X X 1-Soonil X X X 1-Soonil NACH -CU X 1-Soonil Z -CU X 1-Soonil <td< td=""><td>INI. well</td><td>3-VOA HCI -cul</td><td></td><td></td></td<> | INI. well | 3-VOA HCI -cul | | |
| 1-500ml 1-500ml X X X 1-500ml 1-500ml X X X 1-500ml 1-500ml X X X 1-500ml 1-500ml X X X 1-500ml 1-500ml H4504 -CCl X 1-500ml 1-500ml H4504 -CCl X 1-500ml NdH -CCl X X 1-500ml NdH -CCl NdH | | 1-Liter auber 200 | | × |
| I-Seen I-Seen X X I-135 H-504 -CU X X I-560-11 H-504 -CU X X I-560-11 HV03 -COI X X Inv. Hold HV03 -COI X Inv. Received Dy: Date Time | | 122- [mog- | | × |
| I- 135 Hasson, Husson, -CU X X 1- Exon, HUO3 -COI X X 1- Exon, MacH -COI X X 1- Seon, MacH COI X X 1- Seon | | 1-500ml | × | |
| I-seoned HNO3 COI X I-seoned MacH -COI X I-seoned NacH -COI X Inserved by: Pate Time Received by: Date Time Received by: Date Time At Abuldat Iolno Ird Intervention | | - 125 1 H2SOH - CU | × | |
| The form the solution of the s | | -500 HNO3 -201 | | |
| The first the fi | | -seem! Nach -cul | | |
| Iby: Iby: Iby: Iby: Iby: Iby: Iby: Received by: Date Time Remarks: Iby: Received by: Iby: Iby: Iby: Received by: Iby: Iby: Iby: Received by: Iby: Iby: Iby: Iby: Iby: Iby: Iby: Iby: Iby: Iby: | | resorus ZN-Aceteral CO | | |
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| By: Received by: Date Time Remarks: <i>Fraken Muchu Wult 16/14 1421</i> By: Lublet Received by: <u>Bate Time</u> <i>L</i> [h/h/d. [] (h/h/h/h/h/h/h/h/h/h/h/h/h/h/h/h/h/h/h/ | | | | |
| The induction of the time date time the induction of the time | Hraken R | MINDATIC ANDE 16/14 1421 | Remarks: | |
| | t house | eceived by: Date Time | | |

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.



| Length | | Тор | Bottom | |
|-------------------------|-------|-------|--------|--|
| KB Adjustment | 15.00 | 0 | 15.0 | |
| 4-1/2" PL casing/tubing | | 15.00 | 15.00 | |
| | | | | |
| | | | | |
| | | | | |

WALSH ENGINEERING & PRODUCTION CORP.

Workover Cost Estimate

Western Refinery Southwest, Inc. AUTHORITY FOR EXPENDITURE

| Mall Name ; WDW #2 | | | Date: 2/2/ | 2016 |
|--|------------|-------------|--------------|------|
| Location: Sec 27, T29N, R11W, San Juan, NM | Objective: | Permanently | P&A Wellbore | |
| | | | | |
| I Workover Cente | Tangible | Intangible | Total | |
| Apphore and Mine | | | | |
| Completion Dig (19 hrs @ \$250/hr includes Mah de Mah, structure) | | 00 500 | 00 500 | |
| Completion Rig (18 mis @ \$250/nr, includes Mob-de-Mob, crew travel) | | 29,500 | 29,500 | |
| Completion Flatus/water nating (pump truck) | | | | |
| Compart | | 7,200 | 7,200 | |
| Tuhing Head and Mall Connection Fillings | | 24,650 | 24,650 | |
| Tubing (490, ft @ 2.20, ft/ft) | | | | |
| Sucker Pada (50 rada 30 60 finad) | | | | |
| Dours bolo nump | | | | |
| Downhole pump | | | | |
| Pontols (topks, oto) | | 4 700 | | |
| Trucking | | 1,720 | 1,720 | |
| Surface Ecolity Installation | | 5,100 | 5,100 | |
| Destare Leastion | | | | |
| Well Site Supervision | | 1 100 | | |
| Engineering | | 4,100 | 4,100 | |
| Engineering Bito | | 1,000 | 1,000 | |
| Dito | | | | |
| Dipolines and Installation | | | | |
| Tapk and Eithings | | | | |
| Dieneral Costa | | 4.050 | | |
| Dispusar Cusis Motor | | 1,250 | 1,250 | |
| Surface Perlamation | | C 405 | 5 405 | |
| D&A marker | | 5,125 | 5,125 | |
| | | 135 | 135 | |
| Workover Costs | 0 | 79,780 | 79,780 | |
| 10% Contingency | Δ | 7 072 | 7 078 | |
| Total Workover Costs | • | 97 759 | 07 750 | |
| I VIGI WULKUVEL UUSIS | V | 01,100 | 01,100 | |

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





Mr. Jim Griswold, Bureau Chief NM Oil Conservation Division (OCD) Environmental Bureau 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: Discharge Plan Application for UIC Class I Non-Hazardous Injection Well Proposed Waste Disposal Well (WDW) #2 Bloomfield Terminal Western Refining Southwest, Inc. (Western) Bloomfield, New Mexico

Dear Mr. Griswold:

The enclosed *Discharge Plan Application for UIC Class I Non-Hazardous Injection Well* revised pursuant to the conference call with the OCD staff on January 22nd, 2016. The purpose of the application for Waste Disposal Well #2 is to replace Disposal #1 (API # 30-045-29002) which was abandoned in 2015. The fluids to be disposed in the proposed injection well will be waste water system effluent, evaporation pond contact storm water and injection well stimulation/ maintenance liquids.

Western appreciates your assistance with this urgent matter. If there are any questions regarding the enclosed Discharge Plan Application, please contact Mr. Randy Schmaltz at (505) 632-4171.

Sincerely,

Mr. Mark Smith President Western Refining Southwest, Inc.

cc

Carl Chavez NMOCD Brandon Powell, NMOCD Phillip Goetze, NMOCD Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Revised August 1, 2011

Submit Original Plus 1 Copy to Santa Fe 1 Copy to Appropriate District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

X New Renewal Modification

1. Type: UIC Class I Non-Hazardous Injection Well (WDW #2)

2. Operator: Western Refining Southwest, Inc.

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

Contact Person: Class I Non-Hazardous Injection Well Phone: 505-632-8013

3. Location: <u>SE</u> /4 <u>NE</u> /4 Section <u>27</u> Township <u>29N</u> Range <u>11W</u> Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site.

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.

- 6. Attach a description of all materials stored or used at the facility.
- 7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
- 8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
- 9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
- 10. Attach a routine inspection and maintenance plan to ensure permit compliance.
- 11. Attach a contingency plan for reporting and clean-up of spills or releases.
- 12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.
- 13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

14. CERTIFICATIONI 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 | | |
|------------|-----------------|------|---------|-------|-----|
| Signature: | Bruce | ρ. | P | | |
| E-mail Ad | dress: <u>b</u> | ruce | davis (| DWNR. | Com |

| Title: | Director |
|--------|----------|
| Date: | 3-2-16 |

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

4. Landowner of facility site.

San Juan Refining Company Attn: Western Refining Southwest, Inc. 1250 W. Washington St. Suite 101 Tempe, AZ 85281 Ron Weaver 505-632-8013

5. Description of the facility.

The proposed facility is an UIC Class I Non-hazardous Injection Well (WDW #2).

Purpose

The purpose of WDW #2 is to replace Disposal #1 (API# 30-045-29002) which was abandoned in 2015.

Location

The proposed well location is within the fence line of Bloomfield Terminal. See the figure and survey in Appendix A of this Discharge Plan Application.

Application for Permit to Drill

The Application for Permit to Drill (Form C-101) is included as Appendix A of this Discharge Plan Application. Form C-101 is also typically submitted under the Oil and Gas regulations, the format presents information also common for Class I injection wells under the Water Quality regulations. The Form C-101 includes general well data, well location survey (Form C-102), well design information including cement slurry details and a well drilling program.

Application for Authorization to Inject

The Application for Authorization to Inject (Form C-108) is included as Appendix B of this Discharge Plan Application. Although Form C-108 is typically submitted under the Oil and Gas regulations, the format presents information also common for Class I injection wells under the Water Quality regulations. The Form C-108 includes general well data, area of review information, proposed operation information, geologic data on the injection zone, the proposed stimulation program and other information.

6. Description of stored materials stored and used.

The proposed injection well will not be used to for material storage.

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

7. Description of present sources of effluent and waste solids.

During workover (maintenance) operations, the proposed injection well WDW #2 will be a source of waste water and possibly waste solids. The waste water will be re-injected into the WDW #2. The waste solids will be characterized and disposed properly.

8. Current liquid and solid waste collection/treatment/disposal procedures.

The proposed injection well will be used to dispose of non-exempt non-hazardous waste water. A Injection Fluid Analytical is included as Appendix C of this Discharge Plan Application.

9. Description of proposed modifications to the existing collection/treatment/disposal systems.

The pumps and piping to injection well WDW #2 will be redesigned as needed to meet the pressure and flow demands determined during the injectivity testing. This redesign will allow treated waste water to be injected directly into the WDW #2 or directed to the evaporation ponds before injection into WDW #2.

10. Routine inspection and maintenance plan

The WDW #2 surface completion and associated flanges/pumps/piping will be visually inspected daily.

Mechanical Integrity Testing (MIT) will be conducted pursuant to 20.6.2.5204 NMAC. At a minimum, the program will include:

- A MIT at least once every five years or every time a well workover is performed, and
- An annual Bradenhead test.

11. Contingency Plan for Reporting and clean-up of Spills or releases.

The Bloomfield Terminal has an Emergency and Facility Response Plans in place respond releases including treated waste water. If a reportable quantity (5 bbl.) of treated waste water is released from the injection well, NMOCD and NMED Hazardous Waste Bureau will notified in accordance with applicable regulations. Containment, clean-up and reporting will commence as soon as practicable.

12. Geologic/Hydrological information.

Geologic information about the injection zone is included in Appendix B of this Discharge Plan Application.

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

13. Facility Closure Plan.

A Closure Plan for WDW #2 is included as Appendix D of this Discharge Plan Application. The closure plan includes an estimate for Financial Assurance.

Appendix A Application for Permit to Drill

| District I 1625 N. French Dr., Hobbs, NM 88240 | State of New Mexico | Form C-101 Revised July 18, 2013 |
|---|--|-------------------------------------|
| Phone: (575) 393-6161 Fax: (575) 393-0720 District II | Energy Minerals and Natural Resources | 100350 5019 10, 2013 |
| 811 S. First St., Artesia, NM 88210 Phone: (575) 748-1283 Fax: (575) 748-9720 District III | Oil Conservation Division | AMENDED REPORT |
| 1000 Rio Brazos Road, Aztec, NM 87410 Phone: (505) 334-6178 Fax: (505) 334-6170 | 1220 South St. Francis Dr. | |
| District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 Phone: (505) 476-3460 Fax: (505) 476-3462 | Santa Fe, NM 87505 | |

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| | | 1. | Operator Name | and Address | | | | ² OGRID Number | | | |
|---|---------------------------------|---|--|--|--|-------------------|-------------------|-----------------------------------|--------|--|--|
| | Western Refining Southwest, Inc | | | | | | | 267595 * API Number | | | |
| #50 County Road 4990 (PO Box 159) Bloomfield, NM 87413 | | | | | | | | | | | |
| * Prop | erty Code | | ^{3.} Property Name Waste Disposal Well (WDW) | | | | | ^م Well No. #2 | | | |
| | | | 7. 10 | ^{7.} St | irface Location | 1 | | | | | |
| UL - Lot H | Section 27 | Township 29N | Range 11W | Lot Idn | Feet from 2028' | N/S Line North | Feet From 111' | Feet From E/W Line 111' East S | | | |
| 1017 X 2017 X 2017 X 2017 | | Landre and Landre and Landre and Landre and Landre and Landre and Landre and Landre and Landre and Landre and L | | * Propos | ed Bottom Hol | e Location | | | | | |
| UL - Lot | Section | Township | Range | Lot Idn | Feet from | N/S Line | Feet From | E/W Line | County | | |
| | <u> </u> | | | 9. Pc | ool Informatio | n | | | | | |
| | | | 515 513.020033 | Country of the second s | States and a states of the sta | | | | D 10 1 | | |

Pool Name

Pool Code

| ^{11.} Work Type | ¹² Well Type | ¹² . Well Type I ³ . Cable/Rotary S R | | ^{15.} Ground Level Elevation | |
|--|--|---|---------------------------|---------------------------------------|--|
| N | S | | | 5535' GL | |
| ¹⁶ Multiple | ¹⁶ Multiple ¹⁷ Proposed Depth NO ~ 7500' | | ^{19.} Contractor | ^{20.} Spud Date | |
| NO | | | TBD | Est Marc 2016 | |
| Depth to Ground water Less than 50' | Distance from | nearest fresh water well 660 ' | Distance to | nearest surface water 1334° | |

We will be using a closed-loop system in lieu of lined pits

^{21.} Proposed Casing and Cement Program

| Туре | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|------|-----------|-------------|------------------|---------------|-----------------|---------------|
| Surf | 17-1/2" | 13-3/8" | 48 ppf – H40 | ~ 300' | 464 sx | Surface |
| Int | 12- ¼" | 9-5/8" | 36 ppf – J55 | ~ 3600' | 857 sx | Surface |
| Prod | 8-3/4" | 7" | 26 ppf – L80 | ~ 7500' | 850 sx | Surface |

Casing/Cement Program: Additional Comments

Will utilize a 2 stage cement job on the 7" casing w/ DV tool at $\sim 4000^{\circ}$

^{22.} Proposed Blowout Prevention Program

| Туре | Working Pressure | Test Pressure | Manufacturer |
|------|------------------|---------------|--------------|
| 2M | 2000 psi | 2000 psi | Schaffer |

| ^{23.} I hereby certify that the information given above is true and complete to the best of my knowledge and belief. | OIL CONSERVATION DIVISION | | | |
|--|---------------------------------|--|--|--|
| I further certify that I have complied with 19.15.14.9 (A) NMAC 🗌 and/or 19.15.14.9 (B) NMAC 🔲, if applicable. Signature: | Approved By: | | | |
| Printed name: Bruce D. Davis | Title: | | | |
| Title: Director | Approved Date: Expiration Date: | | | |
| E-mail Address: bruce. davis @ WNR. com | | | | |
| Date: 3-2-16 Phone: 602-286-1929 | Conditions of Approval Attached | | | |



DISTRICT 1 1625 N. French Dr., Hobbs, N.M. 88240 Phone: (676) 393-6161 Faxi (676) 303-0720 DISTRICT II 611 S. First St., Artesia, N.M. 66210 Phone: (675) 748-1283 Fax: (575) 748-6720 DISTRICT III 1000 Rio Brazos Rd., Aztec, N.M. 67410 Phone: (606) 334-6178 Fax: (505) 334-6170 DISTRICT IV 1220 S. St. Francis Dr., Santa Fe, NM 87605 Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION

1220 South St. Francis Dr. Santa Fe, NM 87505

Form C-102 Revised August 1, 2011 Submit one copy to appropriate District Office

□ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| ¹ API | Number | | | ^g Pool Code | 19 | [®] Pool Name | | | | | | |
|------------------------------|-----------|----------------------------|------------------------|------------------------|--------------------|------------------------|----------------------|---------------|-------------|--------------------------------|-------------------------|--|
| ⁴ Property C | ode | ⁶ Property Name | | | | | | | | 6 We | ell Number | |
| | | Waste Disposal Well (WDW) | | | | | | | | | 2 | |
| ⁷ OGRID No |). | | | 75 88890 100 | , ^D Ope | rator 1 | Name | | | | 0 | Elevation |
| 26759 | 5 | | | Wester | n Refinir | ng S | outhwest, Inc | с. | | | | 5535' |
| | | | | | ¹⁰ Surf | ace | Location | | | | | |
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from | the | North/South line | Fee | t from the | East/West | line | County |
| H | 27 | 29-N | 11-W | | 2028 | | NORTH | | 111' | EAS1 | • | SAN JUAN |
| | | | ¹¹ Bott | om Hole | Locati | on I | f Different Fr | om | Surface | | | |
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from | the | North/South line | Fee | t from the | East/West | line | County |
| ¹⁸ Dedicated Acre | 3 | | ¹⁸ Joint or | Infill | 14 Consolide | ation C | ode | 15 Or | der No. | | | |
| | | | | | | | | | | | | |
| NOATION | | | GOLONIET | | G COMPI | TAIDTO | | TATI | | | | NGOLIDATED |
| NO ALLOW | ADLL W | | VON-STA | NDARD 1 | UNIT HAS | S BE | EN APPROVEI | \mathbf{BY} | THE DI | ISION | EN CC | UN2OPIDALED |
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Western Refining Southwest, Inc. – WDW #2

Cement Slurry Details (Attachment for NMOCD – APD)

Note: Actual Slurry Design will vary depending upon vendor selection and actual hole conditions.

17-1/2" Hole - 13-3/8", 40 ppf, J55 casing at ~ 300 ft

394 (548 cf) sacks Type III Cement, 2% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 59.2% Fresh Water

Yield:1.39 cf/sx Slurry wt 14.60 ppg

12-1/4" Hole - 9-5/8", 36 ppf, J55 casing at ~ 3600 ft

Lead:

806 sacks (1621 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx Slurry Wt: 14.5 ppg

8-3/4" Hole - 7", 26 ppf, L80 casing at ~ 7500 ft

Stage Tool (DV) at ~ 4000'

Stage no. 1

Lead:

224 sacks (450 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

180 sacks (338 cf) (10:90) Poz L:Type III Cement, 0.25% bwoc Calcium Chloride, 0.3% bwoc CD-32, 0.02 gps FP-6L, 0.5% bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 5 lbs/sx Kol-Seal, 87.8% Fresh Water

Yield: 1.88 cf/sx Slurry Wt: 13.0 ppg

Stage no. 2

Lead:

414 sacks (832 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx Slurry Wt: 14.5 ppg

DRILLING PROGRAM Western Refining Southwest, Inc. Waste Disposal Well (WDW) #2 San Juan County, NM

Surface Location 2028' FNL & 111' FEL Section 27, T29N, R11W Graded Elevation 5535' <u>SHL Geographical Coordinates (NAD-83)</u> Latitude 36.698609° N Longitude 107.970351° W

Bottom Hole Location (Vertical Well) Same as Surface

DIRECTIONS TO Western Refining - WDW #2

- > From Bloomfield NM, go on South on HWY 550 to CR 4990
- > Turn left and go easterly on CR 4990 for ~ 1.0 mi.
- > Turn left (north) for 0.1 miles to new location.

Pre-Spud

- Identify Safe Briefing Areas on location. Prevailing wind is NW to SE. Attempt to locate briefing
 areas upwind in the corners of location. Note location of access road and provide for alternate exit if
 not up wind.
- Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and the Time & Date of well spud on both the Daily Drilling Report and the IADC Daily Drilling Report.
- Ensure regulatory notifications are made Notify the NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud.
- Contact NMOCD Field Inspector Supervisor Brandon Powell 505-320-0200. Record time & date of notification on reports.
- Review and post NMOCD permits and conditions of approval. Ensure 100% compliance with all
 regulations and conditions.

Well Plan

- Drill 17-1/2" surface hole from 0' to 350'.
- Drill surface with a fresh water gel mud system.
- 8.3 -9.4 ppg, 32-75 vis, NC fluid loss, <5% LGS.
- Perform a deviation surveys at 100', 250' and TD.

- Control deviation as necessary.
- Run and cement 13-3/8" casing and cement to the surface.
- Contact NMOCD if cement is not circulated to surface to get remediation approved prior to 1" cement.
 If cement is below 200' from surface, a CBL may have to be run to determine cement top.
- Nipple up BOP and test BOPE
- Ensure all drill pipe has casing friendly hardbanding.
- Install ditch magnets and measure metal cuttings in a vis cup every tour.
- Drill 12-1/4" intermediate to ~ 3600' with a fresh water LSND mud.
- Short trip to surface casing to prepare hole for 9-5/8" casing.
- Run 9-5/8", 36 ppf J-55 casing to Intermediate TD (Clean threads & drift casing once it's on location, prior to running).
- Cement 9-5/8" casing in single stage. Calculate cement volumes to circulate cement to surface.
- Drill 8-3/4" to ~ 7500' w/ fresh water LSND mud.
- Short trip to intermediate to prepare hole for logs and 7" casing.
- Run triple combo open hole logs.
- Run 7", 26 ppf, L80 casing to TD (clean threads & drift casing once it's on location prior to running)
- Nipple down BOP, clean mud tanks.
- Release rig.

<u>Geology</u>

| MD | Formation |
|---------|------------------------|
| Surface | Quatermary Alluvium |
| Joi | N |
| 10' | Nacimiento |
| 515' | Ojo Alamo |
| 625' | Kirtland |
| 1718' | Pictured Cliffs |
| 1880' | Lewis |
| 2688' | Chacra |
| 3335' | Cliffhouse |
| 3394' | Menefee |
| 4037' | Point Lookout |
| 4423' | Mancos Shale |
| 5599' | Gallup |
| 6060' | Greenhorn |
| 6149' | Dakota |
| 6365' | Burro Canyon |
| 6411' | Morrison |
| 7287' | Todilto |
| 7315' | Entrada |
| 7483' | Chinle |

Casing Program:

| Casing & Hole | Weight | Grade | Counling | Setting Depth (MD) | Top of Cement |
|-------------------|--------|-------|----------|--------------------|---------------|
| 13-3/8" (17-1/2") | 48 ppf | H-40 | LT&C | 0-350 ft | To surface |
| 9-5/8" (12-1/4") | 36 ppf | J-55 | LT&C | 0-3600 ft | To surface |
| 7" (8-3/4") | 26 ppf | L-80 | LT&C | 0-7500 | To surface |

Mud logging: Commences at 300', 30-ft samples to TD, or as required to pick formation tops to TD

Open-Hole Logs: Triple Combo

Cased-Hole Logs: CBL

Rig-up

During rig-up, ensure that the following items are properly rigged up:

- Hydraulic remote choke and control panel (ensure that the choke manifold is configured properly to NMOCD standards)
- Trip tank (including piping, valves, etc.)
- Reliable wet-system bulk barite hopper (ensure that it is rigged up so that barite can be mixed prior to the suction tank and also so that barite can be mixed in the pre-mix tank)

Rig items to be taken care of the following issues prior to spud:

- Change seats and valves in mud pumps, redress relief valves, check pre-charge pressures of pulsation dampeners
- Repair all suction valves, etc., in mud tanks as required
- Check all centrifugal pumps, including charger pumps, mud mixing pumps, desander/desilter pumps, etc.

17 1/2" Surface Hole

MIRU During rig-up and while drilling surface hole, ensure that the following items are properly rigged up:.

Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and well spud time/date on Daily Report and on IADC Daily Drilling Report.

 Ensure regulatory notifications are made – NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud. Contact NMOCD Field Inspector. Record name of government personnel contacted and time & date of notification on reports.

Procedure

Bottom-Hole Assembly (BHA) is to consist of the following:

- 1. PU 17-1/2" BHA
 - 17-1/2" surface hole bit
 - Bit sub (ported for float) 7-5/8" reg x 6-5/8" reg
 - Shock Sub
 - 4 ea. 8" DC's
 - Cross over 6-5/8" x 4-1/2"
 - 8 ea. 6" DC's
- 2. Drill 17-1/2" surface hole from 0' to 350'.
- 3. Drill surface with fresh water gel mud system. Drill surface with a fresh water gel mud system containing fresh water gel, poly-plus RD, detergent and 2% KCL
- 4. 8.3 -9.4 ppg. 32-75 vis, NC fluid loss, <5% LGS
- 5. Control deviation as necessary by varying RPM & WOB.
- 6. Install ditch magnets and measure metal cuttings in a vis cup every tour.
 - a. Take survey at 100', if the hole is straight take a second survey halfway to TD and at 13-3/8" casing point.
- 7. Ensure that all rig solids control equipment are working properly.

Target mud properties:

| MW (PPG) | Funnel Viscosity Sec | PV | YP | Gels 10s/10m | MBT | Са | CI- | LGS |
|-------------|----------------------------|-----|--------|-----------------|---------|---------------|------------|------|
| 8.3 – 9.4 | 3 <mark>8 - 4</mark> 5 | <12 | 8 - 18 | 1/2 | <15 ppb | 800-1200 mg/l | <1200 mg/l | ALAP |

- 8. Drill to a minimum of 350-ft RKB. Adjust TD depth as required to fit the casing to the hole. Circulate and pump high viscosity sweeps as required. Make a wiper trip if any drag coming off bottom, otherwise continue POOH to run pipe.
- 9. RU and run 13-3/8" 48# H-40 LT&C casing.
 - a. Clean, visually inspect, and drift the casing on the rack.
 - b. Test slurries with actual mix water in advance. Ensure that Cement Company provides pumping time data from lab tests based on actual mix water and bulk cement as loaded for the job.
 - c. Run casing as follows:
 - Float Shoe
 - One (1) joint of 9-5/8" 36# J-55 LT&C casing
 - Float Collar
 - 13-3/8" 48# H-40 LT&C casing to surface.
 - d. Thread-lock the float shoe and float collar with equivalent thread-lock compound. Make up remaining joints with API modified thread compound. Ensure the float equipment is PDC friendly. Run 5 bow-spring centralizers with one 10-ft from the shoe, then on every jt to surface.
 - e. Fill the pipe as it is run.
 - f. Follow Wellhead Recommended Installation Procedure.
- 10. With the 13-3/8" casing run to bottom, circulate a minimum of one complete hole volume (casing volume + annular volume) before cementing as follows:

- a. Pump schedule (based on 125% excess)
 - 10-bbls Freshwater spacer
 - 394 sx (548 cf) 15.6 ppg
 - Drop top plug
 - Displace with surface drilling mud
- b. Bump the plug with 500 psi over final circulating pressure. Release pressure and then check the integrity of the float equipment.

Note: Pressure test casing to 1500 psi for 30 minutes. Pressure test the casing when pressure testing the BOPE.

- c. Ensure that 13-3/8" landing joint is centered in rotary table when Casing Head is landed.
- d. Report the following on the daily drilling report:
 - Spacer and cement slurry volumes, compositions, and properties (density, yield, etc.)
 - Displacement volume, fluid type, and density
 - Circulating pressure before bumping the plug and pressure that plug was bumped
 - Volume of fluid bled back and whether float equipment held or not
 - Whether cement was returned to surface and estimated volume of cement returns
 - Any other pertinent information about the cement job.
- e. If the cement falls back or does not return to surface, perform a top job with 1" tubing. Top Job Cement Slurry to consist of Class "G" Premium w/ 2% CaCl₂ (or similar cement).
- f. REGULATORY APPROVAL MUST BE GIVEN PRIOR TO PUMPING TOP JOB.
- g. WOC for a minimum 12 hours before drilling out.
- h. While waiting on cement, remove landing joint, nipple up BOPE,
- 11. Follow Wellhead Recommended Wellhead Installation Procedure for 13-5/8" 3,000 psi wellhead. The technician should remove plugs from side outlets, install side outlet valves, and confirm proper installation of entire 3M wellhead assembly equipment prior to pressure testing BOPE.
- 12. Nipple up 13-5/8" 3M BOPE, :
 - a. See attachment showing 2M BOPE (NOTE: Will test per NMOCD specs for 2M System as per APD)
- 14. Ensure that third party pressure test company personnel perform function and accumulator draw down tests by shutting off air and electric power to accumulator.
 - Check nitrogen pre-charge pressure for each accumulator bottle.
 - Record initial accumulator manifold pressure, open and shut all BOP equipment and hydraulic valves, and record final accumulator manifold pressure.
 - Ensure that results of function and accumulator draw down tests and any equipment deficiencies are noted on the Daily Drilling Report and the IADC Daily Drilling Report. Third party pressure test company personnel should provide report of accumulator unit inspection, including nitrogen pre-charge pressures for each accumulator bottle, to the rig supervisor.
- 15. Set 13-5/8" 3M BOP test plug (C22) in Casing Head bowl and open lower valve on Casing Head.
 - **Note:** Ensure that third party pressure test company personnel test all BOP equipment, choke manifold, and all surface equipment to low pressure of 250 psi and rated working pressure (2000 psi) for 10 minutes each test.
 - Note: Third party pressure test personnel should record and annotate all BOPE pressure tests on calibrated chart recorder with appropriate scale for test

pressures. One set of pressure recorder charts should be left onsite with drilling foreman and another set of pressure recorder charts should be submitted to the State Inspectors.

16. Remove 3M BOP test plug. Install retrievable long bowl protector (wear bushing) as required.

12-1/4" Section

Important Notes:

- This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.
- No mud materials should be mixed without explicit instructions from the mud engineer. Also
 ensure that good housekeeping is practiced on the top of the mud tanks to minimize the
 possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which
 could interfere with the pumps or be pumped down the hole.
- Wiper trip to surface to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

1. PU 12-1/4" BHA

4.

- 12-1/4" NOV
- NOV Mud Motor 7/8 5.0 .28 Revs per gallon
- 3 pt String IBS (Stabilizer)
- 2 ea. 6-1/2" DC's
- 3 pt String IBS (Stabilizer)
- 12 ea. 6-1/2" DC's
- 4 ea. 4-1/2" HWDP
- 4 ¹/₂" DP to surface
- 2. TIH and drill out float equipment
- 3. Drill 12-1/4" intermediate hole to TD ~ 3600'
 - Record all pressure tests on chart or Pason.
 - Drill out with fresh water based mud system as described above
 - Perform a deviation surveys every 500'
 - Continue to drill ahead with 12-1/4" PDC bit.
 - a. The 12-1/4" hole will be drilled with LSND WBM (reference mud program).
 - b. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.
- 5. Drill to Intermediate TD of ~3600'
- 6. Circulate hole clean and **Strap Out of Hole.**
- 7. While circulating prior to POOH, work pipe to assist in solids removal.
- 8. POOH to Surface Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.

Run 9-5/8", 36#, J55 LT&C casing.

9.

- Casing Running Order:
- One (1) Float Shoe
- One (1) joint 9-5/8", 36#, J55 LT&C casing
- One (1) Float Collar
- 9-5/8", 36#, J55 LT&C casing
- If necessary run DV tool to ensure cement to surface (Note: verify DV tool placement with Engineer prior to running casing)
- 9-5/8", 36#, J55 LT&C casing, as required, to surface
- Centralizers:
- One Bow Spring centralizer on bottom 10 jts.
- One Bow Spring centralizer on each 4th joint of casing to surface casing
- Two Bow Spring centralizers above and below each DV tool
- Clean threads, drift & visually inspect the casing on the rack.
- Torque each joint of casing to optimum make-up torque.
- Thread-lock the float collar and float shoe with thread lock compound.
- Use API modified pipe dope for remaining casing joints.
- Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.
- 10. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.
 - **Note:** Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.
- 11. Once casing is landed, circulate a <u>minimum</u> of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.
- 12. Cement casing in single stage (if heavy losses or hole conditions dictate install DV tool as needed) Note: verify cement volumes with Engineer prior to ordering cement. Refer to vendor Cement Recommendations for cement details.
 - a. Pump schedule:
 - Pump 10-bbls fresh water to fill lines and prime pumps
 - Pressure test lines to 2,000 psi
 - Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
 - Mix and pump 12.5 ppg lead cement slurry: 806 sx (1621 cf)
 - Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)
 - b. Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Bump the plug with 500 psi over final circulating pressure.
 - c. Release pressure and check pressure integrity of the float equipment. NDBOPE. Lift stack.

- 13. Set slips on 9-5/8" casing. Energize slips with jam bolts.
- 14. LD 13-5/8" BOPE
- 15. NUBOPE (9-5/8"*2,000 psi)
- 16. Test BOPE
 - a. Test rams, HCR, manual valves and wellhead to 250 psi low and 2,000 psi high
 - b. Test manual chokes to 250 psi low and 2,000 psi high
 - c. Test kill line, choke line, choke manifold and all surface tools (TIW's, inside bop, etc) to 250 psi low and 2,000 psi high
 - d. Test 9-5/8" casing to 2,000 psi / 20 minutes.
 - e. Install wear bushing.

8 ³/₄" Section

Important Notes:

- This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.
- No mud materials should be mixed without explicit instructions from the mud engineer. Also
 ensure that good housekeeping is practiced on the top of the mud tanks to minimize the
 possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which
 could interfere with the pumps or be pumped down the hole.
- Wiper trip to Intermediate to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

13. PU 8 ¾" BHA

- 8 3/4" NOV DSHI516G-G2
- NOV Mud Motor 7/8 5.0 .28 Revs per gallon
- 3 pt String IBS (Stabilizer)
- 2 ea. 6-1/2" DC's
- 3 pt String IBS (Stabilizer)
- 12 ea. 6-1/2" DC's
- 4 ea. 4-1/2" HWDP
- 4 1/2" DP to surface
- 14. TIH and drill out float equipment
- 15. Drill 8-3/4" hole
 - Record all pressure tests on chart or Pason.
 - Drill out with fresh water based mud system as described above
 - Perform a deviation surveys every 500'
- 16. Continue to drill ahead with 8 $\frac{3}{4}$ " PDC bit to a TD of ~ 7500'.
 - c. The 8 ¾" hole will be drilled with LSND WBM (reference mud program).

- d. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.
- 17. Plan on bit trip at or near top of Dakota formation. Change out bit to 8-3/4" SKHI616D-D2 and fresh mud motor.
- 18. Continue drilling to TD of ~7500' (10' to 15' into Chinle Formation)
- 19. Circulate hole clean and Strap Out of Hole.
- 20. While circulating prior to POOH, work pipe to assist in solids removal.
- 21. POOH to Intermediate Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.
- 22. TOH & Run Open Hole Logs
- 23. TIH to TD, circulate & condition hole as necessary. TOH, LDDP & DC's
- 24. Run 7" 26# L-80 LT&C casing.
 - Casing Running Order:
 - One (1) Float Shoe
 - One (1) joint 7" 26# L-80 LT&C casing
 - One (1) Float Collar
 - 7" 26# L80 LT&C casing
 - Place DV tool at 4000' (Note: verify DV tool placement with Engineer prior to running casing)
 - 7" 26# N80 LT&C casing, as required, to surface
 - Centralizers:
 - One Bow Spring centralizer on bottom 10 jts.
 - One Bow Spring centralizer on each 4th joint of casing to surface casing
 - Two Bow Spring centralizers above and below each DV tool
 - Clean threads, drift & visually inspect the casing on the rack.
 - Torque each joint of casing to optimum make-up torque.
 - Thread-lock the float collar and float shoe with thread lock compound.
 - Use API modified pipe dope for remaining casing joints.
 - Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.
- 25. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.
 - **Note:** Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.
- 26. Once casing is landed, circulate a <u>minimum</u> of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.

27. Cement casing in 2 stages as follows: (Note: verify cement volumes with Engineer prior to ordering cement). Refer to vendor Cement Recommendations for cement details.

First Stage:

- f. Pump schedule:
 - Pump 10-bbls fresh water to fill lines and prime pumps
 - Pressure test lines to 2,000 psi
 - Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
 - Mix and pump 12.5 ppg lead cement slurry: 224 sx (450 cf)
 - Mix and pump 13.0 ppg tail cement slurry: 180 sx (338 cf)
 - Drop first-stage shutoff plug (top plug)
 - Pump 10-bbls fresh water
 - Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Be sure to slow down displacement rate to 3 bpm or less for 15-20 bbl before and for 15-20 bbl after the first-stage shutoff plug reaches the DV tool at approximately 4,000'.
- g. Bump the plug with 500 psi over final circulating pressure.
- h. Release pressure and check pressure integrity of the float equipment.
- i. Drop opening plug.
- j. Wait required time for opening plug to fall inside casing to top of 2nd DV tool. This time will likely be required to put the cap back on the cement head after dropping the opening plug.
- k. Pressure up to required pressure to open 1st stage tool.
- Break circulation and continue to circulate while WOC. Carefully bring up pump rate and monitor returns for losses. Record volume of cement returned to surface. Circulate and WOC for 4 hours or longer before pumping second stage cement slurry, if samples indicate additional WOC time would be beneficial.

Second Stage:

- a. Pump schedule:
 - Pump 20-bbls water-based spacer mixed at 8.4 lb/gal.
 - Mix and pump 12.5 ppg lead cement slurry: 414 sx (832 cf).
 - Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)
 - Drop closing plug
 - Pump 10-bbls freshwater
 - Displace with drilling fluid at 6-8 bpm then slow down displacement rate to 3 bpm before bumping plug.
- b. Bump the plug with 500 psi over final circulating pressure, then slowly bring pressure up to closing pressure, which will be approximately the final circulating pressure plus required pressure to close 1st DV tool. Release pressure and check for flow back to ensure that the 1st stage tool is closed.
- c. Report the estimated volume of cement returns.
- m. Release pressure and check pressure integrity of the float equipment.
- Lay down landing joint. Install the mandrel pack-off using a stand of HWDP and test pack-off seals to 2000 psi.
- ND 11" 3M BOP Stack. NU 7-1/16" 5M x 4-1/16" Tubing Head Assembly. Be sure that bowl of Tubing Head Assembly is well greased to prevent corrosion while waiting on workover rig to complete well for SWD disposal.

- 30. NU 4-1/16" 5M Gate Valve, in order to secure well.
- 31. Release and RD drilling rig.

John Thompson Engineer

Appendix B

Application for Authorization to Inject

| DATE IN | SUSPENSE | ENGINEER | LOGGED IN | TYPE | APP NO. |
|---------|----------|----------|-----------|------|---------|

ABOVE THIS LINE FOR DIVISION USE ONLY

ST. ST

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-Stan [DHC-Down [PC-Poo] [EOR-Qual | dard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication] hole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling] ol Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement] [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion] [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase] ified Enhanced Oil Recovery Certification] [PPR-Positive Production Response] |
|-----|---|---|
| [1] | TYPE OF AP [A] | PLICATION - Check Those Which Apply for [A] Location - Spacing Unit - Simultaneous Dedication NSL NSP SD |
| | Check [B] | One Only for [B] or [C] 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] | NOTIFICATI [A] | ON REQUIRED TO: - Check Those Which Apply, or Does Not Apply Working, Royalty or Overriding Royalty Interest Owners |
| | [B] | X Offset Operators, Leaseholders or Surface Owner |
| | [C] | X 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. P- | Director | 3-2-16 |
|--------------------|-------------|----------------|---------------|
| Print or Type Name | Signature | Title | Date |
| | | e-mail Address | is @ WNR. com |

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 | | | | | |
| Ш. | OPERATOR: Western Refining Southwest, Inc. | | | | | |
| | ADDRESS: #50 County Road 4990 (PO Box 159), Bloomfield, NM 87413 | | | | | |
| | CONTACT PARTY: <u>Ron Weaver</u> PHONE: <u>505-632-8013</u> | | | | | |
| 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: | | | | | |
| | Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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. | | | | | |
| XIП. | 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: Brok 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:
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 2

| Side 1 | INJE | CTION WELL DATA SHEET | |
|-----------------|--|-------------------------------|---|
| OPERATO | R: Western Refining Southwest, Inc. | | |
| WELL NAI | ME & NUMBER: Waste Disposal Well (WDW) | #2 | |
| MELL LOC | CATION: 2028' FNL & 111' FEL | H 27 | T29N R11W |
| | FOOTAGE LOCATION | UNIT LETTER SECTION | TOWNSHIP RANGE |
| | WELLBORE SCHEMATIC | WELL CO Surface (| <u>ONSTRUCTION DATA</u> Casing |
| Date Drawn | | Hole Size: <u>17-1/2</u> | Casing Size: <u>13-3/8, 48 ppf, H40</u> |
| 17-1/2" Hole | 0HI 4887 4887 | Cemented with: <u>394</u> sx. | or 548 ft ³ |
| | | Top of Cement: Surface | Method Determined: |
| | | Intermediat | te Casing |
| | | Hole Size: 12-1/4" | Casing Size: 9-5/8", 36#, J55 |
| 12-114- Hole | - 3600° , 365°, J45 | Cemented with: 857 sx | or 1693 ft ³ |
| | DV tool at 4000 KB | Top of Cement: Surface | Method Determined: |
| | | Production | n Casing |
| | | Hole Size: 8-3/4" | Casing Size: 7", 26 ppf, L80 |
| | Injection Suing A Ann A Add 100 | Cemented with: 868 sx. | or 1692 ft ³ |
| | | Top of Cement: Surface | Method Determined: |
| 0 | IPC FB Packer at ~ 7265 ' | Total Depth: ~ 7500' | |
| 000 | Proposed Injection Zone: Entrada Sandstone: 7315' - 7485' | Injection Interv | val (Proposed) |
| 8-314" 1100 | 7*, 28#, USS | 7315 ² feel | st to 7483' (perforated 4 spf) |
| Pro | od Csg @ 7300" YGB | (Perforated or Open H | Hole; indicate which) |

| Tubing Size | : 4- | 1/2", 10.5 ppf | <u> </u> | ining Material: | Plastic Lined |
|------------------------|---------------------------|------------------------------------|--|--|-----------------------------------|
| Type of Packe | 3r: | 7" Baker "FAB-1" | (or similar model' | | |
| Packer Settin | 1g Depth: | ~ 7265' | | | |
| Other Type | of Tubing/ | 'Casing Seal (if | applicable): <u>Bak</u> | ker Model "KBH-22" | Anchor tubing seal assembly, lat |
| | | | Additional | l Data | |
| 1. Is this a | new well | drilled for injec | stion? | XYes | No |
| If no, fc | or what pur | rpose was the w | vell originally di | rilled? | |
| 2. Name o | f the Inject | tion Formation. | : Entrada | | |
| 3. Name o | f Field or l | Pool (if applica | ble): | | |
| 4. Has the interval | well ever s and give | been perforatec plugging detail | l in any other zc l, i.e. sacks of co | me(s)? List all such p ement or plug(s) used. | erforated |
| 5. Give th injectio | e name and n zone in t | d depths of any his area: | oil or gas zones Pictured Cliffs | s underlying or overly s, Chacra, Mesaverde, | ng the proposed Gallup, Dakota |
| | | | | | |

Side 2

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 1mile radius.

The maps are below.

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Area of Review 1 mile radius



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.

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

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well (WDW) #2 Well List for 1-Mile Area of Review (AOR)

| ß | 5,950 | 5,970 | 6,200 | 6,150 | | 6,030 | | | 6,260 | 6,365 | 6,350 | 6,350 | 1,487 | 1,747 | 6,314 | 1,620 | 6,3US | PTC'T | 01210 | 0,45U | 1,44U | | 2,300 | 1000 | C+7.1 | 100'7 | 100 0 | 100 C | 2,951 | CdE,d | C7C'D | 0,385 | 0,380 | 2 GDE | CODE C | 6 740 | 6.502 | 6,508 | 6,508 | | 4,331 | 4,331 | 5,760 | | 6,216 | 2,830 | 2,850 | 1,500 | 2,840 | | | | - | 6,525 | 1,810 | 1,890 |
|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------|-------------------------|-------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------------|-------------------------|----------------------|-------------------------|-------------------------|---|--|-------------------------|------------------------------|-------------------------------|--------------------------------|------------------------------|-------------------------|--------------------------------|--------------------------------|-------------------------|-------------------------|--|-------------------------|-------------------------|---|-------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|-------------------------|--------------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------------|--------------------------------|-------------------------|--|
| Wir Cum | 1,291 | 1,472 | 1,283 | 1,964 | 1,056 | 1,172 | | | 4,546 | 211 | | 25,920 | 716 | | 6,176 | | 850/8 | 791 C | 10712 | 115.1 | nca | Vo | no un | 500 | DIT | 005 | HCE'Z | LVL | 747 | 2,414 | 0.022 | 8,033 | 15477 | 1485 | 1 770 | 7 506 | 8.346 | 1,661 | 2,536 | 27,028 | 1,390 | 893 | 657 | 2,137 | 1,247 | 1,244 | 1,556 | 1,120 | 1,900 | | 8,653 | 107,818 | 9,116 | 15,362 | 6,720 | 5,522 B,922 |
| sas cum | 714,731 | 602,470 | 464,380 | 318,931 | 95,176 | 255,800 | | | 2,820,296 | 2,573,971 | 2,646,060 | 189,125 | 368,487 | 355,978 | 4,343,480 | 804,069 | /////1454/5 | 1 FOC 500 | 1+1 0 0 0 0 0 0 | 110,040,0 | 164,643 | 101 330 | 10/ 005 | 803,208 | 745 745 | 040 040 | 100 020 L | 000 LEL | 337,989 | 4/4,351 | DUC EVC | 464,405 | 117,164 | 205 435 | 350.087 | 474 439 | 1.095.534 | 160,434 | 152,025 | 330,236 | 619 | 181,392 | 73,691 | 320,803 | 142,149 | 325,500 | 434,028 | 151,744 | 166,541 | | 46,691 | 226,581 | 200,914 | 300,103 | 116,412 | 75,123 |
| oil cum 0 | 56,157 | 65,478 | 36,820 | 63,095 | | 7,534 | | | 22,497 | 16,714 | 15,187 | | | 10 | 41,071 | | 45,25 | 17 690 | 14,150 | AC/'C7 | | | | OT . | 162 | | EAC | CNC | - | 3,328 | ancio | 4,252 | | 2 | | 4 630 | 2.986 | 370 | | | 150 | | 2,426 | | 5,765 | | | | | | 3,866 | 823 | | 2,529 | | |
| Lease Code | 006883 | 006883 | 006918 | 006918 | | 006918 | | | 022839 | 000410 | 007282 | | 015829 | 251550 | 006258 | 009267 | 006262 | 00000 | etcono | 0000100 | 857900 | C7C700 | 707170 | 650/00 | 202400 | 149770 | Jubres | 077270 | 022685 | 022629 | 214610 | 073416 | 97470 | 251120 210100 | 007557 | 007287 | 006883 | 006918 | 006918 | | 000412 | 022601 | 022841 | | 021407 | 006264 | 006270 | 006268 | 006269 | | | | | | | |
| Prod Zone Name | GALLUP /SD/ | GALLUP /SD/ | GALLUP /SD/ | GALLUP /SD/ | PICTURED CLIFFS | GALLUP /SD/ | MESAVERDE | MORROW | DAKOTA | DAKOTA | DAKOTA | FRUITLAND COAL | FRUITLAND | PICTURED CUFFS | DAKOTA | FRUITLAND | DAKOLA | PAKOTA | CANOLA DAVOTA | UAKUIA | PHUILIANU | | LINUNA ALIT | PICIUKED CUPPS | PARMINGLUN | CHALRA | FRUILANU CUAL | CHACKA | CHACRA | DAKOTA | DAKOTA | DAKUIA | CHALKA | CHACKA | CHACRA | DAKOTA | DAKOTA | DAKOTA | CHACRA | FRUITLAND COAL | MESAVERDE | CHACRA | GALLUP /SD/ | FRUITLAND COAL | GALLUP /SD/ | CHACRA | CHACRA | FRUITLAND | CHACRA | ENTRADA | GALLUP /SD/ | DAKOTA | FRUITLAND COAL | DAKOTA | FRUITLAND COAL | FRUITLAND COAL |
| Status Name | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | INACTIVE | INACTIVE | ACTIVE | INACTIVE | INACTIVE | ACTIVE | INACTIVE | INACTIVE | INACI NE | ACTIVE | ALIIVE | ALIIVE | A MALINE | ALINE | INALINE | INACI IVE | ALIVE | ACTIVE | INAL INC | INACTIVE | ACTIVE | ACTIVE | ACTIVE | ACIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | INACTIVE | INACTIVE | INACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE | ACTIVE |
| County Name | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | NINOT NAC | NAUL NAS | SAN JUAN | NIKOT NIKO | SAN JUAN | NAUL NAS | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | NINDE NING | SAN JUAN | SAN JUAN | SAN JUAN | SAN ILIAN | SAN ILLAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN | SAN JUAN |
| Field Name | ARMENTA | ARMENTA | ARMENTA | ARMENTA | FULCHER KUTZ | ARMENTA | SWD | SWD | BASIN | BASIN | BASIN | BASIN | AZTEC | FULCHER KUTZ | BASIN | AZTEC | BASIN | ALIEL | NICHO NICHO | NICKS | AZ LEC | CTERO | UIEKO | FULCHER KUIZ | UNDESIGNATED | UIEKO | BASIN | UIEKU | OTERO | BASIN | DACIN | BASIN | UIEKU | OTERO | OTERO | BASIN | BASIN | BASIN | OTERO | BASIN | BLANCO | OTERO | ARMENTA | BASIN | ARMENTA | OTERO | OTERO | AZTEC | OTERO | SWD | ARMENTA | BASIN | BASIN | BASIN | BASIN | BASIN |
| Longitude | -107.9548384 | -107.9618893 | -107.9716743 | -107.9808835 | -107,9808835 | -107.9620229 | -107,9736785 | -107.9586722 | -107.9598182 | -107.9734791 | -107,9834612 | -107.9834612 | -107.9541735 | -107.9841029 | -107.9311406 | -107.9750193 | -107.972768 | 1007/005//0T- | COCCCO6-/01- | ERUCCOR./UI- | 141186./01- | CC0/006-/07- | 8175455./01- | 8545485.105- | SCIPCE./UI- | 1977/96./01- | 8404595./0E- | ototecs Lot | -107.9732919 | -107.9565825 | 2007HDE'/DT- | E0616/6//01- | | 48455687.01- 4944664 | 955666 201- | 107 9815395 | -107.9551454 | -107.9659406 | -107.9659406 | -107.9644588 | -107.9644588 | -107.9644588 | -107.9525892 | -107,9525892 | -107.9804042 | -107.9723245 | -107.9810701 | -107.9820557 | -107.9820563 | -107.9586722 | -107.9721325 | -107.9721325 | -107.9632207 | -107,9587095 | -107,9808151 | -107.9729853 |
| Latitude | 36.69244745 | 36.69445794 | 36.68790014 | 36.69549308 | 36.69549308 | 36.6874019 | 36.69640689 | 36.70129353 | 36.70149705 | 36.69478221 | 36,69567609 | 36.69567609 | 36.69953096 | 36.69234828 | 36.70608404 | 36.70664386 | 35.70654763 | CC/CONT/96 | 1007000000 | 3022220102 | 36./0619366 | 20/00/0404000 | 35.53480338 | 2966/169.95 | 36.69189/86 | 36./U182344 | TE/F/D/ 95 | TC/S/D/ OF | 36.69465987 | 36.70815951 | 20.03333002 | 36.69983513 | 51.0538294.45 | 36.69192545 | C81289 35 | 301/00/0C | 36.69192559 | 36.6849902 | 36.6849902 | 36.69991548 | 36.69991548 | 36,69991548 | 36.69824062 | 36,69824062 | 36,68874761 | 36.70637919 | 36.70553482 | 36.69985569 | 36.69966343 | 36.70129353 | 36.69461272 | 36.69461272 | 36.69257114 | 36.6942192 | 36.70572753 | 36.69957456 36.69410423 |
| Location | 29N 11W 26P NW SE SE | 29N 11W 26K SE NE SW | 29N 11W 34A C NE NE | 29N 11W 27K NW NE SW | 29N 11W 27K NW NE SW | 29N 11W 35C SE NE NW | 29N 11W 27I NW NE SE | 29N 11W 26B 5W NW NE | 29N 11W 26B SW NW NE | 29N 11W 27I SW NE SE | 29N 11W 27L NE NW SW | 29N 11W 27L NE NW SW | 29N 11W 26H NW SE NE | 29N 11W 27M NE SW SW | 29N 11W 22N SW SE SW | 29N 11W 220 NE SW SE | 29N 11W 22P SE SE | TOTAL TANK CAR NE SW | SOLUTION TO ANY THE SAM | MS MS MS MTT NS7 | 29N 11W ZZN SE SW | ZONI YOUR OLD LINE INC. | 29N TTW 26I SW NESE | 29N TIW Z/M NE SW SW | 29N 11W 26P NW 56 56 | 29N TTM 798 26 NM NE | Z9N 11W Z3K 5W NE 5W | 29N 11W 23K 5W NE 5W | 29N 11W 27I SW NE SE | 29N 11W Z3J SE NW SE | AND SCH AND SC | 29N 11W 2/H NW SE NE | 29N 11W 2/H NW 5E NE | 29N 11W 26N NW SE SW | AND ATT AN EVALUATE NE | 20N 11W 27F NW 5F NW 5F NW | 29N 11W 26P NW SF SF | 29N 11W 35E NE SW NW | 29N 11W 35E NE SW NW | 29N 11W 26F NW SE NW | 29N 11W 26F NW SE NW | 29N 11W 26F NW SE NW | 29N 11W 26H SE SE NE | 29N 11W 26H SE SE NE | 29N 11W 34C NE NE NW | 29N 11W 22P NW SE SE | 29N 11W 22N SW SE SW | 29N 11W 27F NW SE NW | 29N 11W 27F NW SE NW | 29N 11W 26B SW NW NE | 29N 11W 27I SW NE SE | 29N 11W 27I SW NE SE | 29N 11W 26N NW SE SW | 29N 11W 26J SW NW SE | 29N 11W 22N W2 SE SW | 29N 11W Z7H NW 5E NE 79N 11W 27L |
| Operator Name | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES D&G CO LP | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES ORG CO LP | SAN JUAN REFINING COMPANY | XTO ENERGY INCORPORATED | XTO ENERGY INCORPORATED | BP AMERICA PRODUCTION COMPANY | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES ORG CO LP | HOLCOMB OIL & GAS INCORPORATED | SOUTHERN UNION PRODUCTION COMPANY | MANANA GAS INCORPORATED | PICKETT JOHN C | MANANA GAS INCORPORATED | | DP AIVIERICA FRUDUCI IUN LUMPAINI | BURLINGION RESOURCES DAG COLP | MANANA GAS INCORPORATED | CHAFARMAL OLD & GAS LOWITANT | SOUTHLAND KOYALLY COMPANY LLC | BURLINGION RESOURCES ORG CO LP | GENERAL MINERALS CORPORATION | XIU ENERGY INCORPORALED | HOLCOMB UIL & GAS INCORPORALEU | HOLCOMB UIL & GAS INCURPURATED | XTO ENERGY INCORPORATED | XTO ENERGY INCORPORATED | ATO ENERGY INCOMPONATED | XTO ENERGY INCORPORATED | XIO ENERGY INCORPORALED | SOUTHLAND ROYALTY COMPANY LLC | BUILLINGTON PESOLIPCES OF COL | BURUNGTON RESOURCES ORG COLF | BURINGTON RESOURCES ORG COLP | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES O&G CO LP | HOLCOMB OIL & GAS INCORPORATED | BP AMERICA PRODUCTION COMPANY | XTO ENERGY INCORPORATED | HOLCOMB OIL & GAS INCORPORATED | HOLCOMB OIL & GAS INCORPORATED | SOUTHLAND ROYALTY COMPANY LLC | MANANA GAS INCORPORATED | MANANA GAS INCORPORATED | MANANA GAS INCORPORATED | MANANA GAS INCORPORATED | XTO ENERGY INCORPORATED | XTO ENERGY INCORPORATED | XTO ENERGY INCORPORATED | BURLINGTON RESOURCES O&G CO LP | BURLINGTON RESOURCES O&G CO LP | MANANA GAS INCORPORATED | HOLCOMB OIL & GAS INCORPORALED HOLCOMB OIL & GAS INCORPORATED |
| Well Num | 100 | | 8 | 80 | 80 | S | | | | | | | | | 23 | | | | | | | | | × | | | | | | | | | | | | u | | | | | | | 2 | 6 | 5 | 2 | | | | | LR | IR | 100 | 4 | | 2 |
| Lease Name | CALVIN | CALVIN | CONGRESS | CONGRESS | CONGRESS : | CONGRESS | DISPOSAL | ASHCROFT SWD | SULLIVAN GAS COM D | DAVIS GAS COM F | MANGUM | MANGUM | SULLIVAN | GARLAND B | COOK | GRACE PEARCE | HARTMAN | PAN AMERICAN SI ALE COM | PEARLE GAS LUIVI | CALVIN | COOK | LEA ANN | DELO | GARLAND B | DELO | EARLBSOLUVAN | STATE GAS COM BS | SIAIE GAS LUM BS | DAVIS GAS COM G | PEARCE GAS COM | SULLIVAN GAS CUNI D | DAVIS GAS COM F | DAVIS GAS COM F | CONGRESS | STIMMATT N | AdaNici IAA | CALVIN | CONGRESS | CONGRESS | DAVIS GAS COM J | DAVIS GAS COM J | DAVIS GAS COM J | EARL B SULUVAN | EARL B SULUVAN | SUMMIT | NANCY HARTMAN | MARY JANE | LAUREN KELLY | MARIAN S | ASHCROFT SWD | DAVIS GAS COM F | DAVIS GAS COM F | CALVIN | CALVIN | ROYAL FLUSH | JACQUE |
| Primary API | 130045251950000 | 30045256120000 | 30045256570000 | 30045256730000 | 30045256730001 | 30045256750000 | 30045290020000 | 30045307880000 | 30045077330000 | 30045078250000 | 30045078350000 | 30045078350001 | 30045078680000 | 30045079030000 | 30045079400000 | 30045079590000 | 30045079610000 | 000050020202000 | 000000000000000000000000000000000000000 | 00005002155005 | 30045130890000 | 0000227720000 | 20000/541254005 | 000075/1755005 | 30045226390000 | 00005915254005 | 300452355000UL | 0000222200000 | 30045235540000 | 30045240820000 | 20092240830000 | 30045240840000 | 30042240840000 | 30045245/20000 | | 300425746730000 | 30045247720000 | 30045248370000 | 30045248370000 | 30045253290000 | 30045253290000 | 30045253290000 | 30045256210000 | 30045256210001 | 30045257070000 | 30045267210000 | 30045267310000 | 30045273610000 | 30045273650000 | 30045307880000 | 30045308330001 | 30045308330000 | 30045311180000 | 30045330930000 | 30045343120000 | 30045344090000 30045344630000 |
| Production ID | 00430452519502290 | 00430452561202290 | 00430452565702290 | 00430452567302290 | 00430452567377200 | 00430452567502290 | 00430452900296160 | 00430453078896162 | 100430450773371599 | 00430450782571599 | 00430450783571599 | 100430450783571629 | 00430450786871200 | 100430450790377200 | 00430450794071599 | 00430450795971200 | 00430450796171599 | 0042042042040000 | 607100011000011000 | 90000000000000000000000000000000000000 | 004304513089/1200 | 001170/070400400 | 00430452145/82329 | 004304521/32/1200 | 00430452263966627 | 57579291575405575 | 004304523550/1b25 | 10043045235508252 | 100430452355482329 | 00430452408271599 | 507/107/107/107/108 | 300430452408471599 | 500430452408482329 | 500430452457282329 00430457457293329 | CTCTOC/CHTCHTCHTO | 00410430423705000 | 00430452477771599 | 00430452483771599 | 00430452483782329 | 100430452532971629 | 00430452532972319 | 100430452532982329 | 00430452562102290 | 100430452562171629 | 00430452570702290 | 100430452672182329 | 100430452673182329 | 100430452736171200 | 100430452736582329 | 100430453078896436 | 100430453083302290 | 100430453083371599 | 900430453111871629 | 300430453309371599 | 300430453431271629 | 300430453440971629 100430453446371629 |
| Map Symbol | 0 13 | 0 13 | 0 13 | 0 13 | 0 13 | 0 13 | 1 | 13 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | 57 50 | 5 1 | 3 | 2 0 | 27 0 | 1 | 27 | 6 23 | 5 10 | 17 17 | G 40 | 1 22 | G 25 | G 22 | 5 | 6 25 | 5 22 | 2 00 | 20 | 17 IC | 6 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G 23 | G Zā | G 25 | G 23 | 1 23 | G 23 | G 23 | G 22 | 6 23 | G 21 | G R 23 |

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.

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). ¹² | 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 Bio | ological Treatment (ABT). | | | | 1 |

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

| | | and the second se | and the second second second second second second second second second second second second second second second | |
|------------------------------------|--|---|--|--|
| Waste Water Source | Description | Waste Lype | Frequency | DISCOARGE 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-Routíne | 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 contarninants 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. Bloonnfield 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) | Minister and All | 1/23/2014 | and statute of | 7/28/2014 | 10/1/2014 |
| 1.1.1.2-Tetrachloroethane | | < 10 | na | <20 | < 5.0 |
| 1,1,1,2 Tethenoroethana | · | < 10 | na | < 2.0 | < 5.0 |
| 1,1,2,2 Tetraphloroethane | | < 20 | na | <40 | < 10 |
| 1,1,2,2-1 etrachoroethane | | <10 | na | < 2.0 | < 5.0 |
| 1,1,2-Thenoroemane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloroethane | | <10 | па | < 2.0 | < 5.0 |
| 1,1-Dichloroetnene | | < 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 | participant a list destruction of the second second | < 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 | a non-second and a second second second | < 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-Methylnanhthalene | | < 40 | па | < 8.0 | < 20 |
| 2.2-Dichloropropage | a - nan an c anan an | < 20 | na | <40 | < 10 |
| 2-Butanone | | 200 | па | < 20 | < 50 |
| 2-Chlorotoluene | | < 10 | na | <20 | < 5.0 |
| 2 Hovemone | | <100 | na | < 20 | < 50 |
| 2 Mathulaanhthalana | | < 100 | na | < 8.0 | < 20 |
| 2-Memymaphinaiche | | < 10 | 114 | < 2.0 | < 5.0 |
| 4 Target Italian | | <10 | 114 | < 2.0 | < 5.0 |
| 4-isopropyitoluene | | < 10 | па | < 2.0 | < 50 |
| 4-Methyl-2-pentanone | | < 100 | па | ~20 | < 30 |
| Acetone | | 1400 | na | 85 | 120 |
| Benzene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Bromobenzene | | < 10 | па | < 2,0 | < 5.0 |
| Bromodichloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Bromoform | and the second second second second | < 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 | па | < 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 | <20 | < 5.0 |
| Hevachlorobutadiene | 500 | < 10 | na | <20 | < 5.0 |
| Isopropulbanzapa | 500 | < 10 | 114 | <20 | < 5.0 |
| Mothyl tort hutyl other (MTRE) | | < 10 | na | <20 | < 5.0 |
| Methylana Chlorida | energy in the interim the state of the | < 20 | na | <60 | < 15 |
| Methylene Chloride | | < 30 | 114 | < 1.0 | < 10 |
| | 2 | < 10 | na | <4.0 | < 10 |
| n-butyibenzene | | ~10 | na | >0.0 | ~ 13 |
| n-rropyidenzene | | < 20 | na | ~ 2.0 | ~ 5.0 |
| sec-ButyIbenzene | 4 1 - 5 (1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 | < 10 | na | < 2.0 | < 5.0 |
| Styrene | | < 10 | na | < 2.0 | < 5.0 |
| tert-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Tetrachloroethene (PCE) | | < 10 | па | < 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 |
| Vulenes Total | | < 15 | | <30 | <75 |

Table 3

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity | | | | |
|--|--|----------------|-----------------|--------------|---------------|
| 10 million (10 million) | Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
| Semi-Volatile Organic Compounds (ug/L) | | a sale of the | ar least in the | | CONSIST. SUST |
| 1,2,4-Trichlorobenzene | | < 50 | na | <100 | < 10 |
| 1,2-Dichlorobenzene | | < 50 | па | < 100 | < 10 |
| 1,3-Dichlorobenzene | | < 50 | na | <100 | < 10 |
| 1,4-Dichlorobenzene | 7500 | < 50 | па | < 100 | < 10 |
| 1-Methylnaphthalene | (-1 | < 50 | na | <100 | <10 |
| 2,4,5-Trichlorophenol | | < 50 | па | <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 | Later Management | <100 | na | < 200 | < 20 |
| 2,4-Dinitrotoluene | 130 | < 50 | na | <100 | < 10 |
| 2,6-Dinitrotoluene | | < 50 | na | < 100 | < 10 |
| 2-Chloronaphthalene | | < 50 | па | < 100 | < 10 |
| 2-Chlorophenol | albuite (partie) - province of a second second second second second second second second second second second s | < 50 | na | < 100 | < 10 |
| 2-Methylnaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Methylphenol | | < 50 | na | < 200 | < 20 |
| 2-Nitroaniline | | < 50 | ла | <100 | < 10 |
| 2-Nitrophenol | | < 50 | na | <100 | < 10 |
| 3.3'-Dichlorobenzidine | | < 50 | na | 210 | < 10 |
| 3+4-Methylphenol | | < 50 | na | < 100 | < 10 |
| 3-Nitroaniline | 2 | < 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 | A second state of the seco | < 50 | na | < 100 | < 10 |
| 4-Nitroaniline | | < 50 | na | <100 | < 10 |
| 4-Nitronhenol | | < 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 |
| Renz(a)enthreene | | < 50 | na | < 100 | < 10 |
| Benzo(a)autore | terre and the second second second second second second second second second second second second second second | < 50 | na | < 100 | < 10 |
| Benzo(b)fluoronthono | | < 50 | na | < 100 | < 10 |
| Benzo(c) hillorantinene | | < 50 | na na | < 100 | < 10 |
| Benzo(k)fluorenthane | | < 50 | na | < 100 | < 10 |
| Denzo(k)nuoranunene | | < 100 | na | < 200 | < 10 |
| Benzul elected | | < 50 | | <100 | < 10 |
| Big(2 shlaresthaw) mothers | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethoxy)methane | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroceny))ether | (man) | < 50 | na | <100 | < 10 |
| Bis(2-chiofoisopropyi)ethel Bis(2-chiofoisopropyi)ethel | | < 50 | na | < 100 | < 10 |
| Bis(2-entymexyf)phinalaic | | < 50 | na | < 100 | < 10 |
| Gebeele | | < 50 | 114 | < 100 | < 10 |
| Carbazole | | < 50 | na | <100 | < 10 |
| Direction | | < 50 | na | <100 | < 10 |
| Dibenz(a,n)anthracene | | < 50 | IIa | < 100 | < 10 |
| Diothyl abthalata | | < 50 | ila re | < 100 | < 10 |
| Dimethyl abtholata | | < 50 | na | < 100 | < 10 |
| Dineutyi phinaiate | | ~ 50 | 112 | < 100 | < 10 |
| Di-n-buryi primaiate | and the second second | ~ 50 | na | <100 | < 10 |
| Di-n-octyl primalate | | ~ 50 | na | < 100 | < 10 |
| Fluorantnene | | × 50 | na | < 100 | < 10 |
| Fluorene | 120 | < 50 < 50 | na | <100 | ~ 10 |
| riexachiorobenzene | 130 | > 30 | na | < 100 | < 10 |
| | 006 | ~ 50 | BN | < 100 | < 10 |
| Leveland | 2000 | <u>> 30</u> | na | < 100 | < 10 |
| riexachioroethane | 3000 | > 30 | na | <100 | ~ 10 |
| Indeno(1,2,3-cd)pyrene | | > 30 | па | < 100 | < 10 |
| Isophorone | anangaran kata serina seri | > 00 | na | <100 | ~ 10 |
| INaphthalene | 0000 | < 50 | na | <100 <100 | < 10 |
| Nitrobenzene | 2000 | < 50 | na | < 100 | < 10 |
| N-Nitrosodimethylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodi-n-propylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodiphenylamine | 100000 | < 50 | na | < 100 | < 10 |
| Pentachlorophenol | 100000 | < 100 | па | < 200 | < 20 |
| Phenanthrene | | < 50 | na | < 100 | < 10 |
| Pnenol | | < 50 | na | < 100 | < 10 < 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 otherwis | se stated) | | | 1.418 | |
| Specific Conductance (umhos/cm) | | 7100 | na | 1900 | 1100 |
| Chloride | | 2400 | na | 510 | 220 |
| Sulfate | | 35 | па | 41 | 26 |
| Total Dissolved Solids | | 5240 | na | 1380 | 742 |
| pH (pH Units) | | 6.25 | па | 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) | | STRUCTURE DATE | | | |
| 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 | па | < 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 | | The part of the second | | | |
| 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 |

a = 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).



New Mexico Office of the State Engineer Point of Diversion Summary

| | | (quarte | ers are 1= | NW 2= | NE 3= | SW 4=SE |) | <i>1</i> 27 | |
|-------------------|---------------------|-------------|------------|---------|---------|---------|----------|---------------|-----------|
| | | (quar | ters are s | mallest | to larg | gest) | (NAD83 U | TM in meters) | |
| PC | DD Number | Q64 | Q16 Q4 | Sec | Tws | Rng | Х | Y | |
| SJ | 02148 | | 2 4 | 27 | 29N | 11W | 234448 | 4065184* | |
| Driller License: | 847 | | | | | | | | |
| Driller Name: | SAVAGE, BOB | | | | | | | | |
| Drill Start Date: | 10/20/1987 | Drill Finis | sh Date | : | 11/ | 16/1987 | Plug | Date: | |
| Log File Date: | 11/19/1987 | PCW Rcv | / Date: | | | | Sou | rce: | Shallow |
| Pump Type: | | Pipe Disc | charge | Size: | | | Esti | mated Yiel | d: 10 GPM |
| Casing Size: | 7.00 | Depth W | ell: | | 305 | feet | Dep | th Water: | 186 feet |
| Wate | r Bearing Stratific | cations: | Тор | Bott | om | Descrip | tion | | |
| | | | 225 | 2 | 285 | Sandsto | ne/Grave | /Conglome | rate |
| | Casing Perfo | orations: | Тор | Bott | om | | | | |
| | | | 266 | (| 305 | | | | |
| | | | | | | | | | |

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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

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 | l) #2 | | | addition of the second second | | |
|--|---|--|---|--|------------------------------------|-------------------------------------|
| Geologic Prognosis | Entrad | a & Bluff WDW, San | Juan County | | | |
| Header Well Name & Number: Waste Disposal V API: Pending Lat Sec. 27 Field: Surface Location Footage: 1980 FNL, 330 Bottom Hole Location Footage: Same as \$252 5522 | Vell (WDW) #2 itude (NAD 83): Basin 0 FEL Surface | 36.698499 Objective: County: Sta | Entrada & Bluff FM San Juan ate: New Mexi | Water Disposal Longitude (NAD 83) co Lease: | -107.971156 Location: TV GL Ele | VP: 29 N - Range: 11 W - vation: |
| Surface Owner: Type: Expiration Date: | Proposed Propo | KB Elevation: TD: 7500 sed Plugback: | 5550 D | November 25, 201 Geologist: Pe | 5 ter 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 | Continental Rivers |
| Naciemento 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 & | 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 | Swelling clay | Volcanic Ash Layers |
| Chacra FM | 2688 | 2862 | 189 | Sandstone, siltstone | Gas, Waler | 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, Oll | Transgressive Marine |
| Menefee Member | 3394 | 2156 | 643 | Interbeddded Shale, sandstone & | Gas, Water, Oil | Coastal Plain |
| Point Lookout Sandstone | 4037 | 1513 | 386 | Sandstone | Gas, Water, Oll | Regressive Marine Beach |
| Mancos Shale | 4423 | 1127 | 869 | Shale, thin sandstones & | Gas, Water, Oil | Offshore Marine |
| Niobrara A | 5292 | 258 | 102 | Interbeddded Shale, sandstone | Oll, 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 | Oll, Gas, Water | Offshore Marine Sands |
| Gallup FM | 5599 | -49 | 243 | Interbeddded Shale, sandstone | Oil, Gas, Water | Regressive Marine to |
| 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 |
| Dakola FM | 6149 | -599 | 216 | Sandstone, shale & coals | Oil, Gas, Water | Transgressive Coastal |
| Burro Canvon FM | 6365 | -815 | 46 | Sandstones, some conglomerate | Oll, 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 | Sillstone, Sandstone | Oil, Gas, Water | Alluvial Plain and Eolian |
| Todilto Limestone & Anhydrite | 7287 | -1737 | 28 | Interbedded Limestone & Anbydrite | Oil, Gas, Water, Anyhydrite | Alluvial Plain and Eolian |
| Entrada Sandstone | 7315 | -1765 | 168 | Sandstone | Oll, 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 c | overgage over Entrada Sand | stone. |
| Notes: Any significant flow rates, abnorma | al pressures, lost circula | ation, sticking, fluid loss o | r gain immediately not | I Ify company man, drilling superintende | ent and/or drilling engineer. | |



TD-12551.00 Exclusive

Л V





Mr. Jim Griswold, Bureau Chief NM Oil Conservation Division (OCD) Environmental Bureau 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: Discharge Plan Application for UIC Class I Non-Hazardous Injection Well Proposed Waste Disposal Well (WDW) #2 Bloomfield Terminal Western Refining Southwest, Inc. (Western) Bloomfield, New Mexico

Dear Mr. Griswold:

The enclosed *Discharge Plan Application for UIC Class I Non-Hazardous Injection Well* revised pursuant to the conference call with the OCD staff on January 22nd, 2016. The purpose of the application for Waste Disposal Well #2 is to replace Disposal #1 (API # 30-045-29002) which was abandoned in 2015. The fluids to be disposed in the proposed injection well will be waste water system effluent, evaporation pond contact storm water and injection well stimulation/ maintenance liquids.

Western appreciates your assistance with this urgent matter. If there are any questions regarding the enclosed Discharge Plan Application, please contact Mr. Randy Schmaltz at (505) 632-4171.

Sincerely,

Mr. Mark Smith President Western Refining Southwest, Inc.

cc

Carl Chavez NMOCD Brandon Powell, NMOCD Phillip Goetze, NMOCD State of New Mexico Energy Minerals and Natural Resources

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

Revised August 1, 2011

Submit Original Plus 1 Copy to Santa Fe I Copy to Appropriate District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

X New Renewal Modification

1. Type: UIC Class I Non-Hazardous Injection Well (WDW #2)

2. Operator: Western Refining Southwest, Inc.

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

Contact Person: Class I Non-Hazardous Injection Well Phone: 505-632-8013

3. Location: <u>SE</u> /4 <u>NE</u> /4 Section <u>27</u> Township <u>29N</u> Range <u>11W</u> Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site.

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.

- 6. Attach a description of all materials stored or used at the facility.
- 7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
- 8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
- 9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
- 10. Attach a routine inspection and maintenance plan to ensure permit compliance.
- 11. Attach a contingency plan for reporting and clean-up of spills or releases.
- 12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.
- 13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

14. CERTIFICATIONI 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 | |
|------------|----------|------|-----------|----------|
| Signature: | Bruce | ρ. | R | |
| E-mail Ad | dress: b | ruce | . davis@v | NNR. Com |

| Title: _ | Director | |
|----------|----------|--|
| Date: _ | 3-2-16 | |

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

4. Landowner of facility site.

San Juan Refining Company Attn: Western Refining Southwest, Inc. 1250 W. Washington St. Suite 101 Tempe, AZ 85281 Ron Weaver 505-632-8013

5. Description of the facility.

The proposed facility is an UIC Class I Non-hazardous Injection Well (WDW #2).

Purpose

The purpose of WDW #2 is to replace Disposal #1 (API# 30-045-29002) which was abandoned in 2015.

Location

The proposed well location is within the fence line of Bloomfield Terminal. See the figure and survey in Appendix A of this Discharge Plan Application.

Application for Permit to Drill

The Application for Permit to Drill (Form C-101) is included as Appendix A of this Discharge Plan Application. Form C-101 is also typically submitted under the Oil and Gas regulations, the format presents information also common for Class I injection wells under the Water Quality regulations. The Form C-101 includes general well data, well location survey (Form C-102), well design information including cement slurry details and a well drilling program.

Application for Authorization to Inject

The Application for Authorization to Inject (Form C-108) is included as Appendix B of this Discharge Plan Application. Although Form C-108 is typically submitted under the Oil and Gas regulations, the format presents information also common for Class I injection wells under the Water Quality regulations. The Form C-108 includes general well data, area of review information, proposed operation information, geologic data on the injection zone, the proposed stimulation program and other information.

6. Description of stored materials stored and used.

The proposed injection well will not be used to for material storage.

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

7. Description of present sources of effluent and waste solids.

During workover (maintenance) operations, the proposed injection well WDW #2 will be a source of waste water and possibly waste solids. The waste water will be re-injected into the WDW #2. The waste solids will be characterized and disposed properly.

8. Current liquid and solid waste collection/treatment/disposal procedures.

The proposed injection well will be used to dispose of non-exempt non-hazardous waste water. A Injection Fluid Analytical is included as Appendix C of this Discharge Plan Application.

9. Description of proposed modifications to the existing collection/treatment/disposal systems.

The pumps and piping to injection well WDW #2 will be redesigned as needed to meet the pressure and flow demands determined during the injectivity testing. This redesign will allow treated waste water to be injected directly into the WDW #2 or directed to the evaporation ponds before injection into WDW #2.

10. Routine inspection and maintenance plan

The WDW #2 surface completion and associated flanges/pumps/piping will be visually inspected daily.

Mechanical Integrity Testing (MIT) will be conducted pursuant to 20.6.2.5204 NMAC. At a minimum, the program will include:

- A MIT at least once every five years or every time a well workover is performed, and
- An annual Bradenhead test.

11. Contingency Plan for Reporting and clean-up of Spills or releases.

The Bloomfield Terminal has an Emergency and Facility Response Plans in place respond releases including treated waste water. If a reportable quantity (5 bbl.) of treated waste water is released from the injection well, NMOCD and NMED Hazardous Waste Bureau will notified in accordance with applicable regulations. Containment, clean-up and reporting will commence as soon as practicable.

12. Geologic/Hydrological information.

Geologic information about the injection zone is included in Appendix B of this Discharge Plan Application.

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well #2 (WDW #2) Discharge Plan Application Attachment

13. Facility Closure Plan.

A Closure Plan for WDW #2 is included as Appendix D of this Discharge Plan Application. The closure plan includes an estimate for Financial Assurance.

Appendix A Application for Permit to Drill

| <u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 | State of New Mexico | Form C-101 Revised July 18, 2013 |
|--|--|-------------------------------------|
| Phone: (575) 393-6161 Fax: (575) 393-0720 <u>District II</u> | Energy Minerals and Natural Resources | 1001500 5019 10, 2013 |
| 811 S. First St., Artesia, NM 88210 Phone: (575) 748-1283 Fax: (575) 748-9720 District IVI | Oil Conservation Division | AMENDED REPORT |
| 1000 Rio Brazos Road, Aztec, NM 87410 Phone: (505) 334-6178 Fax: (505) 334-6170 | 1220 South St. Francis Dr. | |
| <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505 Phone: (505) 476-3460 Fax: (505) 476-3462 | Santa Fe, NM 87505 | |

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| | | 1 | | ² OGRID Number | | | | | | | |
|--|--|-----------------|--------------|---------------------------|---|------------|--|---------------------------|--------------------|--|--|
| Western Refining Southwest, Inc | | | | | | | | 267595 | | | |
| #50 County Road 4990 (PO Box 159) Bloomfield, NM 87413 | | | | | | | | ³ · API Number | | | |
| * Property Code * Property Name Waste Disposal Well (WDW) | | | | | | | | ° We # | 11 No. 2 | | |
| | 7. Surface Location | | | | | | | | | | |
| UL - Lot H | Section 27 | Township 29N | Range 11W | Lət Idn | Lot Idn Feet from N/S Line Feet From 2028' North 111' | | | | County San Juan | | |
| | | | | * Propose | ed Bottom Hol | e Location | | | | | |
| UL - Lot | UL - Lot Section Township Range Lot Idn Feet from N/S Line Feet From E/W Line County | | | | | | | | | | |
| | I | <u>I</u> | | ۱ ۹. Pe | ol Information | 1 | | | | | |
| | | | | | | | | | / | | |

Pool Name

Pool Code

| ^{11.} Work Type N | ^{12.} Well S | l Type | ^{13.} Cable/Rotary R | ^{14.} Lease T P | Гуре | ¹⁵ Ground Level Elevation 5535' GL |
|-------------------------------|--|--|-------------------------------------|------------------------------|-------------|--|
| ^{16.} Multiple NO | ^{17.} Proposed Depth ~ 7500' | | ^{18.} Formation Entrada | ^{19.} Contra TBD | ctor) | ^{20.} Spud Date Est Marc 2016 |
| Depth to Ground water | | Distance from nearest fresh water well | | | Distance to | nearest surface water |
| Less than 50' 660' | | | 660 ' | | | 1334' |

We will be using a closed-loop system in lieu of lined pits

^{21.} Proposed Casing and Cement Program

| Туре | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|------|-----------|-------------|------------------|---------------|-----------------|---------------|
| Surf | 17-1/2" | 13-3/8" | 48 ppf – H40 | ~ 300' | 464 sx | Surface |
| Int | 12- ¼" | 9-5/8" | 36 ppf – J55 | ~ 3600' | 857 sx | Surface |
| Prod | 8-3/4" | 7" | 26 ppf – L80 | ~ 7500' | 850 sx | Surface |

Casing/Cement Program: Additional Comments

Will utilize a 2 stage cement job on the 7" casing w/ DV tool at ~ 4000'

^{22.} Proposed Blowout Prevention Program

| Туре | Working Pressure | Test Pressure | Manufacturer |
|------|------------------|---------------|--------------|
| 2M | 2000 psi | 2000 psi | Schaffer |

| ^{23.} I hereby certify that the information given above is true and complete to the best of my knowledge and belief. | OIL CONSERVATION DIVISION | | | |
|---|---------------------------------|--|--|--|
| I further certify that I have complied with 19.15.14.9 (A) NMAC and/or 19.15.14.9 (B) NMAC , if applicable. Signature: | Approved By: | | | |
| Printed name: Bruce D. Davis | Title: | | | |
| Title: Director | Approved Date: Expiration Date: | | | |
| E-mail Address: bruce. davis @ WNR. com | | | | |
| Date: 3-2-16 Phone: 602-286-1929 | Conditions of Approval Attached | | | |



DISTRICT I 1625 N. French Dr., Hobbs, N.M. 88240 Phone: (676) 393-6161 Fax: (676) 303-0720 DISTRICT II 011 S. First St., Artesis, N.M. 68210 Phone: (575) 748-1283 Fax: (575) 748-8720 DISTRICT III 1000 Rio Brazos Rd., Aztec, N.M. 67410 Phone: (605) 334-6178 Fax: (505) 334-6170 DISTRICT IV 1220 S. St. Francis Dr., Santa Fe, NM 07605 Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico Energy, Minerals & Natural Resources Department

Form C-102 Revised August 1, 2011 Submit one copy to appropriate District Office

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

□ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| ¹ API Number ⁸ Pool Code ⁸ Pool Nam | | | | | ^s Pool Code | | | ⁸ Pool Name | | | | |
|--|---------------------------------------|-----------------------|---|-----------|--------------------------|---------|------------------|------------------------|--------------------------|---------------------------------------|---------------------------------------|---|
| ⁴ Property C | ode | | | | ⁶ Well Number | | | | | | ll Number | |
| | | | | V | Vaste Disp | osal V | Vell (WDW) | | | | | 2 |
| "OGRID No |). | | ⁹ Operator Name ⁹ Elevation | | | | | | | | levation | |
| 26759 | 5 | | | Wester | n Refini | ng S | outhwest, Inc | • | | | | 5535' |
| | | | | | ¹⁰ Surf | ace | Location | | | | Souther community | |
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from | the | North/South line | Feet | from the | East/West | line | County |
| Н | 27 | 29-N | 11-W | | 2028 | 1 | NORTH | ~~~ | 111' | EAST | | SAN JUAN |
| | | | ¹¹ Bott | om Hole | Locati | on I | f Different Fr | om | Surface | | | |
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from | the | North/South line | Feet | from the | East/West | line | County |
| Dedicated Acre | 9 | | 18 Joint or | Infill | ¹⁴ Consolid | ation (| ode | 10 Ord | ler No | | | |
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Western Refining Southwest, Inc. – WDW #2

Cement Slurry Details (Attachment for NMOCD – APD)

Note: Actual Slurry Design will vary depending upon vendor selection and actual hole conditions.

17-1/2" Hole - 13-3/8", 40 ppf, J55 casing at ~ 300 ft

394 (548 cf) sacks Type III Cement, 2% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 59.2% Fresh Water

Yield:1.39 cf/sx Slurry wt 14.60 ppg

12-1/4" Hole - 9-5/8", 36 ppf, J55 casing at ~ 3600 ft

Lead:

806 sacks (1621 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx Slurry Wt: 14.5 ppg

8-3/4" Hole - 7", 26 ppf, L80 casing at ~ 7500 ft

Stage Tool (DV) at ~ 4000'

Stage no. 1

Lead:

224 sacks (450 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

180 sacks (338 cf) (10:90) Poz L:Type III Cement, 0.25% bwoc Calcium Chloride, 0.3% bwoc CD-32, 0.02 gps FP-6L, 0.5% bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 5 lbs/sx Kol-Seal, 87.8% Fresh Water

Yield: 1.88 cf/sx Slurry Wt: 13.0 ppg

Stage no. 2

Lead:

414 sacks (832 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx Slurry wt: 12.50 ppg

Tail:

50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx Slurry Wt: 14.5 ppg

DRILLING PROGRAM Western Refining Southwest, Inc. Waste Disposal Well (WDW) #2 San Juan County, NM

Surface Location 2028' FNL & 111' FEL Section 27, T29N, R11W Graded Elevation 5535' <u>SHL Geographical Coordinates (NAD-83)</u> Latitude 36.698609° N Longitude 107.970351° W

Bottom Hole Location (Vertical Well) Same as Surface

DIRECTIONS TO Western Refining - WDW #2

- > From Bloomfield NM, go on South on HWY 550 to CR 4990
- > Turn left and go easterly on CR 4990 for ~ 1.0 mi.
- > Turn left (north) for 0.1 miles to new location.

Pre-Spud

- Identify Safe Briefing Areas on location. Prevailing wind is NW to SE. Attempt to locate briefing
 areas upwind in the corners of location. Note location of access road and provide for alternate exit if
 not up wind.
- Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and the Time & Date of well spud on both the Daily Drilling Report and the IADC Daily Drilling Report.
- Ensure regulatory notifications are made Notify the NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud.
- Contact NMOCD Field Inspector Supervisor Brandon Powell 505-320-0200. Record time & date of notification on reports.
- Review and post NMOCD permits and conditions of approval. Ensure 100% compliance with all
 regulations and conditions.

Well Plan

- Drill 17-1/2" surface hole from 0' to 350'.
- Drill surface with a fresh water gel mud system.
- 8.3 -9.4 ppg, 32-75 vis, NC fluid loss, <5% LGS.
- Perform a deviation surveys at 100', 250' and TD.

- Control deviation as necessary.
- Run and cement 13-3/8" casing and cement to the surface.
- Contact NMOCD if cement is not circulated to surface to get remediation approved prior to 1" cement.
 If cement is below 200' from surface, a CBL may have to be run to determine cement top.
- Nipple up BOP and test BOPE
- Ensure all drill pipe has casing friendly hardbanding.
- Install ditch magnets and measure metal cuttings in a vis cup every tour.
- Drill 12-1/4" intermediate to ~ 3600' with a fresh water LSND mud.
- Short trip to surface casing to prepare hole for 9-5/8" casing.
- Run 9-5/8", 36 ppf J-55 casing to Intermediate TD (Clean threads & drift casing once it's on location, prior to running).
- Cement 9-5/8" casing in single stage. Calculate cement volumes to circulate cement to surface.
- Drill 8-3/4" to ~ 7500' w/ fresh water LSND mud.
- Short trip to intermediate to prepare hole for logs and 7" casing.
- Run triple combo open hole logs.
- Run 7", 26 ppf, L80 casing to TD (clean threads & drift casing once it's on location prior to running)
- Nipple down BOP, clean mud tanks.
- Release rig.

<u>Geology</u>

| MD | Formation |
|---------|------------------------|
| Surface | Quatermary Alluvium |
| 10' | Nacimiento |
| 515' | Ojo Alamo |
| 625' | Kirtland |
| 1718' | Pictured Cliffs |
| 1880' | Lewis |
| 2688' | Chacra |
| 3335' | Cliffhouse |
| 3394' | Menefee |
| 4037' | Point Lookout |
| 4423' | Mancos Shale |
| 5599' | Gallup |
| 6060' | Greenhorn |
| 6149' | Dakota |
| 6365' | Burro Canyon |
| 6411' | Morrison |
| 7287' | Todilto |
| 7315' | Entrada |
| 7483' | Chinle |

Casing Program:

| Casing & Hole Size | Weight | Grade | Coupling | Setting Depth (MD) | Top of Cement |
|-----------------------|--------|-------|----------|--------------------|---------------|
| 13-3/8" (17-1/2") | 48 ppf | H-40 | LT&C | 0-350 ft | To surface |
| 9-5/8" (12-1/4") | 36 ppf | J-55 | LT&C | 0-3600 ft | To surface |
| 7" (8-3/4") | 26 ppf | L-80 | LT&C | 0-7500 | To surface |

Mud logging: Commences at 300', 30-ft samples to TD, or as required to pick formation tops to TD

Open-Hole Logs: Triple Combo

Cased-Hole Logs: CBL

Rig-up

During rig-up, ensure that the following items are properly rigged up:

- Hydraulic remote choke and control panel (ensure that the choke manifold is configured properly to NMOCD standards)
- Trip tank (including piping, valves, etc.)
- Reliable wet-system bulk barite hopper (ensure that it is rigged up so that barite can be mixed prior to the suction tank and also so that barite can be mixed in the pre-mix tank)

Rig items to be taken care of the following issues prior to spud:

- Change seats and valves in mud pumps, redress relief valves, check pre-charge pressures of pulsation dampeners
- Repair all suction valves, etc., in mud tanks as required
- Check all centrifugal pumps, including charger pumps, mud mixing pumps, desander/desilter pumps, etc.

17 1/2" Surface Hole

MIRU During rig-up and while drilling surface hole, ensure that the following items are properly rigged up:.

Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and well spud time/date on Daily Report and on IADC Daily Drilling Report.

 Ensure regulatory notifications are made – NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud.
Contact NMOCD Field Inspector. Record name of government personnel contacted and time & date of notification on reports.

Procedure

Bottom-Hole Assembly (BHA) is to consist of the following:

- 1. PU 17-1/2" BHA
 - 17-1/2" surface hole bit
 - Bit sub (ported for float) 7-5/8" reg x 6-5/8" reg
 - Shock Sub
 - 4 ea. 8" DC's
 - Cross over 6-5/8" x 4-1/2"
 - 8 ea. 6" DC's
- 2. Drill 17-1/2" surface hole from 0' to 350'.
- 3. Drill surface with fresh water gel mud system. Drill surface with a fresh water gel mud system containing fresh water gel, poly-plus RD, detergent and 2% KCL
- 4. 8.3 -9.4 ppg, 32-75 vis, NC fluid loss, <5% LGS
- 5. Control deviation as necessary by varying RPM & WOB.
- 6. Install ditch magnets and measure metal cuttings in a vis cup every tour.
 - a. Take survey at 100', if the hole is straight take a second survey halfway to TD and at 13-3/8" casing point.
- 7. Ensure that all rig solids control equipment are working properly.

Target mud properties:

| MW (PPG) | Funnel Viscosity Sec | PV | YP | Gels 10s/10m | МВТ | Са | CI- | LGS |
|-------------|----------------------------|-----|--------|-----------------|---------|---------------|------------|------|
| 8.3 - 9.4 | 38 - 45 | <12 | 8 - 18 | 1/2 | <15 ppb | 800-1200 mg/l | <1200 mg/l | ALAP |

- 8. Drill to a minimum of 350-ft RKB. Adjust TD depth as required to fit the casing to the hole. Circulate and pump high viscosity sweeps as required. Make a wiper trip if any drag coming off bottom, otherwise continue POOH to run pipe.
- 9. RU and run 13-3/8" 48# H-40 LT&C casing.
 - a. Clean, visually inspect, and drift the casing on the rack.
 - b. Test slurries with actual mix water in advance. Ensure that Cement Company provides pumping time data from lab tests based on actual mix water and bulk cement as loaded for the job.
 - c. Run casing as follows:
 - Float Shoe
 - One (1) joint of 9-5/8" 36# J-55 LT&C casing
 - Float Collar
 - 13-3/8" 48# H-40 LT&C casing to surface.
 - d. Thread-lock the float shoe and float collar with equivalent thread-lock compound. Make up remaining joints with API modified thread compound. Ensure the float equipment is PDC friendly. Run 5 bow-spring centralizers with one 10-ft from the shoe, then on every jt to surface.
 - e. Fill the pipe as it is run.
 - f. Follow Wellhead Recommended Installation Procedure.
- 10. With the 13-3/8" casing run to bottom, circulate a minimum of one complete hole volume (casing volume + annular volume) before cementing as follows:

- a. Pump schedule (based on 125% excess)
 - 10-bbls Freshwater spacer
 - 394 sx (548 cf) 15.6 ppg
 - Drop top plug
 - Displace with surface drilling mud
- b. Bump the plug with 500 psi over final circulating pressure. Release pressure and then check the integrity of the float equipment.

Note: Pressure test casing to 1500 psi for 30 minutes. Pressure test the casing when pressure testing the BOPE.

- c. Ensure that 13-3/8" landing joint is centered in rotary table when Casing Head is landed.
- d. Report the following on the daily drilling report:
 - Spacer and cement slurry volumes, compositions, and properties (density, yield, etc.)
 - Displacement volume, fluid type, and density
 - Circulating pressure before bumping the plug and pressure that plug was bumped
 - Volume of fluid bled back and whether float equipment held or not
 - Whether cement was returned to surface and estimated volume of cement returns
 - Any other pertinent information about the cement job.
- e. If the cement falls back or does not return to surface, perform a top job with 1" tubing. Top Job Cement Slurry to consist of Class "G" Premium w/ 2% CaCl₂ (or similar cement).
- f. REGULATORY APPROVAL MUST BE GIVEN PRIOR TO PUMPING TOP JOB.
- g. WOC for a minimum 12 hours before drilling out.
- h. While waiting on cement, remove landing joint, nipple up BOPE,
- 11. Follow Wellhead Recommended Wellhead Installation Procedure for 13-5/8" 3,000 psi wellhead. The technician should remove plugs from side outlets, install side outlet valves, and confirm proper installation of entire 3M wellhead assembly equipment prior to pressure testing BOPE.
- 12. Nipple up 13-5/8" 3M BOPE, :
 - a. See attachment showing 2M BOPE (NOTE: Will test per NMOCD specs for 2M System as per APD)
- 14. Ensure that third party pressure test company personnel perform function and accumulator draw down tests by shutting off air and electric power to accumulator.
 - Check nitrogen pre-charge pressure for each accumulator bottle.
 - Record initial accumulator manifold pressure, open and shut all BOP equipment and hydraulic valves, and record final accumulator manifold pressure.
 - Ensure that results of function and accumulator draw down tests and any equipment deficiencies are noted on the Daily Drilling Report and the IADC Daily Drilling Report. Third party pressure test company personnel should provide report of accumulator unit inspection, including nitrogen pre-charge pressures for each accumulator bottle, to the rig supervisor.
- 15. Set 13-5/8" 3M BOP test plug (C22) in Casing Head bowl and open lower valve on Casing Head.
 - **Note:** Ensure that third party pressure test company personnel test all BOP equipment, choke manifold, and all surface equipment to low pressure of 250 psi and rated working pressure (2000 psi) for 10 minutes each test.
 - Note: Third party pressure test personnel should record and annotate all BOPE pressure tests on calibrated chart recorder with appropriate scale for test

pressures. One set of pressure recorder charts should be left onsite with drilling foreman and another set of pressure recorder charts should be submitted to the State Inspectors.

16. Remove 3M BOP test plug. Install retrievable long bowl protector (wear bushing) as required.

12-1/4" Section

Important Notes:

- This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.
- No mud materials should be mixed without explicit instructions from the mud engineer. Also
 ensure that good housekeeping is practiced on the top of the mud tanks to minimize the
 possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which
 could interfere with the pumps or be pumped down the hole.
- Wiper trip to surface to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

1. PU 12-1/4" BHA

4.

- 12-1/4" NOV
- NOV Mud Motor 7/8 5.0 .28 Revs per gallon
- 3 pt String IBS (Stabilizer)
- 2 ea. 6-1/2" DC's
- 3 pt String IBS (Stabilizer)
- 12 ea. 6-1/2" DC's
- 4 ea. 4-1/2" HWDP
- 4 ½" DP to surface
- 2. TIH and drill out float equipment
- 3. Drill 12-1/4" intermediate hole to TD ~ 3600'
 - Record all pressure tests on chart or Pason.
 - Drill out with fresh water based mud system as described above
 - Perform a deviation surveys every 500'
 - Continue to drill ahead with 12-1/4" PDC bit.
 - a. The 12-1/4" hole will be drilled with LSND WBM (reference mud program).
 - b. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.
- 5. Drill to Intermediate TD of ~3600'
- 6. Circulate hole clean and **Strap Out of Hole.**
- 7. While circulating prior to POOH, work pipe to assist in solids removal.
- 8. POOH to Surface Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.

- Run 9-5/8", 36#, J55 LT&C casing.
 - Casing Running Order:
 - One (1) Float Shoe
 - One (1) joint 9-5/8", 36#, J55 LT&C casing
 - One (1) Float Collar
 - 9-5/8", 36#, J55 LT&C casing
 - If necessary run DV tool to ensure cement to surface (Note: verify DV tool placement with Engineer prior to running casing)
 - 9-5/8", 36#, J55 LT&C casing, as required, to surface
 - Centralizers:
 - One Bow Spring centralizer on bottom 10 jts.
 - One Bow Spring centralizer on each 4th joint of casing to surface casing
 - Two Bow Spring centralizers above and below each DV tool
 - Clean threads, drift & visually inspect the casing on the rack.
 - Torque each joint of casing to optimum make-up torque.
 - Thread-lock the float collar and float shoe with thread lock compound.
 - Use API modified pipe dope for remaining casing joints.
 - Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.
- 10. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.
 - **Note:** Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.
- 11. Once casing is landed, circulate a <u>minimum</u> of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.
- 12. Cement casing in single stage (if heavy losses or hole conditions dictate install DV tool as needed) Note: verify cement volumes with Engineer prior to ordering cement. Refer to vendor Cement Recommendations for cement details.
 - a. Pump schedule:
 - Pump 10-bbls fresh water to fill lines and prime pumps
 - Pressure test lines to 2,000 psi
 - Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
 - Mix and pump 12.5 ppg lead cement slurry: 806 sx (1621 cf)
 - Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)
 - b. Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Bump the plug with 500 psi over final circulating pressure.
 - c. Release pressure and check pressure integrity of the float equipment. NDBOPE. Lift stack.

9.

- 13. Set slips on 9-5/8" casing. Energize slips with jam bolts.
- 14. LD 13-5/8" BOPE
- 15. NUBOPE (9-5/8"*2,000 psi)
- 16. Test BOPE
 - a. Test rams, HCR, manual valves and wellhead to 250 psi low and 2,000 psi high
 - b. Test manual chokes to 250 psi low and 2,000 psi high
 - c. Test kill line, choke line, choke manifold and all surface tools (TIW's, inside bop, etc) to 250 psi low and 2,000 psi high
 - d. Test 9-5/8" casing to 2,000 psi / 20 minutes.
 - e. Install wear bushing.

8 ³/₄" Section

Important Notes:

- This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.
- No mud materials should be mixed without explicit instructions from the mud engineer. Also
 ensure that good housekeeping is practiced on the top of the mud tanks to minimize the
 possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which
 could interfere with the pumps or be pumped down the hole.
- Wiper trip to Intermediate to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

- 13. PU 8 ¾" BHA
 - 8 3/4" NOV DSHI516G-G2
 - NOV Mud Motor 7/8 5.0 .28 Revs per gallon
 - 3 pt String IBS (Stabilizer)
 - 2 ea. 6-1/2" DC's
 - 3 pt String IBS (Stabilizer)
 - 12 ea. 6-1/2" DC's
 - 4 ea. 4-1/2" HWDP
 - 4 ¹/₂" DP to surface
- 14. TIH and drill out float equipment
- 15. Drill 8-3/4" hole
 - Record all pressure tests on chart or Pason.
 - Drill out with fresh water based mud system as described above
 - Perform a deviation surveys every 500'
- 16. Continue to drill ahead with 8 ³/₄" PDC bit to a TD of ~ 7500'.
 - c. The 8 ¾" hole will be drilled with LSND WBM (reference mud program).

- d. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.
- 17. Plan on bit trip at or near top of Dakota formation. Change out bit to 8-3/4" SKHI616D-D2 and fresh mud motor.
- 18. Continue drilling to TD of ~7500' (10' to 15' into Chinle Formation)
- 19. Circulate hole clean and **Strap Out of Hole.**
- 20. While circulating prior to POOH, work pipe to assist in solids removal.
- 21. POOH to Intermediate Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.
- 22. TOH & Run Open Hole Logs
- 23. TIH to TD, circulate & condition hole as necessary. TOH, LDDP & DC's
- 24. Run 7" 26# L-80 LT&C casing.
 - Casing Running Order:
 - One (1) Float Shoe
 - One (1) joint 7" 26# L-80 LT&C casing
 - One (1) Float Collar
 - 7" 26# L80 LT&C casing
 - Place DV tool at 4000' (Note: verify DV tool placement with Engineer prior to running casing)
 - 7" 26# N80 LT&C casing, as required, to surface
 - Centralizers:
 - One Bow Spring centralizer on bottom 10 jts.
 - One Bow Spring centralizer on each 4th joint of casing to surface casing
 - Two Bow Spring centralizers above and below each DV tool
 - Clean threads, drift & visually inspect the casing on the rack.
 - Torque each joint of casing to optimum make-up torque.
 - Thread-lock the float collar and float shoe with thread lock compound.
 - Use API modified pipe dope for remaining casing joints.
 - Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.
- 25. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.
 - **Note:** Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.
- 26. Once casing is landed, circulate a <u>minimum</u> of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.

27. Cement casing in 2 stages as follows: (Note: verify cement volumes with Engineer prior to ordering cement). Refer to vendor Cement Recommendations for cement details.

First Stage:

- f. Pump schedule:
 - Pump 10-bbls fresh water to fill lines and prime pumps
 - Pressure test lines to 2,000 psi
 - Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
 - Mix and pump 12.5 ppg lead cement slurry: 224 sx (450 cf)
 - Mix and pump 13.0 ppg tail cement slurry: 180 sx (338 cf)
 - Drop first-stage shutoff plug (top plug)
 - Pump 10-bbls fresh water
 - Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Be sure to slow down displacement rate to 3 bpm or less for 15-20 bbl before and for 15-20 bbl after the first-stage shutoff plug reaches the DV tool at approximately 4,000'.
- g. Bump the plug with 500 psi over final circulating pressure.
- h. Release pressure and check pressure integrity of the float equipment.
- i. Drop opening plug.
- j. Wait required time for opening plug to fall inside casing to top of 2nd DV tool. This time will likely be required to put the cap back on the cement head after dropping the opening plug.
- k. Pressure up to required pressure to open 1st stage tool.
- I. Break circulation and continue to circulate while WOC. Carefully bring up pump rate and monitor returns for losses. Record volume of cement returned to surface. Circulate and WOC for 4 hours or longer before pumping second stage cement slurry, if samples indicate additional WOC time would be beneficial.

Second Stage:

- a. Pump schedule:
 - Pump 20-bbls water-based spacer mixed at 8.4 lb/gal.
 - Mix and pump 12.5 ppg lead cement slurry: 414 sx (832 cf).
 - Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)
 - Drop closing plug
 - Pump 10-bbls freshwater
 - Displace with drilling fluid at 6-8 bpm then slow down displacement rate to 3 bpm before bumping plug.
- b. Bump the plug with 500 psi over final circulating pressure, then slowly bring pressure up to closing pressure, which will be approximately the final circulating pressure plus required pressure to close 1st DV tool. Release pressure and check for flow back to ensure that the 1st stage tool is closed.
- c. Report the estimated volume of cement returns.
- m. Release pressure and check pressure integrity of the float equipment.
- Lay down landing joint. Install the mandrel pack-off using a stand of HWDP and test pack-off seals to 2000 psi.
- 29. ND 11" 3M BOP Stack. NU 7-1/16" 5M x 4-1/16" Tubing Head Assembly. Be sure that bowl of Tubing Head Assembly is well greased to prevent corrosion while waiting on workover rig to complete well for SWD disposal.

- 30. NU 4-1/16" 5M Gate Valve, in order to secure well.
- 31. Release and RD drilling rig.

John Thompson Engineer

Appendix B

Application for Authorization to Inject

| DATE IN | SUSPENSE | ENGINEER | LOGGED IN | TYPE | APP NO. |
|---------|----------|----------|-----------|------|---------|

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] |
|-----|--|
| [1] | TYPE OF APPLICATION - Check Those Which Apply for [A] [A] Location - Spacing Unit - Simultaneous Dedication [] NSL [] NSL [] 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 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] X Offset Operators, Leaseholders or Surface Owner |
| | [C] X 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. P- | Director | 3-2-16 |
|--------------------|-------------|----------------|-----------------|
| Print or Type Name | Signature | Title | Date |
| | | e-mail Address | davis @WNR. com |

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 |
| Ш. | OPERATOR: Western Refining Southwest, Inc. |
| | ADDRESS: #50 County Road 4990 (PO Box 159), Bloomfield, NM 87413 |
| | CONTACT PARTY: <u>Ron Weaver</u> PHONE: <u>505-632-8013</u> |
| 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: |
| | Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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: <u>Bruce D. Davis</u> TITLE: <u>Director</u> |
| | SIGNATURE: $B_{n} p p_{2}$ 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:

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 2

| Side 1 | | INJEC | TION WELL DATA SHEET | |
|--|-------------------|--|---|---|
| OPERA | TOR: | Western Refining Southwest, Inc. | | |
| WELL 1 | VAME & N | UMBER: Waste Disposal Well (WDW) # | 42 | |
| MELL I | OCATION | V: 2028' FNL & 111' FEL | H 27 | T29N R11W |
| | | FOOTAGE LOCATION | UNIT LETTER | TOWNSHIP |
| | ĪM | ELLBORE SCHEMATIC | <u>WELL CO</u> Surface C | <u>NSTRUCTION DATA</u> Casing |
| Dat | e Drawn: Dec 2015 | | Hole Size: <u>17-1/2</u> | Casing Size: <u>13-3/8, 48 ppf. H40</u> |
| 17-112" Hole | | 07H 1938 - 1938 | Cemented with: 394 sx. | <i>or</i> 548 ft ³ |
| | | | Top of Cement: Surface | Method Determined: |
| | | | Intermediate | e Casing |
| | | | Hole Size: 12-1/4" | Casing Size: <u>9-5/8", 36#, 155</u> |
| 12-114- Hole | | 9-418°, 368°, U55 - 3600' | Cemented with: 857 sx | or 1693 ft ³ |
| | | DV tool at 4000 KB | Top of Cement: Surface | Method Determined: |
| | | | Production | Lasing |
| and a second second second second second second second second second second second second second second second | | | Hole Size:8-3/4" | Casing Size: 7", 26 ppf, L80 |
| | | Injection String 4 Jan 44 64 100 Inc. | Cemented with: 868 sx. | or 1692 ft ³ |
| | | | Top of Cement: Surface | Method Determined: |
| | | IPC FB Packer at ~ 7265 ° | Total Depth: ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | |
| | 000 | Proposed Injection Zone: Entrada Sandstone: 7315' - 7483' | Injection Interve | <u>al (</u> Proposed) |
| -1/C-8 | | 2st, 155 | 7315' feet | to 7483' (perforated 4 spf) |
| Hole | Frod Csg @ 7500" | | (Perforated or Open H | (ole; indicate which) |

| Type of Packer: 7" Baker "FAB-1" (or similar model" Packer Setting Depth: ~ 7265' Packer Setting Depth: ~ 7265' Other Type of Tubing/Casing Seal (if applicable):Baker Model "KBH-22" Anchor tubing seal assembly, landed Additional Data 1. Is this a new well drilled for injection? X ves No If no, for what purpose was the well originally drilled? 2. Name of the Injection Formation: 3. Name of field or Pool (if applicable): 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: | | | <u>1/4 - 1/1- 1/1- 1/1- 1/1- 1/1- 1/1- 1/1-</u> | | multi Matchial. | r lasuc Lilleu |
|--|---------------------|-------------------------------|---|----------------------------------|--|------------------------------------|
| Packer Setting Depth: ~7265' Other Type of Tubing/Casing Seal (if applicable):Baker Model "KBH-22" Anchor tubing seal assembly, landed 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: 3. Name of field or Pool (if applicable): 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: | Type of Pac | :ker: | 7" Baker "FAB-1" (or | similar model" | | |
| Other Type of Tubing/Casing Seal (if applicable): <u>Baker Model "KBH-22" Anchor tubing seal assembly, landed</u> 1. Is this a new well drilled for injection? Additional Data 1. Is this a new well drilled for injection? Yes No 1. Is this a new well drilled for injection? Yes No 1. If no, for what purpose was the well originally drilled? No 2. Name of the Injection Formation: Entrada 3. Name of frield or Pool (if applicable): | Packer Set | ting Depth: | ~ 7265' | | | |
| Additional Data 1. Is this a new well drilled for injection? X Yes No If no, for what purpose was the well originally drilled? If no, for what purpose was the well originally drilled? 2. Name of the Injection Formation: Base of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of the Injection Formation: Image: A state of any oil or gas zones underlying or overlying the proposed injection zone in this area: Pictured Cliffs. Chacra, Mesavetede, Gallup, Dakota | Other Typ | e of Tubing/ | 'Casing Seal (if app | olicable): <u>Bakı</u> | er Model "KBH-22" | Anchor tubing seal assembly, |
| Is this a new well drilled for injection? <u>X</u> Yes <u>No</u> If no, for what purpose was the well originally drilled? Name of the Injection Formation: <u>Entrada</u> Name of Field or Pool (if applicable): <u>Entrada</u> 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. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: <u>Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota</u> | | | | Additional | Data | |
| 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): Entrada 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: | 1. Is this | a new well | drilled for injection | n? | X_Yes | No |
| Name of the Injection Formation: <u>Entrada</u> Name of Field or Pool (if applicable): <u>Entrada</u> Has the well ever been perforated in any other zone(s)? List all such perforated in intervals and give plugging detail, i.e. sacks of cement or plug(s) used. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: <u>Pictured Cliffs. Chacra, Mesaverde, Gallup, Dakota</u> | If no, | for what pur | rpose was the well | originally dri | illed? | |
| Name of Field or Pool (if applicable): 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. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: <u>Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota</u> | 2. Name | of the Inject | tion Formation: | Entrada | | |
| 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. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: <u>Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota</u> | 3. Name | of Field or | Pool (if applicable) | ; | | |
| Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: <u>Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota</u> | 4. Has th interv | he well ever als and give | been perforated in plugging detail, i. | any other zou e. sacks of cer | ne(s)? List all such I ment or plug(s) used | berforated |
| | 5. Give | the name and ion zone in t | d depths of any oil his area: <u>pi</u> | or gas zones ctured Cliffs. | underlying or overly , Chacra, Mesaverde, | ing the proposed 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 1mile radius.

The maps are below.

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Area of Review 1 mile radius



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

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.

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

Western Refining Southwest, Inc. Bloomfield Terminal Waste Disposal Well (WDW) #2 Well List for 1-Mile Area of Review (AOR)

| - | Production ID | Primary API | Lease Name | Well Num | n Operator Name | Location | Latitude | Longitude Field Nam | e County Na | me Status Na | me Prod Zone Name | Lease Code | OII Cum G | as Cum W | r Cum | ę |
|-----------------------|------------------------|----------------|------------------------|----------|--|---------------------------------------|--------------|--------------------------|-------------------|--------------|----------------------------|------------|-----------|--------------------|--------|--------|
| | 30452519502290 | 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 |
| | 130452561202290 | 30045256120000 | CALVIN CALVIN | | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26K SE NE SW | 36.69445794 | -1.07.9618893 ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006883 | 65,478 | 602,470 | 1,472 | 5,970 |
| - 1 - 1 | 130452565702290 | 30045256570000 | CONGRESS | 16 | BURLINGTON RESOURCES D&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 |
| 1.000 | 130452567302290 | 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 |
| - C | 130452567377200 | 30045256730001 | CONGRESS | 18 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27K NW NE SW | 36.69549308 | -107.9808835 FULCHER KUT | Z SAN JUAN | ACTIVE | PICTURED CLIFFS | | | 95,176 | 1,056 | |
| - 10 C | 130452567502290 | 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 |
| C22 | 204530023005167 | 3004520020000 | ASHCROFT SMD | -1 - | ZAN JUAN REFINING CUMPANT XTO ENERGY INCORPORATED | 29N 11W 2/I NW NE SE | 36,70179353 | UWS C8/96/6/UT- | SAN ILIAN | ACTIVE | MORROW | | | | | |
| ~ | 30450773371599 | 30045077330000 | SULLIVAN GAS COM D | - | XTO ENERGY INCORPORATED | 29N 11W 26B SW NW NE | 36.70149705 | -107.9598182 BASIN | SANJUAN | ACTIVE | DAKOTA | 022839 | 22.497 | .820,296 | 4,546 | 6,260 |
| | 30450787571599 | 30045078750000 | DAMS GAS COM F | | BP AMFRICA PRODUCTION COMPANY | 29N 11W 27I SW NF SF | 36.69478771 | -107 9734791 RASIN | SAN ILIAN | INACTIVE | DAKOTA | 000410 | 16 714 | 573.971 | 211 | 6.365 |
| | 30450783571599 | 30045078350000 | MANGUM | | BURINGTON RESOURCES ORG CO LP | 29N 11W 27L NE NW 5W | 36.69567609 | -107.9834612 BASIN | SAN JUAN | INACTIVE | DAKOTA | 007282 | 15.187 | 646.060 | 1 | 6.350 |
| | 30450783571629 | 30045078350001 | MANGUM | F | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27L NE NW SW | 36.69567609 | -107.9834612 BASIN | SANJUAN | ACTIVE | FRUITLAND COAL | | | 189,125 | 25,920 | 6,350 |
| | 30450786871200 | 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 |
| 1.000 | 30450790377200 | 30045079030000 | GARLAND B | 1 | SOUTHERN UNION PRODUCTION COMPANY | 29N 11W 27M NE 5W 5W | 36.69234828 | -107.9841029 FULCHER KUT | Z SAN JUAN | INACTIVE | PICTURED CUFFS | 251550 | 10 | 355,978 | | 1,747 |
| 100 | (30450794071599 | 30045079400000 | COOK | - | 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 |
| | 130450795971200 | 30045079590000 | GRACE PEARCE | T | PICKETT JOHN C | 29N 11W 220 NE SW SE | 36.70664386 | -107.9750193 AZTEC | SAN JUAN | INACTIVE | FRUITLAND | 009267 | | 804,069 | | 1,620 |
| 0 | 130450796171599 | 30045079610000 | HARTMAN | - | MANANA GAS INCORPORATED | 29N 11W 22P SE SE | 36.70664763 | -107.972768 BASIN | SAN JUAN | INACTIVE | DAKOTA | 006262 | 45,556 | ,456,777 | 9,059 | 6,309 |
| 0 | 130450798571200 | 30045080090000 | PAN AMERICAN STATE COM | e | COOK ROY L | 29N 11W 23K NE SW | 36.71005755 | -107.9637286 AZTEC | SAN JUAN | INACTIVE | FRUITLAND | 570540 | | 31,853 | | 1,523 |
| 0 | 130450798571599 | 30045079850000 | PEARCE GAS COM | F | BP AMERICA PRODUCTION COMPANY | 29N 11W 23K NE SW | 36.70802867 | -107.9633365 BASIN | SAN JUAN | INACTIVE | DAKOTA | 000949 | 12,630 | ,695,598 | 2,187 | 6,274 |
| 0 | 130451200371599 | 30045120030000 | CALVIN | e | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26M SW SW | 36.6929968 | -107.9655043 BASIN | SAN JUAN | ACTIVE | DAKOTA | 006883 | 25,759 | ,648,517 | 7,941 | 6,450 |
| gl | 130451308971200 | 30045130890000 | COOK | 7 | MANANA GAS INCORPORATED | 29N 11W 22N SE 5W | 36,70619366 | -107.981141 AZTEC | SAN JUAN | ACTIVE | FRUITLAND | 006258 | | 845,491 | 650 | 1,440 |
| g | 130452075277200 | 30045207520000 | LEA ANN | 4 | CHAPARRAL OIL & GAS COMPANY | 29N 11W 35E NE SW NW | 36.68464683 | -107.9667053 FULCHER KUT | Z SAN JUAN | INACTIVE | PICTURED CUFFS | 002529 | | 266,925 | | 1,900 |
| 8 | 130452145782329 | 30045214570000 | DELO | 9 | SOUTHLAND ROYALTY COMPANY LLC | 29N 11W 26I SW NE SE | 36.69480938 | -107.9543218 OTERO | SAN JUAN | ACTIVE | CHACRA | 021202 | | 966,707 | 08 | 2,908 |
| 215 | 007//75/1754054 | 3004521/320000 | GARLAND B | HT | BURLINGION RESOURCES ONG CULP | 29N 11W 2/M NE SW SW | 5466/189.9E | -10/.9845498 FULCHER KUI | ANJUAN | INACINE | PICIOKED CUPPS | 650/00 | PT C | 803,208 | 110 | 4 0.45 |
| 215 | 130452263966627 | 30045226390000 | DELO | а. | GENERAL MINERALS CORPORATION | ZSN 11W Z6P NW SE SE | 36.69189/86 | 101.954158 UNDESIGNAL | CAN JUAN | ACTIVE | PARMINGLON | 202400 | 791 | 745 745 | DIL | 138 0 |
| ۶I۶ | 6707900TC7CHOC | | ETATE GAS COM BE | + + | | IN THAT SOU SEAL NE CAN HE CAN HE CAN | 101/02/01/02 | -107 0634046 BACIN | NAULUAN CAN ILLAN | ACTIVE | CUALITY AND COAT | 1+0770 | | 677 850 | 005 C | 7 954 |
| 218 | 01222222001 /022222001 | TOODOCCEZCHOOS | STATE GAS COM BS | | HOLCOMB OIL & GAS INCORPORATED | TOUL TITLE SAUNE SAUNE SAUNE SAUNE | TETETUTAE | -107 9634048 DTFBO | NAU INAN | INACTIVE | CHACRA | 077876 | 505 | 550.835 | BCE'S | 2 954 |
| 418 | BCECEPSSECSPUE | | DAVIS GAS COM G | 4 - | XTD FNFRGY INCORPORATED | 29N 111/V 27I SW NF SF | 36 69465987 | -107 9737919 DTFRO | SAN ILIAN | INACTIVE | CHACRA | 022685 | 222 | 937.989 | 747 | 2.951 |
| a g | 30452408271599 | 30045240820000 | PEARCE GAS COM | 1E | XTO ENERGY INCORPORATED | 29N 11V/ 23I SE NW SE | 36.70815961 | -107.9565825 BASIN | SANJUAN | ACTIVE | DAKOTA | 022629 | 3,328 | 474.351 | 5,412 | 6,365 |
| 18 | 130452408371599 | 30045240830000 | SULLIVAN GAS COM D | IE | XTO ENERGY INCORPORATED | 29N 11W 26F NW SE NW | 36.69993082 | -107.9642882 BASIN | SANJUAN | ACTIVE | DAKOTA | 022839 | 6,902 | ,458,755 | 7,940 | 6,329 |
| 10 | 130452408471599 | 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 |
| 2 | 130452408482329 | 30045240840000 | DAVIS GAS COM F | IE | 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 |
| 0 | 130452457282329 | 30045245720000 | CONGRESS | 6 | 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 |
| 010 | 13045245/382329 | 30045245730000 | GARLAND | - | SOUTHLAND RDYALTY COMPANY LLC | Z9N IIW Z7M NE SW SW | 36.69270239 | -107.9844958 OTERO | SANJUAN | ACTIVE | CHACKA | 021914 | | 205,435 Can are | 1,140 | C05/7 |
| 010 | 1045245/482329 | 30045245/40000 | SUMMIT | | BURLINGTON RESOURCES 08/6 CO LP | Z9N 11W 34A SW NE NE | 36.68/182 | -10/.9/22658 DIEHO | NAULUAN | ACTIVE | CHACKA | 155/00 | 1 130 | 780,005 | 1 EOC | 765'7 |
| 210 | CECT/C/047CHOCH | DODOCTTACZDOCE | TAL MAN | 1 | BUNLINGTON RESOURCES UNG COLD | JONI 111NI JED MINI CE CE | 36 60107550 | NICHA CONTRACTOR | NEOLVIC | ACTIVE | DAKOTA | CO6883 | 2 986 | 005 590 | R 346 | 6 507 |
| | 0001121122000 | 30045248370000 | CONGRESS | 45 | RURI INGTON RESOLITCES OR COLP | 79N 11W 35F NF SW NW | 36.6849902 | -107-9659406 BASIN | SANJUAN | ACTIVE | DAKOTA | 006918 | 370 | 160.434 | 1.661 | 6.508 |
| 10 | 130452483782329 | 30045248370000 | CONGRESS | 4E | BURUNGTON RESOURCES O&G CO LP | 29N 11W 35E NE SW NW | 36.6849902 | -107.9659406 OTERO | SAN JUAN | ACTIVE | CHACRA | 816900 | | 152,025 | 2,536 | 6,508 |
| 10 | 130452532971629 | 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 CDAL | | | 330,236 | 27,028 | |
| 0 | 130452532972319 | 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 | 1,390 | 4,331 |
| 01 | 430452532982329 | 30045253290000 | DAVIS GAS COM J | - | XTO ENERGY INCORPORATED | 29N 11W 26F NW SE NW | 36,69991548 | -107.9644588 OTERO | SAN JUAN | INACTIVE | CHACRA | 022601 | | 181,392 | 893 | 4,331 |
| u i c | 430452562102290 | 30045256210000 | EARL B SULUVAN | Nr | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 26H SE SE NE | 36.69824062 | -107.9525892 ARMENTA | SAN JUAN | INACTIVE | GALLUP /SD/ | 022841 | 2,425 | 12/2/21 | 154 | 5,/bU |
| JIC | 05020202220000 | TOODTZ8525400E | SUMMIT | 15 | FOLCOME OL & GAS INCONFORMED | 29N 11W 34C NF NF NW | 36.68874761 | -107.9804042 ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 021407 | 5.765 | 142.149 | 1.247 | 6.216 |
| 10 | 130452672182329 | 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 |
| 18 | 130452673182329 | 30045267310000 | MARY JANE | T | 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 |
| 0 | 130452736171200 | 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 |
| 0 | 130452736582329 | 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 |
| 0 | 130453078896436 | 30045307880000 | ASHCROFT SWD | T | XTO ENERGY INCORPORATED | 29N 11W 26B SW NW NE | 36.70129353 | -107.9586722 SWD | SAN JUAN | ACTIVE | ENTRADA | | | | | |
| U I | 430453083302290 | 30045308330001 | DAVIS GAS COM F | 1.R | XTO ENERGY INCORPORATED | 29N 11W 27I SW NE SE | 36.69461272 | -107.9721325 ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | | 3,866 | 46,691 | 8,653 | |
| | 430453083371599 | 30045308330000 | DAVIS GAS COM F | IR | XTO ENERGY INCORPORATED | 29N 11W 2/I SW NE SE | 36.694612/2 | -107.97.21325 BASIN | SAN JUAN | ACTIVE | DAKUIA SPIIITI AND COAL | | C78 | 126,022 | 9116 | |
| 11 C | CTOT/DTTTCCHOCH | OUDUEBUEESVUE | CALVIN FALVIN | TCO | BUKLINGI UN RESUURCES UNG LO LE | AND 32 WAN AND 192 WALF NOC | CB1C769 96 | NICHOL 1027COC. 101- | SAN ILLAN | ACTIVE | PAKOTA | | 2.529 | RUD.103 | 15.362 | 6.525 |
| - C | 130453431271629 | 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 |
| | 13D453440971629 | 30045344090000 | IACOUE | - | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 27H NW SE NE | 36.69957456 | -107.9729694 BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 62,855 | 3,225 | 1,897 |
| 100 | 130453446371629 | 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 |
| | | | | | | | | | | | | | | | | |

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.

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 | <u></u> |
|---|--|------------|-------------|---|---------|
| 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). ¹² | 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 Bio | ological 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 galions 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 Terninal is a transportation facility. The exemption of oil and gas exploration and production wastes does not apply to transportation facilities.

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 | па | < 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 | па | < 20 | < 50 |
| 2-Methylnaphthalene | | < 40 | na | < 8.0 | < 20 |
| 4-Chlorotoluene | | < 10 | na | < 2.0 | < 5.0 |
| 4-Isopropyltoluene | 1. miles | < 10 | na | < 2.0 | < 5.0 |
| 4-Methyl-2-pentanone | | < 100 | na | < 20 | < 50 |
| Acetone | | 1400 | na | 85 | 120 |
| Benzene | 500 | < 10 | па | < 2.0 | < 5.0 |
| Bromobenzene | | < 10 | na | < 2.0 | < 5.0 |
| Bromodichloromethane | | < 10 | па | < 2.0 | < 5.0 |
| Bromoform | | < 10 | na | < 2.0 | < 5.0 |
| Bromomethane | the second second second second second second second second second second second second second second second s | < 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 | па | < 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 | erri enere de estador de electronis | < 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 | па | < 2.0 | < 5.0 |
| tert-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Tetrachloroethene (PCE) | | < 10 | ра | < 2.0 | < 5.0 |
| Toluene | | < 10 | | < 2.0 | < 5.0 |
| frans-1 2-DCE | | < 10 | pa | <20 | < 5.0 |
| trans-1 3-Dichloropropene | | < 10 | na | <20 | < 5.0 |
| Trichloroethene (TCF) | | < 10 | pa | <20 | < 5.0 |
| Trichlorofluoromethane | | < 10 | na | < 2.0 | < 5.0 |
| Vinyl chloride | 200 | < 10 | pa | <20 | < 5.0 |
| Yulener Total | 200 | < 15 | na | < 3.0 | <75 |

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity | | | | |
|--|---|-------------|----------------------|-------------|-----------------|
| | Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
| Semi-Volatile Organic Compounds (ug/L) | | | The Street of Street | 31 Jo B. | Contract Fuller |
| 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 | for the second se | < 50 | na | < 100 | <10 |
| 2,4,5-Trichlorophenol | | < 50 | па | < 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 | па | <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 | па | 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 |
| Acenaphinylene | | < 50 | na | < 100 | <10 |
| Aniline | | < 50 | | <100 | <10 |
| Anthracene | | < 50 | 118 | < 100 | < 10 |
| Azobenzene | | < 50 | na | < 100 | <10 |
| Benz(a)aninfacene | | < 50 | na | <100 | < 10 |
| Benzo(a)pyrene | | < 50 | na | < 100 | < 10 |
| Benzo(b)nuorannene Benzo(chi)perulene | | < 50 | 114 | < 100 | < 10 |
| Benzo((c)fluoranthana | | < 50 | na | < 100 | < 10 |
| Benzo(k)Illioranuiene | | < 100 | na | < 200 | < 40 |
| Benzul alaohal | | < 50 | 114 | < 100 | < 10 |
| Bis(2 abloraethory)methane | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethyl)ether | | < 50 | па | < 100 | < 10 |
| Bis(2-chloroisopropyl)ether | | < 50 | na | < 100 | < 10 |
| Bis(2-ethylbeyyl)nbthalate | harmonic transformed the second | < 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 | e new restances in a large scale of the | < 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 | Number (| < 50 | па | < 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 | па | < 200 | < 20 |
| Phenanthrene | | < 50 | na | < 100 | < 10 |
| Phenol | | < 50 | na | < 100 | < 10 |
| Pyrene | | < 50 | na | < 100 | < 10 |
| Pyridine | 5000 | < 50 | na | < 100 | < 10 |

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|--|-------------|-------------|-----------------------|--------------|
| General Chemistry (mg/L unless otherwis | se stated) | | | 1.201 | A CONTRACTOR |
| Specific Conductance (umhos/cm) | | 7100 | na | 1900 | 1100 |
| Chloride | | 2400 | na | 510 | 220 |
| Sulfate | and the second second second second second second second second second second second second second second second | 35 | па | 41 | 26 |
| Total Dissolved Solids | | 5240 | na | 1380 | 742 |
| pH (pH Units) | | 6.25 | па | 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) | | Y UDA LOUIS | -14 M | and the second second | |
| 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 | | a Columbia | | | |
| 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 |

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).



New Mexico Office of the State Engineer Point of Diversion Summary

| | (quarters are 1=NW 2=NE 3=SW 4=SE) | | | | | | | | |
|-------------------|------------------------------------|-------------|-----------|-------|------------------------------------|-----------|------------------------|----------|----------|
| | | | | | (quarters are smallest to largest) | | | | |
| PC | Q64 | Q16 Q4 | Sec | Tws | Rng | Х | Y | | |
| SJ | 02148 | | 24 | 27 | 29N | 11W | 234448 | 4065184* | e |
| Driller License: | 847 | | | | | | | | |
| Driller Name: | SAVAGE, BOB | | | | | | | | |
| Drill Start Date: | 10/20/1987 | Drill Finis | sh Date | : | 11/* | 16/1987 | Plug | Date: | |
| Log File Date: | 11/19/1987 | PCW Rcv | Date: | | | | Sou | ce: | Shallow |
| Pump Type: | | Pipe Disc | charge \$ | Size: | | | Estimated Yield: 10 GF | | |
| Casing Size: | 7.00 | Depth We | əll: | | 305 | feet | Dept | h Water: | 186 feet |
| Wate | r Bearing Stratific | ations: | Тор | Bott | om | Descrip | tion | | |
| | | 225 | 2 | 285 | Sandsto | ne/Gravel | /Conglome | rate | |
| | Casing Perfo | rations: | Тор | Bott | om | | | | |
| | | | 266 | ŝ | 305 | | | | |
| | | | | | | | | | |

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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

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 | 1.00 | | · · · · · · · · · · · · · · · · · · · | | | | |
|--|---|--|---|--|--|-------------------------------------|--|--|
| Geologic Prognosis | Entrada | & Bluff WDW, San | Juan County | | | | | |
| Header Well Name & Number: Waste Disposal V API: Pending Lal Sec. 27 Field: Surface Location Footage: 1900 FNL, 330 Bottom Hole Location Footage: Same as \$ 5538 Surface Quage: | Vell (WDW) #2 itude (NAD 83): Basin D FEL Surface | 36.698499 Objective: County: Sta | Entrada & Bluff FM 1 San Juan ate: New Mext | Water Disposal Longitude (NAD 83) co Lease: | -107.971156 Location: TV GL Ele | VP: 29 N - Range: 11 W - vation: | | |
| Type: Proposed TD: 7500 November 25, 2015 Expiration Date: 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 cirriculation | Continental Rivers | | |
| Naciemento 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 & | 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 | Swelling clay | Volcanic Ash Layers | | |
| Chacra FM | 2688 | 2862 | 189 | Sandstone, siltstone | Gas, Waler | 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 | | |
| Menefee Member | 3394 | 2156 | 643 | Interbeddded Shale, sandstone & | 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 & | Gas, Water, Oil | Offshore Marine | | |
| Niobrara A | 5292 | 258 | 102 | Interbeddded Shale, sandstone | Oll, 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 | | |
| 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 | Oll, Gas, Water | Offshore Marine | | |
| Dakola FM | 6149 | -599 | 216 | Sandstone, shale & coals | Oil, Gas, Water | Transgressive Coastal | | |
| Burro Canvon FM | 6365 | -815 | 46 | Sandstones, some conglomerate | Oll, 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 | Sillstone, Sandstone | Oil, Gas, Water | Alluvial Plain and Eolian | | |
| Todilto Limestone & Anhydrite | 7287 | -1737 | 28 | Interbedded Limestone & Anbyddite | 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 | Oll, Gas, Water | Continental Rivers | | |
| Proposed TD | 7500 | -1950 | | TD designed for complete log c | overgage over Entrada Sand | stone. | | |
| Notes: Any significant flow rates, abnorma | al pressures, lost circula | tion, sticking, fluid loss o | r gain immediately not | ify company man, drilling superintende | ent and/or drilling engineer. | | | |

| | u L | F | ő | ę | R | B | F |
|---|--|----------|-------------|----------------------------|-------------------|---|----|
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| 24583.1 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 | e - State State in | | | Lington Control | | and the second se | |



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ANGEL PEAK B #22 -

TD-7512.00

consection of the section a manage of the Exclusive 1X. 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.

XIII. Public Notice will follow NMOCD review of this application.

Appendix C Injection Fluid Analytical

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity | | | | |
|-----------------------------------|--|-------------|-------------|-------------|-------------|
| | Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
| Volatile Organic Compounds (ug/L) | Reference in the second second | 1/23/2014 | MAR HERIO | 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 | па | < 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 | па | < 4.0 | <10 |
| 1,2-Dibromoethane (EDB) | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichlorobenzene | | < 10 | па | < 2.0 | < 5.0 |
| 1,2-Dichloroethane (EDC) | 500 | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloropropane | | < 10 | па | < 2.0 | < 5.0 |
| 1,3,5-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichlorobenzene | | < 10 | па | < 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 | enter a substantia de la constanti de la constanti de la constanti de la constanti de la constanti de la const | < 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 | па | < 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 | па | < 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 | па | < 2.0 | < 5.0 |
| Hexachlorobutadiene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Isopropylbenzene | | < 10 | па | < 2.0 | < 5.0 |
| Methyl tert-butyl ether (MTBE) | | < 10 | na | < 2.0 | < 5.0 |
| Methylene Chloride | | < 30 | па | < 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 |

Injection Well 2014 Quarterly Analytical Summary

| | Toxicity | 2 | And a second sec | | | |
|--|---|-------------|--|-------------|--|--|
| | Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | |
| Semi-Volatile Organic Compounds (ug/L) | Marshall & Berlin | | Service of | | and the second sec | |
| 1 2 4-Trichlorobenzene | | < 50 | na | < 100 | < 10 | |
| 1.2-Dichlorobenzene | | < 50 | па | < 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 | 444444994(44444444444444444444444444444 | < 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 | па | < 100 | <10 | |
| 4 6-Dinitro-2-methylphenol | ang a ang ang ang ang ang ang ang ang an | < 100 | na | < 200 | < 20 | |
| 4-Bromophenyl phenyl ether | | < 50 | па | < 100 | < 10 | |
| 4-Chloro-3-methylphenol | terre and the second second second second second second second second second second second second second second | < 50 | na | < 100 | < 10 | |
| 4-Chloroaniline | 10000000000000000000000000000000000000 | < 50 | па | <100 | < 10 | |
| 4-Chlorophenyl phenyl ether | | < 50 | na | < 100 | < 10 | |
| 4-Nitroaniline | | < 50 | na | < 100 | < 10 | |
| 4-Nitrophenol | | < 50 | na | < 100 | <10 | |
| Acenanhthene | | < 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)pyrepe | | < 50 | na | < 100 | <10 | |
| Benzo(b)fluoranthene | | < 50 | na | <100 | < 10 | |
| Benzo(g h i)perulene | | < 50 | na | < 100 | <10 | |
| Banzo(k)fluoranthana | | < 50 | na | < 100 | < 10 | |
| Benzoio goid | | < 100 | na | < 200 | < 40 | |
| Benzul alcohol | | < 50 | na | < 100 | < 10 | |
| Rig(2 ablereathere) methane | | < 50 | na | < 100 | < 10 | |
| Bis(2-chloroethyl)athar | | < 50 | na | <100 | < 10 | |
| Bis(2 chloroicopropul) ather | manna a la companya ang | < 50 | 10 | < 100 | <10 | |
| Bis(2-chiolosopiopyi)ettel | | < 50 | na | <100 | < 10 | |
| Bis(2-emymexy)phinalate | NUMBER OF STREET | < 50 | na | < 100 | < 10 | |
| Carbagele | | < 50 | na | < 100 | < 10 | |
| Chryster | | < 50 | 110 | < 100 | < 10 | |
| Dikana(a k)anthracana | | < 50 | | < 100 | < 10 | |
| Dibenzeanjanimacene | | < 50 | 114 | < 100 | < 10 | |
| District and a standard | | < 50 | 114 | < 100 | < 10 | |
| Dientyl philaiale | | < 50 | na | < 100 | < 10 | |
| Dinetnyi philaiate | | < 50 | na | < 100 | < 10 | |
| Di-n-outyr primalate | | < 50 | na | < 100 | < 20 | |
| Eluoranthene | | < 50 | na | <100 | < 10 | |
| Fluerene | | < 50 | na | < 100 | < 10 | |
| Lawashlarahangan- | 120 | < 50 | na | < 100 | < 10 | |
| Upypehlorobutedig=== | 500 | < 50 | na | <100 | < 10 | |
| Haveskiereguelens-t | 000 | < 50 | na | < 100 | < 10 | |
| Herechlerecthere | 3000 | < 50 | | < 100 | < 10 | |
| Indexe(1.2.2. ed)pursue | 3000 | < 50 | | < 100 | < 10 | |
| Isophorone | | < 50 | 110 | < 100 | <10 | |
| Newbihalawa | | < 50 | 110 | < 100 | <10 | |
| Nitrohangana | 2000 | < 50 | 114 | < 100 | <10 | |
| N Nitronodimethul | 2000 | < 50 | 110 | < 100 | <10 | |
| N Nitese di a angestanine | | < 50 | 114 | < 100 | < 10 | |
| IN-INITOSOGI-n-propylamine | | < 50 | 118 | < 100 | <10 | |
| n-initrosocipitenyiamine | 100000 | < 100 | 114 | < 200 | < 20 | |
| Pentachiorophenoi | 100000 | < 50 | na | < 100 | <10 | |
| Phenel | | < 50 | na na | < 100 | <10 | |
| Pureno | | < 50 | na | < 100 | <10 | |
| ryrene | 5000 | ~ 50 | na | < 100 | <10 | |
| Pyridine | 5000 | 1 < 20 | 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 otherwi | se stated) | | | LES SPAN | 12466 |
| 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 | па | 480 | 110 |
| Magnesium | | 75 | na | 99 | 23 |
| Potassium | | 37 | па | 36 | 8.2 |
| Sodium | | 1000 | na | 1100 | 220 |
| Total Alkalinity (as CaCO3) | | 380 | na | 220 | 150 |
| Total Metals (mg/L) | a California March | Sector St. | 949. P. H. H. H. H. | Mark and and | |
| 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 | | 10 10 | | and the second | |
| 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 | па | >200 | >200 |
| Corrosivity (ph Units) | ≤2 or ≥ 12.5 | 6.25 | na | 7.44 | 6.82 |

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| CLIENT: Western Refining Southwest, Project: Injection Well 1-23-2014 | Inc. | | Client Samp Collection | Die ID: Inje Date: 1/23 | ection Well 3/2014 8:35:00 AM | |
|--|--------|---------|---------------------------|----------------------------|----------------------------------|--------|
| Lab ID: 1401A07-001 | | AQUEUUS | | Date: 1/24 | 4/2014 10:15:00 AM | Detel |
| Analyses | Result | KL - | 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 N | IETALS | | | | Analyst | ELS |
| Arsenic | ND | 0.020 | ma/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: SEMIVOLATILE | S | | | | Analyst | DAM |
| Acenaphthene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Acenaphthylene | ND | 50 | ug/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/∟ | 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-Chioro-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 |

Hall Environmental Analysis Laboratory, Inc.

Analytical Report Lab Order 1401A07 Date Reported: 2/13/2014

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 Page 1 of 17

P Sample pH greater than 2.

RL Reporting Detection Limit

| Hall En | vironmental Analys | is Laborato | rv. Inc. | | | Lab Order 1401A07 | 14 |
|----------------|-----------------------------|-------------|----------|------------|------------|----------------------|-------|
| | | | | | I. ID. Ia | inaction Woll | |
| CLIENT: | Western Refining Southwest, | lnc. | (| lient Samp | ne iD: inj | | |
| Project: | Injection Well 1-23-2014 | | | Collection | Date: 1/2 | 23/2014 8:35:00 AM | |
| Lab ID: | 1401A07-001 | Matrix: AC | QUEOUS | Received | Date: 1/2 | 24/2014 10:15:00 AM | |
| Analyses | | Result | RL Qual | Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 8270C: SEMIVOLATILE | S | | | | Analyst | DAM |
| 2-Chloron | aphthalene | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Chlorop | henol | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| , 4-Chlorop | henyl 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 |
| Dibenzofi | Iran | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,2-Dichle | probenzene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,3-Dichle | probenzene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,4-Dichle | probenzene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3,3'-Dichi | orobenzidine | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Diethyl pł | nthalate | 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-Dichle | prophenol | ND | 100 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dime | thylphenol | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4,6-Dinitr | o-2-methylphenol | ND | 100 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dinitr | ophenol | ND | 100 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dinitr | otoluene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,6-Dinitr | otoluene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Fluoranth | ene | 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 |
| Hexachlo | robenzene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachlo | robutadiene | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachio | rocyclopentadiene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachlo | roethane | 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 |
| Isophoror | ne | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1-Methylr | naphthalene | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Methylr | naphthalene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Methylp | phenol | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3+4-Meth | ylphenol | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitroso | di-n-propylamine | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitroso | odimethylamine | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitrosc | diphenylamine | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Naphthal | ene | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Nitroan | iline | ND | 50 | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3-Nitroan | iline | ND | 50 | μg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Nitroan | iline | 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.

- 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 Page 2 of 17

Analytical Report

- P Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Environmental Analysis | | Date Reported: 2/13/2014 | | | | | | | | |
|--|---------------|---|---------|-------|----------------------|--------|--|--|--|--|
| CLIENT: Western Refining Southwest, In Project: Injection Well 1-23-2014 Lab ID: 1401A07-001 | c. Matrix: | Client Sample ID: Injection Well Collection Date: 1/23/2014 8:35:00 AM Matrix: AQUEOUS Received Date: 1/24/2014 10:15:00 AM | | | | | | | | |
| Analyses | Result | RL Qua | l Units | DF | Date Analyzed | Batch | | | | |
| FPA METHOD 8270C: SEMIVOLATILES | | | | | Analyst | DAM | | | | |
| Nitrobonzene | ND | 50 | ua/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 | | | | |
| Pentachiorophenol | 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-Trichlorophenoi | 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-Elunrophenol | 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 | | | | | Analysi | t: 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 | | | | |
| | | | * 1001 | · · · | | | | | | |

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 Page 3 of 17
- P Sample pH greater than 2.
- RL Reporting Detection Limit

Analytical Report

Analytical Report

Lab Order 1401A07

Date Reported: 2/13/2014

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

Lab ID: 1401A07-001

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 Qu | al 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-Isopropyitoluene | 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 |

Matrix: AQUEOUS

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

| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | B Analyte detected in the associated Method B | | |
|-------------|----|---|----|---|--------------|--|
| | E | Value above quantitation range | H | Holding times for preparation or analysis | s exceeded | |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 4 of 17 | |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | | |
| | R. | RPD outside accepted recovery limits | RL | Reporting Detection Limit | | |
| | S | Spike Recovery outside accepted recovery limits | | | | |

Analytical Report Lab Order 1401A07

Date Reported: 2/13/2014

7

Hall Environmental Analysis Laboratory, Inc.

| CLIENT: Western Refining Southwest Project: Injection Well 1-23-2014 | st, Inc. | Client Sample ID: Injection Well Collection Date: 1/23/2014 8:35:00 AM | | | | | | | | | |
|---|----------|---|------|--------------|---------|----------------------|--------|--|--|--|--|
| Lab ID: 1401A07-001 | Matrix: | AQUEOU | S | Received Dat | te: 1/2 | 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 CONDUCTANC | E | | | | | Analyst | SRM | | | | |
| Conductivity | 7100 | 0.010 | | µmhos/cm | 1 | 1/24/2014 5:53:17 PM | R16304 | | | | |
| SM4500-H+B: PH | | | | | | Analyst | SRM | | | | |
| pН | 6.25 | 1.68 | Н | 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. | В | Analyte detected in the associated Meth | od Blank |
| | Е | Value above quantitation range | Н | Holding times for preparation or analysi | s exceeded |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 5 of 1 |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | I ugo D of I |
| | 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

> 140128036 1401A07

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

Analytical Results Report

| Sample Number Client Sample ID | 140128036-001 1401A07-001E / INJE | Samp CTION WELL | oling Date | 1/23/2014 | Date/ Samp | Time Receive | ed 1/28/2014 8:35 AM | 12:18 PM | | | |
|-----------------------------------|--------------------------------------|--------------------|-----------------|-----------|---------------|--------------|-------------------------|-----------|--|--|--|
| Matrix | Matrix Water | | Sample Location | | | | | | | | |
| Comments | | | | | | | | | | | |
| Parameter | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier | | | |
| Cvanide (reacti | ive) | ND | mg/L | 1 | 2/12/2014 | CRW | SW846 CH7 | | | | |
| Flashonint | | >200 | ۰F | | 2/4/2014 | KFG | EPA 1010 | | | | |
| nH | | 5.89 | ph Units | | 1/31/2014 | AJT | EPA 150.1 | | | | |
| Reactive sulfid | 6 | 1.57 | mg/L | 1 | 1/29/2014 | АJT | 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. Soli/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:Cent0085; FL(NELAP): E871089

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID | МВ | SampTy | pe: MI | BLK | Tes | tCode: E | PA Method | 300.0: Anions | 5 | | |
|--|--------------------------|--|--|--|---|--|--|--|------------------------|----------------------|------|
| Client ID: | PBW | Batch I | ID: R1 | 6313 | Я | RunNo: 1 | 6313 | | | | |
| Prep Date: | | Analysis Da | te: 1/ | 24/2014 | S | SeqNo: 4 | 70380 | 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 Meth | | | | | | 300.0: Anions | 8 | | |
| Client ID: | LCSW | Batch I | ID: R1 | 6313 | R | RunNo: 1 | 6313 | | | | |
| 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 | ****** | | |
| | | SampType: MBLK TestCode: EPA Method 300.0: Anions | | | | | | | | | |
| Sample ID | МВ | SampTy | pe: MI | BLK | Tes | tCode: E | PA Method | 300.0: Anions | 5 | | |
| Sample ID Client ID: | MB PBW | SampTy Batch I | pe: MI ID: R1 | 3LK 6337 | Tesi | tCode: E RunNo: 1 | PA Method 6337 | 300.0: Anions | 3 | | |
| Sample ID Client ID: Prep Date: | MB PBW | SampTy Batch I Analysis Da | pe: MI ID: R1 te: 1/ | BLK 6337 27/2014 | Tes F S | tCode: E tunNo: 1 SeqNo: 4 | PA Method 6337 71000 | 300.0: Anions Units: mg/L | 5 | | |
| Sample ID Client ID: Prep Date: Analyte | MB PBW | SampTy Batch I Analysis Da Result | pe: MI ID: R1 te: 1/ PQL | BLK 6337 27/2014 SPK value | Tesi F S SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC | PA Method 6337 71000 LowLimit | 300.0: Anions Units: mg/L HighLimit | s %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride | MB PBW | SampTy, Batch I Analysis Da Result ND | pe: MI ID: R1 te: 1/ PQL 0.50 | BLK 6337 27/2014 SPK value | Tesi F SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC | PA Method 6337 71000 LowLimit | 300.0: Anions Units: mg/L HighLimit | s %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID | MB PBW LCS | SampTy Batch I Analysis Da Result ND SampTy | pe: MI ID: R1 te: 1/ PQL 0.50 pe: LC | BLK 6337 27/2014 SPK value S | Tes F SPK Ref Val Tes | tCode: E RunNo: 1 SeqNo: 4 %REC KCode: E | PA Method 6337 .71000 LowLimit PA Method | 300.0: Anions Units: mg/L HighLimit 300.0: Anions | \$ %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: | MB PBW LCS LCSW | SampTy, Batch I Analysis Da Result ND SampTy, Batch I | pe: MI ID: R1 te: 1/ PQL 0.50 pe: L0 | BLK 6337 27/2014 SPK value S 6337 | Tes F SPK Ref Val Tes F | tCode: E RunNo: 1 SeqNo: 4 %REC %REC tCode: E RunNo: 1 | PA Method 6337 .71000 LowLimit PA Method 6337 | 300.0: Anions Units: mg/L HighLimit 300.0: Anions | \$ %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: | MB PBW LCS LCSW | SampTy Batch I Analysis Da Result ND SampTy Batch I Analysis Da | pe: MB ID: R1 te: 1/ PQL 0.50 pe: LC ID: R1 te: 1/ | BLK 6337 27/2014 SPK value S 6337 27/2014 | Tes F SPK Ref Val Tes F S | tCode: E RunNo: 1 SeqNo: 4 %REC tCode: E RunNo: 1 SeqNo: 4 | PA Method 6337 .71000 LowLimit PA Method 6337 .71001 | 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L | s %RPD s | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: Analyte | MB PBW LCS LCSW | SampTy, Batch I Analysis Da Result ND SampTy, Batch I Analysis Da Result | pe: MI ID: R1 te: 1/ PQL 0.50 pe: L0 ID: R1 te: 1/ PQL | 3LK 6337 27/2014 SPK value S 6337 27/2014 SPK value | Tesi SPK Ref Val Tesi F SPK Ref Val | tCode: E RunNo: 1 SeqNo: 4 %REC tCode: E RunNo: 1 SeqNo: 4 %REC | PA Method 6337 .71000 LowLimit PA Method 6337 .71001 LowLimit | 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit | s %RPD s %RPD | RPDLimit RPDLimit | Qual |

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

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1401A07 *13-Feb-14*

WO#:

Western Refining Southwest, Inc. **Client:**

Project:

Injection Well 1-23-2014

| Sample ID 5ml rb | SamnT | voe: M | SI K | TestCode: EPA Method 8260B: VOLATILES | | | | | | |
|--------------------------------|------------|---------------|-----------|---------------------------------------|----------|----------|-------------|------|----------|------|
| | Datah | | 6444 | | | RAA1 | | | | |
| | Batch | ни: К1 | 0441 | | anino; 1 | 0441 | | | | |
| Prep Date: | Analysis D | ate: 1/ | 31/2014 | 5 | SeqNo: 4 | 74209 | 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-Methyinaphthalene | 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 | | | | | | | | |

Qualifiers:

2,2-Dichloropropane

Value exceeds Maximum Contaminant Level. *

ND

2.0

- Е Value above quantitation range
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- в Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- р Sample pH greater than 2.
- Reporting Detection Limit RL

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13-Feb-14

WO#:

1401A07

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Western Refining Southwest, Inc.

Injection Well 1-23-2014 **Project:**

| | | · · · · · · · · · · · · · · · · · · · | | | Cade: = | 14 88-44 | 90000 VOL | | | |
|-----------------------------|------------|---------------------------------------|------------|---------------------------------------|-----------|-----------|-------------|--------|----------|------|
| Sample ID 5ml rb | SampT | ype: ME | 9LK | PestCode: EPA Method 8260B; VOLATILES | | | | | | |
| Client ID: PBW | Batch | וD: R1 | 6441 | R | unNo: 10 | 6441 | | | | |
| Prep Date: | Analysis D | ate: 1 /: | 31/2014 | S | eqNo: 47 | 74209 | 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 Ics | SampT | Гуре: LC | s | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSW | Batch | h ID: R1 | 6441 | F | RunNo: 1 | 6441 | | | | |
| Prep Date: | Analysis D | Date: 1/ | '31/2014 | S | SeqNo: 4 | 74213 | 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. *

Value above quantitation range Е

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- в Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- Reporting Detection Limit RL

WO#: 13-Feb-14

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1401A07

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID 100ng Ics | SampT | SampType: LCS TestCode: E | | | | EPA Method 8260B: VOLATILES | | | | | |
|-----------------------------|------------|---------------------------|-----------|-------------|-----------------|-----------------------------|-------------|------|----------|------|--|
| Client ID: LCSW | Batch | h ID: R1 | 6441 | F | RunNo: 1 | 6441 | | | | | |
| Prep Date: | Analysis E | Date: 1/ | 31/2014 | S | SeqNo: 4 | 74213 | 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. *
- Value above quantitation range Е
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- в Analyte detected in the associated Method Blank
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
 - Ρ Sample pH greater than 2.
 - RL Reporting Detection Limit

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13-Feb-14

WO#: 1401A07

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID mb-11420 | SampTy | /pe: MBLK | Tes | tCode: Ef | PA Method | 8270C: Semi | volatiles | | |
|-----------------------------|-------------|------------------|-------------|-----------|-----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch | ID: 11420 | F | RunNo: 1 | 6402 | | | | |
| Prep Date: 1/27/2014 | Analysis Da | ate: 1/30/2014 | ę | SegNo: 4 | 73422 | 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

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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

WO#: 1401A07 13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID mb-11420 | SampTyp | e: MBLK | Test | tCode: EP/ | A Method | 8270C: Semi | volatiles | | |
|----------------------------|---------------|-----------------|-------------|------------|----------|-------------|-----------|----------|------|
| Client ID: PBW | Batch ID |): 11420 | R | lunNo: 164 | 102 | | | | |
| Prep Date: 1/27/2014 | Analysis Date | e: 1/30/2014 | s | SeqNo: 473 | 3422 | Units: µg/L | | | |
| Analyte | Result F | 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 | | | | | | | |
| Hexachiorocyclopentadiene | 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 | 1 | 80.7 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 77 | 100.0 | 1 | 76.6 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 74 | 100.0 | I | 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

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WO#:

Client:

Project:

Western Refining Southwest, Inc.

Injection Well 1-23-2014

| Sample ID Ics-11420 | SamoT | vpe: LC | S | Tes | tCode: El | PA Method | 8270C: Semi | volatiles | | |
|---|--|---|--|--|--|--|--|--|----------|------|
| Client ID: LCSW | Batch | 1D: 11 | - 420 | 55. F | anNo: 1 | 6402 | | | | |
| Prep Date: 1/27/2014 | Analysis D | ate: 1/ | 30/2014 | 5 | SeqNo: 4 | 73423 | 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-Fluorobiphenvl | 74 | | 100.0 | | 73.9 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 80 | | 100.0 | | 80.0 | 52.1 | 116 | | | |
| | | | | | | | | | | |
| Sample ID mb-11513 | SampT | ype: MB | зlк | Tes | tCode: El | PA Method | 8270C: Semi | volatiles | | |
| Sample ID mb-11513 Client ID: PBW | SampT Batch | ype: MI 1 ID: 11 | 3LK 513 | Tes F | tCode: El RunNo: 1 | PA Method 6496 | 8270C: Semi | volatiles | | |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 | SampT Batch Analysis D | ype: Mi i ID: 11 vate: 2/ | 3LK 513 3/2014 | Tes F S | tCode: El RunNo: 1 SeqNo: 4 | PA Method 6496 75097 | 8270C: Semi Units: %RE | volatiles C | | |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte | SampT Batch Analysis D Result | ype: MB 1D: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC | PA Method 6496 75097 LowLimit | 8270C: Semi Units: %RE HighLimit | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Sur: 2-Fluorophenol | SampT Batch Analysis D Result 110 | ype: Mi D: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 | PA Method 6496 75097 LowLimit 22.7 | 8270C: Semi Units: %RE HighLimit 98 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Sur: 2-Fluorophenol Sur: Phenol-d5 | SampT Batch Analysis D Result 110 93 | ype: MB n ID: 11 vate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 | PA Method 6496 75097 LowLimit 22.7 23.4 | 8270C: Semi Units: %RE HighLimit 98 74.9 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 110 93 130 | ype: Mi n ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 GeqNo: 4 <u>%REC</u> 54.9 46.5 65.6 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | SampT Batch Analysis D Result 110 93 130 77 | ype: Mf 1D: 11 vate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl | SampT Batch Analysis D Result 110 93 130 77 71 | ype: Mf 1D: 11 Pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 111 110 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 | SampT Batch Analysis D Result 110 93 130 77 71 71 72 | ype: Mr D: 11 vate: 2/ PQL | BLK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 | Tes F S SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 | volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT | ype: MF ate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 3S | Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi | volatiles C %RPD volatiles | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch | ype: Mf 1 ID: 11 PQL PQL ype: LC | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 100.0 55 513 | Tes F SPK Ref Val Tes F | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi | volatiles C %RPD volatiles | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D | ype: Mf 1D: 11 PQL Ype: LC 1D: 11 Pate: 2/ | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 | Tes F SPK Ref Val Tes F S | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE | volatiles C %RPD volatiles C | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result | ype: MF ate: 2/ PQL ype: LC a ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 513 3/2014 SPK value | Tes F SPK Ref Val Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE HighLimit | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 | ype: MF ate: 2/ PQL ype: LC a ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 3/2014 SPK value 200.0 | Tes F SPK Ref Val Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC 49.8 | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE HighLimit 98 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 | ype: Mf n ID: 11 PQL PQL ype: LC n ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 100.0 3/2014 SPK value 200.0 200.0 200.0 | Tes F SPK Ref Val Tes SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC 49.8 42.3 | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 23.4 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE HighLimit 98 74.9 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 150 | ype: Mf i ID: 11 PQL PQL i ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 3/2014 SPK value 200.0 200.0 200.0 200.0 200.0 | Tes F SPK Ref Val Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC 49.8 42.3 77.3 | PA Method 6496 75097 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 23.4 23.3 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE HighLimit 98 74.9 111 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |
| Sample ID mb-11513 Client ID: PBW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: 2-Fluorobiphenyl Surr: 4-Terphenyl-d14 Sample ID Ics-11513 Client ID: LCSW Prep Date: 1/31/2014 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 | SampT Batch Analysis D Result 110 93 130 77 71 72 SampT Batch Analysis D Result 100 85 150 82 | ype: Mf i ID: 11 PQL PQL i ID: 11 pate: 2/ PQL | 3LK 513 3/2014 SPK value 200.0 200.0 200.0 100.0 100.0 100.0 100.0 3/2014 SPK value 200.0 200.0 200.0 200.0 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100 | Tes F SPK Ref Val | tCode: El RunNo: 1 SeqNo: 4 %REC 54.9 46.5 65.6 77.3 70.6 71.6 tCode: El RunNo: 1 SeqNo: 4 %REC 49.8 42.3 77.3 81.7 | PA Method 6496 75097 LowLimit 22.7 23.4 23.3 36.8 38.3 52.1 PA Method 6496 75098 LowLimit 22.7 23.4 23.3 36.8 | 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 110 116 8270C: Semi Units: %RE HighLimit 98 74.9 111 111 | volatiles C %RPD volatiles C %RPD | RPDLimit | Qual |

Qualifiers:

Value exceeds Maximum Contaminant Level. *

E Value above quantitation range

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit Ο R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits \mathbf{S}
- В Analyte detected in the associated Method Blank
- Η Holding times for preparation or analysis exceeded

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- ND Not Detected at the Reporting Limit
- Р Sample pH greater than 2.
- RĽ Reporting Detection Limit

WO#: 1401A07

13-Feb-14

WO#: 1401A07

13-Feb-14

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID Ics-11513 | SampType: LCS TestCode: EPA Meth | | | | PA Method | 8270C: Semi | volatiles | | |
|----------------------------|----------------------------------|-------------|-------------|-----------|-----------|--------------------|-----------|----------|------|
| Client ID: LCSW | Batch ID: | 11513 | R | tunNo: 1 | 6496 | | | | |
| Prep Date: 1/31/2014 | Analysis Date: | 2/3/2014 | S | eqNo: 4 | 75098 | Units: %RE | С | | |
| Analyte | Result PQI | _ 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 Icsd-11513 | SampType: I | LCSD | Test | tCode: El | PA Method | 8270C: Semi | volatiles | | |
| Client ID: LCSS02 | Batch ID: | 11513 | R | tunNo: 1 | 6496 | | | | |
| Prep Date: 1/31/2014 | Analysis Date: | 2/3/2014 | S | eqNo: 4 | 75099 | Units: % RE | C | | |
| 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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | Western F Injection | Refining Well 1-2 | South 3-201 | wes 4 | t, Inc. | | | | | | | | |
|---------------------|------------------------|----------------------|----------------|----------|-----------|-------------|----------|----------|-----|---------------|-------|-----------|------|
| Sample ID | MB-11463 | Samp | Туре: | ΜВ | LK | Tes | tCode: E | EPA Meth | lod | 7470: Mercury | ı | | |
| Client ID: | PBW | Bate | ch ID: | 114 | 63 | F | RunNo: | 16401 | | | | | |
| Prep Date: | 1/29/2014 | Analysis | Date: | 1/3 | 80/2014 | ę | SeqNo: | 473049 | | Units: mg/L | | | |
| Analvte | | Result | PQ | L | SPK value | SPK Ref Val | %REC | LowLir | nit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | ND | 0.000 | 20 | | | | | | | | | |
| Sample ID | LCS-11463 | Samp | туре: | LCS | S | Tes | tCode: I | EPA Meti | nod | 7470: Mercury | 1 | | |
| Client ID: | LCSW | Bat | ch ID: | 114 | 63 | F | RunNo: | 16401 | | | | | |
| Prep Date: | 1/29/2014 | Analysis | Date: | 1/3 | 30/2014 | S | SeqNo: | 473050 | | Units: mg/L | | | |
| Analyte | | Result | PQ | L | SPK value | SPK Ref Val | %REC | LowLi | mit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0047 | 0.000 | 20 | 0.005000 | 0 | 94.3 | | 80 | 120 | | | |
| Sample ID | 1401A07-001CMS | Sam | Type: | MS | | Tes | tCode: I | EPA Meti | nod | 7470: Mercury | / | | |
| Client ID: | Injection Well | Bat | ch ID: | 114 | 63 | F | RunNo: | 16401 | | | | | |
| Prep Date: | - 1/29/2014 | Analysis | Date: | 1/3 | 30/2014 | S | SeqNo: | 473069 | | Units: mg/L | | | |
| Analyte | | Result | PG |)L. | SPK value | SPK Ref Val | %REC | : LowLi | mit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0046 | 0.00 | 10 | 0.005000 | 0 | 91.0 |) | 75 | 125 | | | |
| Sample ID | 1401A07-001CMS | D Samr | Type: | MS | D | Tes | tCode: | EPA Met | hod | 7470: Mercury | / | | |
| Client ID | Injection Well | Bat | ch iD: | 114 | - | F | RunNo: | 16401 | | - | | | |
| Pren Date | 1/29/2014 | Analysis | Date: | 1/: | 30/2014 | | SegNo: | 473070 | | Units: mg/L | | | |
| | 112012017 | Desult | | | | | W DEC | louii | mit | Highl imit | % PPD | RPDI imit | Qual |
| Analyte | | 0.0045 | <u>۲۵ م</u> | 2∟ 10 | 0 005000 | OFK RET VAL | | | 75 | 125 | 1.02 | 20 | |
| mercury | | 0.0040 | 0.00 | 10 | 0.000000 | v | 00.1 | | | 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

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1401A07 13-Feb-14

WO#:

Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID MB-11432 | B-11432 SampType: MBLK | | | | TestCode: EPA 6010B: Total Recoverable Metals | | | | | |
|---|---|--|--|--|--|--|---|-----------|-------------------------|------|
| Client ID: PBW | Batc | h ID: 114 | 132 | R | unNo: 16 | 5372 | | | | |
| Prep Date: 1/28/2014 | Analysis I | Date: 1/2 | 29/2014 | S | eqNo: 47 | 72096 | 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 | Samp | Type: LC | S | Tes | tCode: El | PA 6010B: ` | Total Recover | able Meta | als | |
| Sample ID LCS-11432 Client ID: LCSW | Samp Bato | Type: LC | S 432 | Tes F | tCode: El RunNo: 10 | PA 6010B: ` 6372 | Total Recover | able Meta | als | |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 | Samp Bato Analysis | Type: LC h ID: 114 Date: 1/ | S 432 29/2014 | Tes F | tCode: El RunNo: 10 SeqNo: 4 | PA 6010B: ` 6372 72097 | Total Recover Units: mg/L | able Meta | nis | |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte | Samp Bato Analysis Result | Type: LC th ID: 11 4 Date: 1 7 PQL | S 432 29/2014 SPK value | Tes F S SPK Ref Val | tCode: Ef RunNo: 10 SeqNo: 4 %REC | PA 6010B: ` 6372 72097 LowLimit | Total Recover Units: mg/L HighLimit | able Meta | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic | Samp Bato Analysis Result 0.43 | Type: LC h ID: 114 Date: 1/ PQL 0.020 | S 432 29/2014 SPK value 0.5000 | Tes F SPK Ref Val 0 | tCode: El RunNo: 10 SeqNo: 4 %REC 85.6 | PA 6010B: 1 6372 72097 LowLimit 80 | Total Recover Units: mg/L HighLimit 120 | able Meta | RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium | Samp Bato Analysis Result 0.43 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 | S 432 29/2014 SPK value 0.5000 0.5000 | Tes F SPK Ref Val 0 0 | tCode: EF RunNo: 10 SeqNo: 4 %REC 85.6 85.5 | PA 6010B: ` 6372 72097 LowLimit 80 80 | Total Recover Units: mg/L HighLimit 120 120 | able Meta | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium | Samp Bato Analysis Result 0.43 0.43 0.42 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 | Tes F SPK Ref Val 0 0 0 0 | tCode: EF RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 | PA 6010B: 1 6372 72097 LowLimit 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 | able Meta | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium | Samp Bato Analysis Result 0.43 0.43 0.42 45 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 50.00 | Tes F SPK Ref Val 0 0 0 0 0 0 | tCode: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 | Units: mg/L HighLimit 120 120 120 120 | %RPD | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium | Samp Bato Analysis Result 0.43 0.43 0.42 45 0.43 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.0020 1.0 0.0060 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 50.00 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 | tCode: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 | %RPD | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead | Samp Bate Analysis Result 0.43 0.43 0.43 0.42 45 0.43 0.42 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.0020 1.0 0.0060 0.0050 | S 432 29/2014 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 | %RPD | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium | Samp Bate Analysis Result 0.43 0.43 0.43 0.42 45 0.43 0.42 45 | Type: LC ch ID: 114 Date: 1/ PQL 0.020 0.0020 1.0 0.0060 0.0050 1.0 | S 432 29/2014 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 90.0 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 | %RPD | als RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium | Samp Bate Analysis Result 0.43 0.43 0.42 45 0.43 0.42 45 0.42 45 44 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 1.0 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 10 SeqNo: 4 85.6 85.5 84.3 89.1 85.3 84.4 90.0 88.6 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium | Samp Bato Analysis Result 0.43 0.43 0.42 45 0.43 0.42 45 44 0.42 | Type: LC th ID: 114 Date: 1/ PQL 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 1.0 0.050 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 90.0 88.6 83.4 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | a is RPDLimit | Qual |
| Sample ID LCS-11432 Client ID: LCSW Prep Date: 1/28/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium Silver | Samp Bato Analysis Result 0.43 0.43 0.42 45 0.43 0.42 45 44 0.42 0.089 | Type: LC th ID: 114 PQL 0.020 0.020 0.0020 1.0 0.0050 1.0 1.0 0.050 0.0050 0.0050 | S 432 29/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 10 SeqNo: 4 %REC 85.6 85.5 84.3 89.1 85.3 84.4 90.0 88.6 83.4 88.7 | PA 6010B: 6372 72097 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | %RPD | a is RPDLimit | Qual |

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

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WO#:

| Client: Project: | Western Refining South Injection Well 1-23-201 | west, Inc. [4 | | | | | | | |
|---------------------------|---|------------------|-------------|--------------------|-----------|-------------|-------|----------|------|
| Sample ID mb-1 | SampType: | MBLK | Tes | tCode: SM23 | 320B: All | kalinity | | | |
| Client ID: PBW | Batch ID: | R16304 | F | lunNo: 1630 | 4 | | | | |
| Prep Date: | Analysis Date: | 1/24/2014 | S | GeqNo: 4701 | 97 | Units: mg/L | CaCO3 | | |
| Analyte | Result P | QL SPK value | SPK Ref Val | %REC Lo | owLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO | 3) ND | 20 | | | | | | | |
| Sample ID 1cs-1 | SampType: | LCS | Tes | tCode: SM23 | 320B: Al | kalinity | | | |
| Client ID: LCSW | Batch ID: | R16304 | F | RunNo: 1630 | 4 | | | | |
| Prep Date: | Analysis Date: | 1/24/2014 | 8 | SeqNo: 4701 | 98 | Units: mg/L | CaCO3 | | |
| Analyte | Result Pr | QL SPK value | SPK Ref Val | %REC La | owLimit | HighLimit | %RPD | RPDLimit | Quai |
| Total Alkalinity (as CaCO | 3) 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

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Client: Western Refining Southwest, Inc.

Project: Injection Well 1-23-2014

| Sample ID MB-11406 | SampType: MBLK | | | TestCode: SM2540C MOD: Total Dissolved Solie | | | | lids | | |
|---|--|---------------------------------|----------------------------------|--|--|--|--|------------------|------------------|------|
| Client ID: PBW | Batch I | D: 11 | 406 | F | RunNo: 10 | 6349 | | | | |
| Prep Date: 1/27/2014 | Analysis Dat | e: 1/ | 28/2014 | S | SeqNo: 4 | 71302 | 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 | SampTy | e: LC | S | Tes | tCode: SI | M2540C MC | DD: Total Dise | olved So | lids | |
| Sample ID LCS-11406 Client ID: LCSW | SampTyr Batch I | De: LC | S 406 | Tes F | tCode: SI RunNo: 1 | M2540C MC 6349 | D: Total Dise | olved So | lids | |
| Sample ID LCS-11406 Client ID: LCSW Prep Date: 1/27/2014 | SampTyr Batch I Analysis Dat | De: LC D: 11 D: 11 | S 406 28/2014 | Tes F S | tCode: SI RunNo: 1 SeqNo: 4 | M2540C MC 6349 71303 | DD: Total Diss Units: mg/L | olved So | lids | |
| Sample ID LCS-11406 Client ID: LCSW Prep Date: 1/27/2014 Analyte | SampTyr Batch I Analysis Dat Result | De: LC D: 11 e: 1/ PQL | S 406 28/2014 SPK value | Tes F S SPK Ref Val | tCode: SI RunNo: 14 SeqNo: 4 %REC | M2540C MC 6349 71303 LowLimit | DD: Total Diss Units: mg/L HighLimit | olved So %RPD | lids RPDLimit | Qual |

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

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WO#: 1401A07

13-Feb-14

| HALL Hall Environme ENVIRONMENTAL ANALYSIS LABORATORY TEL: 505-345-2 Website: www | ental Analysis Labora 4901 Hawkin Albuquerque, NM 83 3975 FAX: 505-345-4 w.hallenvironmental. | Ne NE 7109 Sam 7107 com | ple Log-In Ci | heck List |
|---|---|---|-----------------------------------|---------------------|
| Client Name: Western Refining Southw Work Order Num | iber: 1401A07 | | RcptNo: | 1 |
| Received by/date: LM GI/24/14 Logged By: Michelle Garcla 1/24/2014 10:15:00 | D AM | Minus Co | un | |
| Reviewed By: AT 1/177/14 | 9 F WI | n pureus car | ue - | |
| Chain of Custody | | | | b |
| 1. Custody seals intact on sample bottles? | Yes il | No | Not Present M | |
| 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 🗹 | # of preserved bottles checked | Λ |
| 12.Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes 🗹 | No | for pH: | r (12)unless noted) |
| 13, Are matrices correctly identified on Chain of Custody? | Yes 🕅 | No 🗍 | Adjusted | NOX |
| 14 is it clear what analyses were requested? | Yes 🗹 | No | | X |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes 🗹 | No | Checked by: | |
| Special Handling (if applicable) | | | | |
| 16. Was client notified of all discrepancies with this order? | Yes 🗌 | No 🗌 | NA 🗹 | |
| Person Notified: Dat By Whom: Via Regarding: Client Instructions: | te: [: [i]eMait [i]] | Phone Fax | | |
| 17. Additional remarks: | <u></u> | <u>, , , , , , , , , , , , , , , , , , , </u> | <u></u> | Ĺ |

| - | Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|-----------|---------|-----------|-------------|---------|-----------|-----------|
| | 1 | 1.2 | Good | Yes | | | |

Page 1 of 1

| HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com 1 Hawkins NE - Albuquerque, NM 87109 | 505-345-3975 Fax 505-345-4107 Analysis Request | ьсв, ^г bCB, ^г bO ⁴ 'SO ⁴) l' N ^{9'} K seck-nb D2 D2 D2 | Cor N) | PH 601560 (Method PH (Method PH (Method PH (8310 of PH (8310 of PH (8310 of PH (8310 of PH (8310 of PH (904) PH | | | | | | | | | | | | · · · | y sub-contracted data will be clearly notated on the analytical report. |
|--|---|---|--|--|------------------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|----------------------------|--|-------------------------------|-------------------------------------|--------------------------------|---|
| Around Time: andard □ Rush at Name: Injection Well | Tel | t Manager: s (6021) s (6021) | Er Do TPH E Temberature | ainer Preservativ HEAL No. HEAL NO. HEAN NO. HEAL NO. HEAN NO. HEAL NO. HEAN NO. HEAN NO. HEA | | Provide a standard provide a sta | ml Amber - CO | mi Amber | 1 H ₂ SO4 | mi HNO ₃ _ C() | m Na OH | mi Zn Acutate | | | 10% Remarks: 10/100 / 03/14 /510 | Of ZH ILL | o other accredited laboratories. This serves as notice of this possibility. An |
| Chain-of-Custody Record Tum-A Sient: Western Refining X Sta Address: 50 CR 4990 | Bloomfield, NM 87413 Project have #: 505-632-4135 | MOC Package: Standard D Level 4 (Full Validation) | I Other Sample EDD (Type) On Los Sample Sample EDD (Type) | Date Time Matrix Sample Request ID Conta | 23-4 8:35 H20 Injection Well 5-VO/ | H ₂ 0 Injection Well 1 - lite | H ₂ 0 Injection Well 1-500 | H ₂ 0 Injection Well 1-500 | H ₂ 0 Injection Well 1-250 | H ₂ 0 Injection Well 1-500 | H ₂ 0 Injection Well 1-500 | 1-500 Injection Well 1-500 | | B: JIme: Relition inched Awy. | 14 ISID Varet Maler Mu | 14 MID MARTIN Walter Concerned | If necessary, camples submitted to Hall Environmental may be subcontracted to a |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| CLIENT: | Western Refining Southwest, Inc | • | | Client Sample | e ID: Înj | ection Well | |
|-----------|---------------------------------|---------|---------|-------------------|------------------|----------------------|--------|
| Project: | Injection Well 7-28-14 3rd QTR | | | Collection E | ate: 7/2 | 8/2014 9:30:00 AM | |
| Lab ID: | 1407D12-001 | Matrix: | AQUEOUS | Received E | ate: 7/2 | 9/2014 7:55:00 AM | |
| Analyses | | Result | RL (| Jual Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 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 MET | HOD 7470: MERCURY | | | | | Analyst: | MMD |
| Mercury | | ND | 0.00020 | mg/L | 1 | 8/4/2014 2:43:32 PM | 14571 |
| EPA 6010 | B: TOTAL RECOVERABLE MET | ALS | | - | | 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 |
| Cadmiun | n | 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 |
| Chromiu | m | 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 |
| Magnesi | um | 99 | 1.0 | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Potassiu | m | 36 | 1.0 | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Selenium | ז | 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 MET | HOD 8270C: SEMIVOLATILES | | | | | Analyst: | DAM |
| Acenaph | thene | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Acenaph | thylene | 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 |
| Anthrace | ne | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Azobenz | ene | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benz(a)a | Inthracene | 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 a | Icohol | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroethoxy)methane | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroethyl)ether | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chl | oroisopropyl)ether | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-eth | ylhexyl)phthalate | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Bromo | phenyl phenyl ether | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Butyl ber | nzyl phthalate | ND | 100 | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Carbazol | e | 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-Chloro | aniline | ND | 100 | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers: * Value exceeds Maximum Contaminant Level. В Ε Н Value above quantitation range Analyte detected below quantitation limits ND J 0 RSD is greater than RSDlimit \mathbf{P} Sample pH greater than 2.

R RPD outside accepted recovery limits

Spike Recovery outside accepted recovery limits S

Analyte detected in the associated Method Blank

Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit Page 1 of 20

RLReporting Detection Limit

Date Reported: 8/15/2014

Analytical Report Lab Order 1407D12

Analytical Report Lab Order 1407D12

Date Reported: 8/15/2014

Hall Environmental Analysis Laboratory, Inc.

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

1407D12-001

Lab ID:

Client Sample ID: Injection Well Collection Date: 7/28/2014 9:30:00 AM Received Date: 7/29/2014 7:55:00 AM

| Analyses | Result | RL Qu | al Units | DF | Date Analyzed | Batch |
|--------------------------------|--------|-------|----------|----|----------------------|-------|
| EPA METHOD 8270C: SEMIVOLATILE | s | | | | 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 |

Matrix: AQUEOUS

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 Page 2 of 20
- P Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Er | nvironmental Analysis | Labora | ntory, Inc | | | | Analytical Report Lab Order 1407D12 Date Reported: 8/15/20 | 14 |
|------------|--------------------------------|---------|---------------|------|-----------------|-------------|--|-----------|
| CI IENT. | Western Refining Southwest Inc | | | | lient Samnl | e ID: Ini | ection Well | |
| CLIENT | Western Retning Southwest, Inc | • | | C | Collection 1 | Deter $7/2$ | 8/2014 0·30·00 AM | |
| Project: | Injection Well 7-28-14 3rd QTR | | | | Collection | | 0/2014 9.30.00 ANI | |
| Lab ID: | 1407D12-001 | Matrix: | AQUEOUS | | Received I | Date: 7/2 | 9/2014 7:55:00 AM | |
| Analyses | | Result | RL C |)ual | Units | DF | Date Analyzed | Batch |
| EPA MET | HOD 8270C: SEMIVOLATILES | | | | | | Analys | t: DAM |
| Nitrobena | zene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Nitroph | enol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Nitroph | enol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Pentachl | orophenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Phenanti | hrene | 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-Trie | chlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4,5-Tri | chlorophenol | ND | 100 | | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2.4.6-Tri | chlorophenol | ND | 100 | | μg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2 | 2-Fluorophenol | 0 | 12.1-85.8 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: F | Phenol-d5 | 0 | 17.7-65.8 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2 | 2.4.6-Tribromophenol | 0 | 26-138 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 1 | Nitrobenzene-d5 | 0 | 47.5-119 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2 | 2-Eluorobiphenyl | 0 | 48.1-106 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 4 | 1-Terphenyl-d14 | 0 | 44-113 | s | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| EPA MET | HOD 8260B: VOLATILES | | | | | | Analys | t: 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 |
| Ethylben | zene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Methyl te | ert-butyl ether (MTBE) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2.4-Tri | methylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.3.5-Tri | methvlbenzene | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dich | loroethane (EDC) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1.2-Dibro | omoethane (EDB) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Naphtha | lene | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1-Methyl | naphthalene | ND | 8.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Methyl | naphthalene | 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 |
| Bromobe | enzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromodi | chloromethane | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromoto | | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromom | ethane | ND | 6.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Butan | one | 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 |
| Chlorobe | enzene | ND | 2.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Chloroet | bane | ND | 4.0 | | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| | | | oin chaoldict | fort | lagged OC / | lata and i | preservation informati | <u>on</u> |

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 Page 3 of 20
- P Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Environmental Analysi | s Laborate | ory, Inc. | | | Lab Order 1407D12 Date Reported: 8/15/201 | 4 |
|--|-----------------------|-----------|--------------------------------------|---------------------------------------|--|--------|
| CLIENT: Western Refining Southwest, I Project: Injection Well 7-28-14 3rd QT Lab ID: 1407D12-001 | nc. R Matrix: A | QUEOUS | lient Samp Collection Received | ole ID: Inj Date: 7/2 Date: 7/2 | ection Well 28/2014 9:30:00 AM 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-Chlorofoluene | ND | 2.0 | μg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Chlorofoluene | 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-Butvibenzene | 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.

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 Page 4 of 20

Analytical Report

- P Sample pH greater than 2.
- RL Reporting Detection Limit

| Hall Environmen | tal Analysis La | bora | atory, In | c. | | | Lab Order 1407D12 Date Reported: 8/15/201 | 4 |
|--|--|---------|-----------|------|--|------------------------------|---|--------|
| CLIENT: Western Refin Project: Injection Well | ing Southwest, Inc. 7-28-14 3rd QTR | latrix: | AOUEOUS | C | lient Sample I Collection Da Received Da | D: Inj te: 7/2 te: 7/2 | ection Well 28/2014 9:30:00 AM 29/2014 7:55:00 AM | |
| Analyses | Re | sult | RL (| Qual | Units | DF | Date Analyzed | Batch |
| EPA METHOD 8260B: | /OLATILES | | | | | | Analyst | DJF |
| Trichlorgethene (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-Dichloroethan | e-d4 | 92.4 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: 4-Bromofluorober | zene | 95.4 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: Dibromofluorome | ihane | 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 CO | ONDUCTANCE | | | | | | Analyst | : JRR |
| Conductivity | | 1900 | 0.010 | | µmhos/cm | 1 | 7/29/2014 12:08:01 PM | R20245 |
| SM4500-H+B: PH | | | | | | | Analyst | : JRR |
| pН | | 7.10 | 1.68 | Н | 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 CaCO | 3) | 220 | 20 | | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PM | R20245 |
| SM2540C MOD: TOTAL | DISSOLVED SOLIDS | 5 | | | | | Analyst | : KS |
| Total Dissolved Solids | | 1380 | 200 | * | mg/L | 1 | 7/30/2014 5:19:00 PM | 14475 |

Analytical Report

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

| | | | | | (C. 1) |
|-------------|---|---|----|---|----------------|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detected in the associated Meth | od Blank |
| | Е | Value above quantitation range | Н | Holding times for preparation or analys | is exceeded |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 5 of 20 |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | x 466 c 0x - c |
| | 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: Address: | HALL ENVIRONMENTAL ANALYSIS LAB 4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109 | Batch #: Project Name: | 140730036 1407D12 | |
|---------------------|---|---------------------------|----------------------|--|
| Attn: | ANDY FREEMAN | | | |

Analytical Results Report

| Sample Number Client Sample ID Matrix Comments | 140730036-001 1407D12-001E / INJE0 Water | Samp CTION WELL | ling Date | 7/28/2014 | Date/ Samp | Time Receive Ning Time | ed 7/30/2014 9:30 AM | 12:25 PM |
|---|--|--------------------|-----------|-----------|---------------|---------------------------|-------------------------|-----------|
| Parameter | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
| Cyanide (react | lve) | ND | mg/L | 1 | 8/12/2014 | CRW | SW846 CH7 | |
| Flashpoint | | >200 | ۴ | | 8/5/2014 | KFG | EPA 1010 | |
| рН | | 7.44 | ph Units | 5 | 8/5/2014 | AJT | SM 4500pH-B | |
| Reactive sulfid | 9 | 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/solld results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Lebs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0D28; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00159; ID:WA00189; WA:C586; MT:Cert0095; FL(NELAP): E871099

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 | Project Name: | 1 407D12 | |
| | ALBUQUERQUE, NM 87109 | | | |
| Attn: | ANDY FREEMAN | | | |
| | Analytical Results R | leport | | |

Quality Control Data

| Lab Control Sa | mple | | | | | | | | | | |
|--------------------|--------------------|------------------|------------------|---------------|-------|-------|-------------|------------|--------|-----------|---------------|
| Parameter | | LCS Result | Units | LCS | Spike | %Rec | AR | %Rec | Prep | Date / | Analysis Date |
| Reactive sulfide | | 0.16 | mg/L | 1 | 0.2 | 80.0 | 70 | -130 | 8/1/2 | 2014 | 8/1/2014 |
| Cyanide (reactive) | | 0.505 | mg/L | | 0.5 | 101.0 | 80 | -120 | 8/12/ | 2014 | 8/12/2014 |
| Lab Control Sa | mple Duplicate | | | | | | | 40 | | | |
| Parameter | | LCSD | Units | LCSD Snike | %Rec | %RP | D 9 | AR ARPD | Prep [| Date A | malysis Date |
| Reactive suifide | | 0.18 | mg/L | 0.2 | 90.0 | 11.8 | 3 | 0-25 | 8/1/2 |)14 | 8/1/2014 |
| Matrix Spike | | | | | | | це | | | | |
| Somnia Number | Parameter | | Sample Result | M5 Result | Unit | ts S | mə Spike | %Rec | %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 D | uplicate | мер | | MeD | | | | ۸R | | | |
| Parameter | | . anou Result | Units | Spike | %F | Rec 9 | 6RPD | %RPI |) Pre | p Date | Analysis Date |
| Cyanide (reactive) |) | 0.906 | mg/L | 1 | 90 |).6 | 1.4 | 0-25 | 8/1 | 2/2014 | 8/12/2014 |
| Method Blank | | | | | | | | | | | |
| Parameter | | | Re | sult | U | nits | | PQL | P | rep Date | Analysis Date |
| Cvanide (reactive) | • | | Ν | ID | n | ng/L | | 1 | 8/ | 2/2014 | 8/12/2014 |
| Reactive sulfide | 7 | | ٨ | D | n | ng/L | | 1 | 8/ | 1/2014 | 8/1/2014 |

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

Comments:

Certifications held by Anstek 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 Anstek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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

| Sample ID | МВ | SampTyp | e: MB | BLK | Test | tCode: El | PA Method | 300.0: Anions | ; | | |
|---|---|--|---|--|--|---|--|---|------------------------|----------------------------------|------|
| Client ID: | PBW | Batch II | D: R2 | 0236 | R | RunNo: 2 | 0236 | | | | |
| Prep Date: | | Analysis Date | e: 7/: | 29/2014 | S | SeqNo: 5 | 88153 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Sulfate | | ND | 0.50 | | | | | | | | |
| Sample ID | LCS | SampTyp | e: LC | S | Test | tCode: El | PA Method | 300.0: Anions | ; | | |
| Client ID: | LCSW | Batch II | D: R2 | 0236 | R | RunNo: 2 | 0236 | | | | |
| Prep Date: | | Analysis Dat | e: 7/: | 29/2014 | S | SeqNo: 5 | 88154 | 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 | SampTyp | e: Me | BLK | Tes | tCode: El | PA Method | 300.0: Anions | 5 | | |
| Client ID: | PBW | Batch II | D: R2 | 0236 | R | RunNo: 2 | 0236 | | | | |
| Prep Date: | | Analysis Dat | e: 7 /; | 29/2014 | S | SeqNo: 5 | 88211 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Sulfate | | ND | 0.50 | | | | | | | | |
| | | | | | | | | | | | |
| Sample ID | LCS | SampTyp | e: LC | S | Tes | tCode: El | PA Method | 300.0: Anions | 3 | | |
| Sample ID Client ID: | LCS LCSW | SampTyp Batch II | DE: LC | S 0236 | Tes | tCode: El RunNo: 2 | PA Method 0236 | 300.0: Anions | 3 | | |
| Sample ID Client ID: Prep Date: | LCS LCSW | SampTyp Batch II Analysis Dat | e: LC D: R2 e: 7/: | S 0236 29/2014 | Tes F S | tCode: El RunNo: 2 SeqNo: 5 | PA Method 0236 88212 | 300.0: Anions Units: mg/L | 3 | | |
| Sample ID Client ID: Prep Date: Analyte | LCS LCSW | SampTyp Batch II Analysis Dat Result | e: LC D: R2 e: 7/: PQL | S 0236 29/2014 SPK value | Tesi F SPK Ref Val | tCode: El RunNo: 2 SeqNo: 5 %REC | PA Method 0236 88212 LowLimit | 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate | LCS LCSW | SampTyp Batch II Analysis Dat Result 9.6 | e: LC D: R2 e: 7/: PQL 0.50 | 5 0236 29/2014 SPK value 10.00 | Tes F SPK Ref Val 0 | tCode: E RunNo: 2 GeqNo: 5 %REC 95.6 | PA Method 0236 88212 LowLimit 90 | 300.0: Anions Units: mg/L HighLimit 110 | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID | LCS LCSW MB | SampTyp Batch II Analysis Dat Result 9.6 SampTyp | De: LC D: R2 e: 7/: PQL 0.50 De: ME | S 0236 29/2014 SPK value 10.00 BLK | Tes F S SPK Ref Val 0 Tes | tCode: El RunNo: 2 BeqNo: 5 %REC 95.6 tCode: El | PA Method 0236 88212 LowLimit 90 PA Method | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions | 3 %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: | LCS LCSW MB PBW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II | De: LC D: R2 e: 7/: PQL 0.50 De: ME D: R2 | S 0236 29/2014 SPK value 10.00 3LK 0363 | Tes F SPK Ref Val 0 Tes F | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 | PA Method 0236 88212 LowLimit 90 PA Method 0363 | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions | 3 %RPD 5 | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: | LCS LCSW MB PBW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat | De: LC D: R2 e: 7/: PQL 0.50 De: ME D: R2 e: 8/ | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 | Tes F S SPK Ref Val 0 Tes F S | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 SeqNo: 5 | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte | LCS LCSW MB PBW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat Result | De: LC D: R2 e: 7 /2 0.50 De: ME D: R2 e: 8 /4 PQL | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 SPK value | Tes F SPK Ref Val 0 Tes F SPK Ref Val | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 SeqNo: 5 %REC | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte Chloride | LCS LCSW MB PBW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat Result ND | be: LC c: 7/: PQL 0.50 be: ME D: R2 e: 8/- PQL 0.50 | S 0236 29/2014 SPK value 10.00 BLK 0363 4/2014 SPK value | Tes F SPK Ref Val 0 Tes F SPK Ref Val | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 SeqNo: 5 %REC | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit | %RPD | RPDLimit RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte Chloride | LCS LCSW MB PBW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat Result ND SampTyp | De: LC D: R2 e: 7/: PQL 0.50 De: R2 e: 8/- PQL 0.50 De: LC | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 SPK value SPK value | Tes F S SPK Ref Val 0 Tes F SPK Ref Val Tes | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 SeqNo: 5 %REC | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit PA Method | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions | %RPD | RPDLimit RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: | LCS LCSW MB PBW LCS LCSW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat Result ND SampTyp Batch II | De: LC D: R2 e: 7/2 PQL 0.50 De: R2 e: 8/4 PQL 0.50 De: LC D: R2 | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 SPK value S 0363 | Tes F SPK Ref Val 0 Tes SPK Ref Val Tes F | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 %REC tCode: El RunNo: 2 | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit PA Method 0363 | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions | %RPD | RPDLimit RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: | LCS LCSW MB PBW LCS LCSW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat ND SampTyp Batch II Analysis Dat | De: LC D: R2 e: 7/: PQL 0.50 De: ME D: R2 e: 8/- D: R2 D: R2 de: LC D: R2 e: 8/- | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 SPK value SS 0363 4/2014 | Tes F SPK Ref Val 0 Tes SPK Ref Val SPK Ref Val Tes F SPK Ref S | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 %REC tCode: El RunNo: 2 SeqNo: 5 | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit PA Method 0363 92147 | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L | 3 %RPD 3 %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Sulfate Sample ID Client ID: Prep Date: Analyte Chloride Sample ID Client ID: Prep Date: Analyte | LCS LCSW MB PBW LCS LCSW | SampTyp Batch II Analysis Dat Result 9.6 SampTyp Batch II Analysis Dat Result Analysis Dat Result | De: LC D: R2 e: 7/: PQL 0.50 D: R2 e: 8/ PQL 0.50 D: R2 e: 8/ PQL | S 0236 29/2014 SPK value 10.00 3LK 0363 4/2014 SPK value S 0363 4/2014 SPK value | Tes F SPK Ref Val 0 Tes SPK Ref Val Tes SPK Ref Val | tCode: El RunNo: 2 SeqNo: 5 %REC 95.6 tCode: El RunNo: 2 %REC tCode: El RunNo: 2 SeqNo: 5 %REC | PA Method 0236 88212 LowLimit 90 PA Method 0363 92146 LowLimit PA Method 0363 92147 LowLimit | 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit Units: mg/L HighLimit | %RPD | RPDLimit RPDLimit RPDLimit | Qual |

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

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| Sample ID MB | SampType: MBLK | T | estCode: EPA Method | | | | |
|-----------------|-----------------------|---------------------|---------------------|---------------|------|----------|------|
| Client ID: PBW | Batch ID: R2036 | 3 | RunNo: 20363 | | | | |
| Prep Date: | Analysis Date: 8/5/20 | 014 | SeqNo: 592208 | Units: mg/L | | | |
| Analyte | Result PQL SP | PK value SPK Ref Va | al %REC LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND 0.50 | | | | | | |
| Sample ID LCS | SampType: LCS | T | estCode: EPA Method | 300.0: Anions | \$ | | |
| Client ID: LCSW | Batch ID: R2036 | 3 | RunNo: 20363 | | | | |
| Prep Date: | Analysis Date: 8/5/20 |)14 | SeqNo: 592209 | Units: mg/L | | | |
| Analyte | Result PQL SP | PK value SPK Ref Va | al %REC LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| | | | | | | | |

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
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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

| Sample ID 5mL rb | SampT | ype: MI | зlk | TestCode: EPA Method 8260B: VOLATILES | | | | | | |
|---|--|---|-----------|---------------------------------------|----------|----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: R20230 | | | RunNo: 20230 | | | | | | |
| Prep Date: | Analysis D | ate: 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 Ics | SampT | ype: LC | s | TestCode: EPA Method 8260B: VOLATILES | | | | | | |
| Client ID: LCSW | Batch | ו ID: R 2 | 20230 | F | RunNo: 2 | 0230 | | | | |
| Prep Date: | Analysis D | ate: 7 | /29/2014 | 5 | eqNo: 5 | 87930 | Units: %RE | C | | |
| 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 | SampT | ype: MI | BLK | TestCode: EPA Method 8260B: VOLATILES | | | | | | |
| Client ID: PBW | Batch ID: R20298 | | | RunNo: 20298 | | | | | | |
| Prep Date: | Analysis D | ate: 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 ND | 1.0 2.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene | ND ND ND | 1.0 2.0 4.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene | ND ND ND ND | 1.0 2.0 4.0 4.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone | ND ND ND ND | 1.0 2.0 4.0 4.0 10 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene | ND ND ND ND ND | 1.0 2.0 4.0 4.0 10 1.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane | ND ND ND ND ND ND | 1.0 2.0 4.0 4.0 10 1.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane Bromoform | ND ND ND ND ND ND | 1.0 2.0 4.0 10 1.0 1.0 1.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane Bromoform Bromomethane | ND ND ND ND ND ND ND ND | 1.0 2.0 4.0 10 1.0 1.0 1.0 3.0 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane Bromoform Bromomethane 2-Butanone | ND ND ND ND ND ND ND ND | 1.0 2.0 4.0 10 1.0 1.0 1.0 3.0 10 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane Bromoform Bromomethane 2-Butanone Carbon disulfide | ND ND ND ND ND ND ND ND ND | 1.0 2.0 4.0 10 1.0 1.0 1.0 3.0 10 10 | | | | | | | | |
| Naphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acetone Bromobenzene Bromodichloromethane Bromoform Bromomethane 2-Butanone Carbon disulfide Carbon Tetrachloride | ND ND ND ND ND ND ND ND ND | 1.0 2.0 4.0 10 1.0 1.0 3.0 10 10 10 | | | | | | | | |

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

WO#: 1407D12

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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 | | | F | RunNo: 2 | 0298 | | | | |
| 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:

* 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

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WO#: 1407D12

Client: Western Refining Southwest, Inc.

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

| Sample ID 5ml rb | SampT | ype: ME | BLK | Tes | tCode: El | | | | | |
|-----------------------------|--------------------------|-----------------|-----------|---------------------|-----------------|-----------|-------------|--------|----------|------|
| Client ID: PBW | Batch | ו ID: R2 | 0298 | F | RunNo: 2 | | | | | |
| 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 ics | SampT | ype: LC | s | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSW | Batch | n ID: R2 | 0298 | RunNo: 20298 | | | | | | |
| Prep Date: | Analysis D | ate: 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.
- Value above quantitation range Е
- l Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- RL Reporting Detection Limit

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WO#: 1407D12

15-Aug-14

Western Refining Southwest, Inc. **Client:**

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

| Sample ID mb-14520 | SampTy | ype: ME | BLK | TestCode: EPA Method 8270C: Semivolatiles | | | | | | |
|-----------------------------|-----------------|---------|-----------|---|----------|----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 14520 | | | RunNo: 20300 | | | | | | |
| Prep Date: 7/31/2014 | Analysis Da | ate: 7/ | 31/2014 | 8 | SegNo: 5 | 90031 | 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:

2,4-Dinitrophenol

Value exceeds Maximum Contaminant Level. *

ND

Value above quantitation range Е

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
 - Sample pH greater than 2. Ρ
 - RL Reporting Detection Limit

Page 11 of 20
Western Refining Southwest, Inc. **Client:**

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

| Sample ID mb-14520 | SampType | B: MBLK | Tes | tCode: EP | A Method | 8270C: Semiv | volatiles | | |
|----------------------------|---------------|--------------|-------------|------------------|----------|--------------|-----------|----------|------|
| Client ID: PBW | Batch ID | : 14520 | F | RunNo: 20 | 300 | | | | |
| Prep Date: 7/31/2014 | Analysis Date | : 7/31/2014 | ę | SegNo: 59 | 0031 | Units: µg/L | | | |
| Analyte | Result F | QL 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 | | | | | | | |
| lsophorone | 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-Terphenvi-d14 | 94 | 100.0 |) | 94.5 | 44 | 113 | | | |

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Έ Value above quantitation range
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- Sample pH greater than 2. Ρ
- RL Reporting Detection Limit

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15-Aug-14

1407D12

Client: Western Refining Southwest, Inc.

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

| Sample ID Ics-14520 | SampT | ype: LC | S | Test | Code: E | PA Method | 8270C: Semi | volatiles | | |
|---|--|---|--|---|---|--|---|--|--|------|
| Client ID: LCSW | Batch | 1 ID: 14 | 520 | R | unNo: 2 | 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis D | ate: 7/ | 31/2014 | S | ieqNo: 5 | 90032 | 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 Icsd-14520 | SampT | ype: LC | SD | Tes | Code: E | PA Method | 8270C: Semi | volatiles | | |
| Sample ID Icsd-14520 Client ID: LCSS02 | SampT Batch | ype: LC | SD 520 | Tesi R | Code: E | PA Method 0300 | 8270C: Semi | volatiles | | |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 | SampT Batch Analysis D | ÿpe: LC 1 ID: 14 Pate: 7/ | SD 520 31/2014 | Tesl R S | Code: E tunNo: 2 teqNo: 5 | PA Method 0300 90033 | 8270C: Semi Units: µg/L | volatiles | | |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte | SampT Batch Analysis D Result | ype: LC 1 ID: 144 Pate: 7/ PQL | SD 520 31/2014 SPK value | Tesi R SPK Ref Val | Code: E tunNo: 2 teqNo: 5 %REC | PA Method 0300 90033 LowLimit | 8270C: Semi Units: µg/L HighLimit | volatiles %RPD | RPDLimit | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene | SampT Batch Analysis D Result 77 | ype: LC 1 ID: 144 Date: 7/ PQL 10 | SD 520 31/2014 SPK value 100.0 | Tesi R S SPK Ref Val 0 | Code: E tunNo: 2 teqNo: 5 %REC 76.5 | PA Method 0300 90033 LowLimit 50.3 | 8270C: Semi Units: µg/L HighLimit 109 | volatiles %RPD 12.8 | RPDLimit 27.2 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol | SampT Batch Analysis D Result 77 190 | ype: LC 1 ID: 14 pate: 7/ PQL 10 10 | SD 520 31/2014 SPK value 100.0 200.0 | Tesi R SPK Ref Val 0 0 | Code: E tunNo: 2 teqNo: 5 %REC 76.5 93.8 | PA Method 0300 90033 LowLimit 50.3 51.2 | 8270C: Semi Units: µg/L HighLimit 109 113 | volatiles %RPD 12.8 5.37 | RPDLimit 27.2 25.9 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol | SampT Batch Analysis D Result 77 190 170 | ype: LC 1 ID: 144 pate: 7/ PQL 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 | Tes R SPK Ref Val 0 0 0 | Code: E tunNo: 2 ieqNo: 5 %REC 76.5 93.8 84.4 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 | 8270C: Semi Units: µg/L HighLimit 109 113 104 | volatiles %RPD 12.8 5.37 11.7 | RPDLimit 27.2 25.9 22.5 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene | SampT Batch Analysis D Result 77 190 170 73 | ype: LC 1 ID: 144 Pate: 7/ PQL 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 | Tesl R SPK Ref Val 0 0 0 0 0 | Code: E unNo: 2 ieqNo: 5 %REC 76.5 93.8 84.4 73.3 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 | 8270C: Semi Units: μg/L HighLimit 109 113 104 106 | volatiles %RPD 12.8 5.37 11.7 8.19 | RPDLimit 27.2 25.9 22.5 24.6 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene | SampT Batch Analysis D Result 77 190 170 73 73 | ype: LC DID: 144 Pate: 7/ PQL 10 10 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 | Tesi R SPK Ref Val 0 0 0 0 0 0 | iCode: E itunNo: 2 iteqNo: 5 %REC 76.5 93.8 84.4 73.3 73.1 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 | 8270C: Semi Units: μg/L HighLimit 109 113 104 106 107 | %RPD 12.8 5.37 11.7 8.19 11.9 | RPDLimit 27.2 25.9 22.5 24.6 25.3 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine | SampT Batch Analysis D Result 77 190 170 73 73 85 | ype: LC Di ID: 144 Pate: 7/ PQL 10 10 10 10 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E cunNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 | <pre>volatiles %RPD 12.8 5.37 11.7 8.19 11.9 6.98</pre> | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol | SampT Batch Analysis D Result 77 190 170 73 73 85 110 | ype: LC DD: 144 Pate: 71 PQL 10 10 10 10 10 10 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 | Tesi R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E cunNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 | 8270C: Semi Units: μg/L HighLimit 109 113 104 106 107 119 62.2 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 | ype: LC D ID: 144 Pate: 7/ PQL 10 10 10 10 10 10 10 10 10 20 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0 | Tesi R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E cunNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 | ype: LC D ID: 144 Pate: 7/ PQL 10 10 10 10 10 10 10 10 20 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E cunNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 89 | ype: LC D ID: 144 Pate: 7/ PQL 10 10 10 10 10 10 10 20 10 10 20 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 100.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | iCode: E icunNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 | volatiles %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene 1,2,4-Trichlorobenzene | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 89 68 | ype: LC plD: 144 pate: 7/ 10 10 10 10 10 10 10 20 10 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | iCode: E tunNo: 2 iceqNo: 5 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 106 | <pre>volatiles %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1</pre> | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Sur: 2-Fluorophenol | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 89 68 140 | ype: LC plD: 144 pate: 7/ 10 10 10 10 10 10 10 20 10 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 100.0 100.0 200.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | iCode: E tunNo: 2 SeqNo: 5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 106 85.8 | <pre>%RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0</pre> | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 89 68 140 110 | ype: LC plD: 144 pate: 7/ PQL 10 10 10 10 10 10 20 10 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E cunNo: 2 SeqNo: 5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 68.4 68.8 53.9 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 0 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 77 190 170 73 73 85 110 150 100 89 68 140 110 110 | ype: LC plD: 144 PQL 10 10 10 10 10 10 10 10 20 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E tunNo: 2 SeqNo: 5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 68.4 68.8 53.9 86.5 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 26 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 138 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 0 0 0 0 0 0 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 0 0 | Qual |
| Sample ID Icsd-14520 Client ID: LCSS02 Prep Date: 7/31/2014 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2,4,6-Tribromophenol Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5 Surr: Nitrobenzene-d5 | SampT Batch Analysis D Result 77 190 170 73 73 73 85 110 150 100 89 68 140 110 170 88 | ype: LC plD: 144 PQL 10 10 10 10 10 10 10 10 20 10 10 10 | SD 520 31/2014 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 | Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Code: E SeqNo: 2 %REC 76.5 93.8 84.4 73.3 73.1 84.9 52.7 72.9 51.6 88.8 68.4 68.8 68.4 68.8 53.9 86.5 88.1 | PA Method 0300 90033 LowLimit 50.3 51.2 48.5 39.5 45.4 50.4 15.5 23.5 26.8 54.4 39.9 12.1 17.7 26 47.5 | 8270C: Semi Units: µg/L HighLimit 109 113 104 106 107 119 62.2 93.5 65.6 108 106 85.8 65.8 138 119 | %RPD 12.8 5.37 11.7 8.19 11.9 6.98 1.69 0.275 6.05 7.31 13.1 0 | RPDLimit 27.2 25.9 22.5 24.6 25.3 23.6 34.7 32.8 25.5 31.4 25.9 0 0 0 0 0 0 | Qual |

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

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ND Not Detected at the Reporting Limit

P Sample pH greater than 2.

RL Reporting Detection Limit

WO#: 1407D12

15-Aug-14

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

| Sample ID Icsd-14520 | SampType | : LCSD | Test | Code: EF | PA Method | 8270C: Semiv | volatiles | | |
|-----------------------|----------------|--------------|-------------|------------------|-----------|--------------|-----------|----------|------|
| Client ID: LCSS02 | Batch ID | 14520 | R | unNo: 2 (| 0300 | | | | |
| Prep Date: 7/31/2014 | Analysis Date: | 7/31/2014 | s | eqNo: 5 | 90033 | Units: µg/L | | | |
| Analyte | Result P | QL 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

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15-Aug-14

1407D12

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

| Sample ID | 1407d12-001b dup | SampType: | DUP | Test | Code: | SM2510B: S | pecific Condu | uctance | | |
|--------------|------------------|----------------|--------------|-------------|-------|------------|---------------|---------|----------|------|
| Client ID: | Injection Well | Batch ID: | R20245 | R | unNo: | 20245 | | | | |
| Prep Date: | | Analysis Date: | 7/29/2014 | S | eqNo: | 588403 | Units: µmho | os/cm | | |
| Analyte | | Result PC | QL SPK value | SPK Ref Val | %REC | C LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Conductivity | | 1800 0.0 |)10 | | | | | 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

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1407D12 15-Aug-14

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | West Inject | ern Refining Southwest, Inc. tion Well 7-28-14 3rd QTR | | | | | | |
|---------------------|----------------|---|------------------|------------------|----------------|------|----------|------|
| Sample ID | MB-14571 | SampType: MBLK | TestCo | de: EPA Method | d 7470: Mercur | у | | |
| Client ID: | PBW | Batch ID: 14571 | Runi | lo: 20345 | | | | |
| Prep Date: | 8/4/2014 | Analysis Date: 8/4/2014 | Seql | No: 591482 | Units: mg/L | | | |
| Anaiyte | | Result PQL SPK valu | ie SPK Ref Val % | REC LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | ND 0.00020 | | | | | | |
| Sample ID | LCS-14571 | SampType: LCS | TestCo | de: EPA Method | d 7470: Mercur | у | | |
| Client ID: | LCSW | Batch ID: 14571 | Runl | No: 20345 | | | | |
| Prep Date: | 8/4/2014 | Analysis Date: 8/4/2014 | Seq | No: 591483 | Units: mg/L | | | |
| Analyte | | Result PQL SPK valu | ue SPK Ref Val % | REC LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0049 0.00020 0.00500 | 0 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

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WO#: 1407D12 15-Aug-14

| Client: Project: | Western Injection | Refining S Well 7-28 | Southwes 3-14 3rd | st, Inc. QTR | | | | | | | |
|---------------------|----------------------|-------------------------|----------------------|-----------------|-------------|-----------|-------------|---------------|-----------|----------|------|
| Sample ID | MB-14549 | Samp | Type: ME | BLK | Test | tCode: El | PA 6010B: 1 | Total Recover | able Meta | lls | |
| Client ID: | PBW | Bato | h ID: 14 | 549 | R | RunNo: 2 | 0323 | | | | |
| Prep Date: | 8/1/2014 | Analysis I | Date: 8 / | 2/2014 | s | eqNo: 5 | 90696 | 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 | Samp | Type: LC | S | Tes | tCode: E | PA 6010B: ' | Total Recover | able Meta | als | |
| Client ID: | LCSW | Bato | h ID: 14 | 549 | F | RunNo: 2 | 0323 | | | | |
| Prep Date: | 8/1/2014 | Analysis | Date: 8 / | 2/2014 | 5 | SeqNo: 5 | 90697 | 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 | Samp | Type: LC | s | Tes | tCode: E | PA 6010B: | Total Recover | able Meta | als | |
| Client ID: | LCSW | Bate | ch ID: 14 | 549 | F | RunNo: 2 | 20323 | | | | |
| Prep Date: | 8/1/2014 | Analysis | Date: 8/ | /2/2014 | 5 | SeqNo: 5 | 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 | | | |

Qualifiers:

Sodium

* Value exceeds Maximum Contaminant Level.

50

1.0

50.00

- 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

80

120

ND Not Detected at the Reporting Limit

101

P Sample pH greater than 2.

0

RL Reporting Detection Limit

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1407D12 15-Aug-14

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

| Sample ID | 1407d12-001b dup | SampTy | pe: Dl | JP | Tes | tCode: | SM4500-H+B | : pH | - | | |
|------------|------------------|-------------|--------|-----------|-------------|--------|------------|--------------------|------|----------|------|
| Client ID: | Injection Well | Batch | ID: R2 | 20245 | F | lunNo: | 20245 | | | | |
| Prep Date: | | Analysis Da | te: 7 | /29/2014 | S | eqNo: | 588388 | Units: pH u | nits | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %RE(| C LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| pН | | 7.11 | 1.68 | | | | | | | | Н |

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

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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

WO#: 1407D12

15-Aug-14

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | Western Refining Southwes Injection Well 7-28-14 3rd | st, Inc. QTR | | | | | | | |
|--------------------------|---|-----------------|-------------|-------------------|-------------|-------------|-------|----------|------|
| Sample ID mb-1 | SampType: MB | BLK | Test | Code: SI | /12320B: Al | kalinity | | | |
| Client ID: PBW | Batch ID: R20 | 0245 | R | unNo: 2 (|)245 | | | | |
| Prep Date: | Analysis Date: 7/2 | 29/2014 | S | eqNo: 58 | 38355 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as Ca | 203) ND 20 | | | | | | | | |
| Sample ID Ics-1 | SampType: LC | S | Tes | Code: SI | W2320B: Al | kalinity | | | |
| Client ID: LCSV | W Batch ID: R2 | 0245 | R | unNo: 20 | 0245 | | | | |
| Prep Date: | Analysis Date: 7/2 | 29/2014 | S | eqNo: 5 | 88356 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as Ca | 203) 80 20 | 80.00 | 0 | 100 | 90 | 110 | | | |
| Sample ID mb-2 | SampType: MB | 3LK | Tes | tCode: SI | 12320B: AI | kalinity | | | |
| Client ID: PBW | Batch ID: R2 | 0245 | F | unNo: 20 | 0245 | | | | |
| Prep Date: | Analysis Date: 7/2 | 29/2014 | S | eqNo: 5 | 88376 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as Cal | ND 20 | | | | | | | | |
| Sample ID Ics-2 | SampType: LC | S | Tes | tCode: SI | M2320B: AI | kalinity | | | |
| Client ID: LCSV | V Batch ID: R2 | 0245 | F | tunNo: 2 0 | 0245 | | | | |
| Prep Date: | Analysis Date: 7/2 | 29/2014 | S | SeqNo: 5 | 88377 | Units: mg/L | CaCO3 | | |
| Analyte | Result PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as Cal | 203) 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

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Hall Environmental Analysis Laboratory, Inc.

| Client: | Western Refining Southwest, Inc. |
|---------|----------------------------------|
| D | Tailanting Wall 7 00 14 2nd OTD |

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

| Sample ID MB-14475 | SampType: MBLK Batch ID: 14475 | TestCode: SM2540C MC RunNo: 20257 | DD: Total Dissolved Solids |
|---|---|--|---|
| 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 MC | DD: Total Dissolved Solids |
| Sample ID LCS-14475 Client ID: LCSW | SampType: LCS Batch ID: 14475 | TestCode: SM2540C M0 RunNo: 20257 | DD: Total Dissolved Solids |
| Sample ID LCS-14475 Client ID: LCSW Prep Date: 7/29/2014 | SampType: LCS Batch ID: 14475 Analysis Date: 7/30/2014 | TestCode: SM2540C M0 RunNo: 20257 SeqNo: 588641 | DD: Total Dissolved Solids Units: mg/L |
| Sample ID LCS-14475 Client ID: LCSW Prep Date: 7/29/2014 Analyte | SampType: LCS Batch ID: 14475 Analysis Date: 7/30/2014 Result PQL SPK value | TestCode: SM2540C M0 RunNo: 20257 SeqNo: 588641 SPK Ref Val %REC LowLimit | DD: Total Dissolved Solids Units: mg/L HighLimit %RPD RPDLimit Qual |

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

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| HALL Hall Environmenta ENVIRONMENTAL ANALYSIS LABORATORY TEL: 505-345-397 Website: www.b | al Analysis Laborator 4901 Hawkins N buquerque, NM 8710 15 FAX: 505-345-410 nallenvironmental | 79 72 73 77 77 77 | ole Log-In Check List |
|--|---|----------------------------------|------------------------------------|
| Client Name: Western Refining Southw Work Order Numbe | er: 1407D12 | | RcptNo: 1 |
| Received by/date: A-07/29/19 | | | |
| Logged By: Anne Thorne 7/29/2014 7:55:00 AM | M | ami Am | - |
| Completed By: Anne Thorne 7/29/2014 | | Den M. | |
| Beviewed By: MA - m/29/14 | | Cana Store | - |
| 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 🗌 | |
| 5, Were all samples received at a temperature of >0° C to 6.0°C | Yes 🔽 | No 🗌 | |
| 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 Viais 🗌 |
| 11. Were any sample containers received broken? | Yes | No 🗹 | # of preserved |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes 🗹 | No 🗌 | for pH: (2)or (12) hiess noted) |
| 13. Are matrices correctly identified on Chain of Custody? | Yes 🗹 | No 🗌 | Adjusted? <u>NO</u> |
| 14. Is it clear what analyses were requested? | Yes 🗹 | No 🗌 | 19 |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes 🗹 | 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 Persor |
| Regarding: | |
| Client Instructions: | the second second second second second second second second second second second second second second second s |

17. Additional remarks:

18. Cooler Information

| ľ | Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|-----------|---------|-----------|-------------|---------|-----------|-----------|
| | 1 | 1.0 | Good | Yes | | | |

| | ANALYSIS LABORATORY | www.hailenvironmental.com | 11 Hawkins NE - Albuquerque, NM 87109 | I. 505-345-3975 Fax 505-345-4107 | Analysis Request | ין אובר גרס גרס גרס גרס | | | 01 N) 24, 408 24, 808 24, 8 | (GF) 0 01 0 01 1 0 0 01 1 0 0 01 1 0 0 0 1 0 0 0 0 | Ватов Нат Ватов Нат | | × | | | | | X | | | | S. | | | Any sub-contracted data will be clearly notated on the analytical report. |
|---------------|---------------------|---------------------------|---------------------------------------|----------------------------------|------------------|--|------------|---------------------------|--|---|---|----------------|---------|--------|---------|---------|----------|----------|---------|------|--|--------------|-------------|-----------------|---|
| | | | 490 | Tel | | ul)) (1) | 902 805 | ອ)) s,(| + 1WE | 38. 38 | BTEX + MT BTEX + MT | | | | | | | | | | | Remark | | | possibility. |
| | | 7-28-14 | ell 3mgTR | | | | , | | | | | 1201 | 00 | 192 | 102 | 102 | 1922 |)02 | 102 | | | Date Time | 25/1 M/82/1 | 01/29/19 | es. This serves as notice of this |
| ime: | □ Rush | | ion W | | | er: | | | 26 Ves | erature 1 | Preservative Type | He l | amber | | | H2 SO4 | HNO3 | No.0H | Acetate | | | | Flipely | 5 | credited laboratori |
| Turn-Around T | K Standard | Project Name: | TNJEET | Project #: | | Project Manag | | | Sampler. | Sample della | Container Type and # | 3-VOA | 1-1:ter | 1-500- | 1-500-1 | 1-250~1 | 1-500ml | 1-50ml | [-500m] | | | Received by: | V-JMJ24 | Received for | contracted to other at |
| stody Record | ReGNIUS | | 5 CR 4990 | NN 874/3 | 2-4/35 | | | Level 4 (Full Validation) | ji | | Sample Request ID | Injection Well | | | | | | | | | | hed by: | hit Krokon | hed by: hed by: | Mutted to Hall Environmental may be sub |
| of-Cu | 22 | | #55 | R R | | | | | □ Othe | | Matrix | Ha O | - | | | | | | | | | Relinquis | p | | |
| זain-∢ | leste | | ddress | ž Č | No. | Fax#: | ackage: | ard | ation P | Type) | Time | 8.6 | - | | | - | | - | | | | Time: | 1452 | Time: | |
| ט | Clients N | | Mailing A | Rloo | Phone # | email or | QA/QC P | X Stand | Accredit: | | Date | 7-26-10 | - | | | | | | | | | Date: | -28-14 | Date: | |

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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109



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

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 Analy | sis Labora | tory, Inc. | | | Date Reported: 10/23/20 | 14 |
|---|--------------------------|------------|---------------------------------------|--------------------------------------|--|--------|
| CLIENT: Western Refining Southwest Project: Injection Well 4th QTR 10-1 Lab ID: 1410102-001 | , Inc. -14 Matrix: | AQUEOUS | Client Samp Collection Received | le ID: Inj Date: 10/ Date: 10/ | ection Well /1/2014 10:00:00 AM /2/2014 6:50:00 AM | |
| Analyses | Result | RL Q | ual 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 |
| FPA METHOD 7470: MERCURY | | | | | Analyst: | MMD |
| Mercury | ND | 0.00020 | mg/L | 1 | 10/8/2014 3:02:49 PM | 15770 |
| EDA 6040P. TOTAL RECOVERABLE | METALS | | Ū | | Analyst | ELS |
| EPA 6010B: TOTAL RECOVERABLE | | 0.000 | ma/l | 1 | 10/10/2014 0·26·53 AM | 15825 |
| Arsenic | | 0.020 | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Banum | 0.20 ND | 0.020 | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Calmum | 110 | 5.0 | mg/L | 5 | 10/10/2014 9:28:28 AM | 15825 |
| Caldulfi | | 0.00 | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Eand | | 0.0000 | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Magnesium | 23 | 1.0 | mα/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Potassium | 82 | 1.0 | mg/⊑ | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Solenium | 0.2 ND | 0.050 | mg/l | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Selection | ND | 0.0050 | ma/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: SEMIVOLATIL | ES | | | | 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)pervlene | 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 |
| Benzyi 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-methyiphenol | ND | 10 | μg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Chloroanlline | 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.

Value exceeds Maximum Contaminant Level. Qualifiers: *

E Value above quantitation range

Analyte detected below quantitation limits J

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

- \mathbf{S} Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank в

H Holding times for preparation or analysis exceeded

- ND Not Detected at the Reporting Limit Page 2 of 18
- Sample pH greater than 2. P
- RL Reporting Detection Limit

Lah Order 1410102

Analytical Report

| CLIENT: Western Refining Southwest, I | nc. | Client Sample ID: Injection Well | | | | | | | | | | |
|--|-----------|---------------------------------------|----------|------------------|----------------------|-------|--|--|--|--|--|--|
| Project: Injection Well 4th OTR 10-1-1 | .4 | Collection Date: 10/1/2014 10:00:00 A | | | | | | | | | | |
| Lab ID: 1410102-001 | Matrix: A | QUEOUS | 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-butyi 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 | | | | | | |

Hall Environmental Analysis Laboratory, Inc.

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Analytical Report Lab Order 1410102 Date Reported: 10/23/2014

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

| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | В | Analyte detected in the associated Meth | od Blank |
|-------------|---|--|----|---|---------------|
| | E | Value above quantitation range | Ĥ | Holding times for preparation or analys | is exceeded |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 3 of 18 |
| | 0 | RSD is greater than RSDlimit | Р | Sample pH greater than 2. | 1 450 5 01 10 |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit | |

Spike Recovery outside accepted recovery limits S

RL Reporting Detection Limit

| | | | | Lab C |)rder 1410102 | |
|---|---------|-------------|------------|------------------|--------------------|--------|
| Hall Environmental Analysis | Labora | itory, Inc. | | Date I | Reported: 10/23/20 |)14 |
| CLIENT: Western Refining Southwest, Inc | | | lient Samp | le ID: Injection | Well | |
| Project: Injection Well 4th OTR 10-1-14 | | | Collection | Date: 10/1/201 | 4 10:00:00 AM | |
| Lab ID: 1410102-001 | Matrix: | AOUEOUS | Received | Date: 10/2/201 | 4 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: Phenoi-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.

- 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

Page 4 of 18

Analytical Report

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 | s Laborat | ory, Inc. | | | Lab Order 1410102 Date Reported: 10/23/20 | 14 | | | |
|---|-----------------------|--|-------|----|--|--------|--|--|--|
| CLIENT: Western Refining Southwest, In Project: Injection Well 4th QTR 10-1-1 Lab ID: 1410102-001 | nc. 4 Matrix: A | Client Sample ID: Injection WellCollection Date: 10/1/2014 10:00:00 AMMatrix: AQUEOUSReceived 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 | μα/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 Page 5 of 18

Analytical Report

P Sample pH greater than 2.

RL Reporting Detection Limit

Analytical Report
Lab Order 1410102

Date Reported: 10/23/2014

Hall Environmental Analysis Laboratory, Inc.

| CLIENT: Western Refining Southwest, I | nc. | Client Sample ID: Injection Well | | | | | | | | | |
|--|---------|--|------|--------------|-----------------|-----------------------|--------|--|--|--|--|
| Project: Injection Well 4th QTR 10-1-1 | 4 | Collection Date: 10/1/2014 10:00:00 AM | | | | | | | | | |
| Lab ID: 1410102-001 | Matrix: | AQUEOUS | | Received Dat | t e: 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 | | | | |
| рH | 7.08 | 1.68 | Н | 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 SO | DLIDS | | | | | 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. | В | Analyte detected in the associated Meth | od Blank |
|-------------|---------------------------------|---|----|--|---------------|
| | Е | Value above quantitation range | Н | Holding times for preparation or analysi | is exceeded |
| | J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit | Page 6 of 18 |
| | O RSD is greater than RSD limit | | | Sample pH greater than 2. | 1 age 0 01 10 |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit | |
| | S | Spike Recovery outside accepted recovery limits | | | |
| | | | | | |

Anatek Labs, Inc.

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

Analytical Results Report

| Sample Number Client Sample ID Matrix Comments | 141003043-001 1410102-001E / INJE(Water | Samp CTION WELL Samp | ling Date | 10/1/2014 | Date/ Samp | Time Receive ling Time | ed 10/3/2014 10:00 AM | 1:30 PM |
|---|--|----------------------------|--------------------------------|-----------|---|---------------------------|---|-----------|
| Bernatar | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
| Cyanide (react Flashpoint pH Reactive sulfid | ive) | ND >200 6.82 3.01 | mg/L °F ph Units mg/L | 1 | 10/15/2014 10/15/2014 10/8/2014 10/15/2014 | CRW KFG KJS HSW | SW846 CH7 EPA 1010 SM 4500pH-B SW846 CH7 | |

Authorized Signature

John Coddingtor, 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.

Certifications held by Anatek Lebs 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 Lebs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871089

Anatek Labs, Inc.

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| Client: | HALL ENVIRONMENTAL ANALYSIS LAB 4901 HAWKINS NE SUITE D | Batch #: Project Name: | 141003043 1410102 | |
|---------|--|---------------------------|----------------------|--|
| Autros. | ALBUQUERQUE, NM 87109 | - | • | |
| Attn: | ANDY FREEMAN Analytical Results F | Report | | |

Quality Control Data

| Lab Control Sam | ıple | | | | | | | | | | |
|---|---|------------------------------|--------------------------------|------------------------------|--------------------|-------------------------------|-----------------------------|----------------------|--------------------------------|---------------------------------------|---|
| Parameter Reactive sulfide Cyanide (reactive) | | LCS Result 0.180 0.519 | Units mg/L mg/L | LCS S 0.2 0.5 | pike | % Rec 90.0 103.8 | AR 1 70 80 | %Rec -130 -120 | Prep 10/15/ 10/15 | Date //2014 /2014 | Analysis Date 10/15/2014 10/15/2014 |
| Matrix Spike Sample Number 1 141003043-001 1 141003043-001 0 | Parameter Reactive sulfide Cyanide (reactive) | | Sample Resuit 3.01 ND | MS Result 3.77 2.41 | Unit mg/ mg/ | ts L | MS Spike 0.767 2.5 | %Rec 99.1 96.4 | AR %Rec 70-130 80-120 | Prep Date 10/15/2014 10/15/2014 | Analysis Date 10/15/2014 10/15/2014 |
| Matrix Spike Du Parameter Cyanide (reactive) | plicate | MSD Result 2.41 | Units mg/L | MSD Spike 2.5 | % 90 | Rec 3.4 | %RPD 0.0 | AR %RPE 0-25 |) Pre 10/ | ep Date 15/2014 | Analysis Date 10/15/2014 |
| Method Blank Parameter Cyanlde (reactive) Reactive sulfide | | | Re N | sult ID ID | U n | nits ng/L ng/L | | PQL 1 1 | P 10/ 10/ | rep Date /15/2014 /15/2014 | Analysis Date 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:ID200301-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cent0095; FL(NELAP): E871098

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | | Western Refining S Injection Well 4th (| outhwe QTR 10 | st, Inc. -1-14 | | | | | | | |
|---------------------|------|--|------------------|-------------------|-------------|----------|-----------|--------------|------|----------|------|
| Sample ID | мв | Samp1 | Гуре: МВ | 3LK | Tes | tCode: E | PA Method | 300.0: Anion | 5 | | |
| Client ID: | PBW | Batcl | h iD: R2 | 1640 | F | RunNo: 2 | 1640 | | | | |
| Prep Date: | | Analysis E | Date: 10 | 0/2/2014 | S | BeqNo: 6 | 34799 | 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 | Samp | Гуре: LC | s | Tes | tCode: E | PA Method | 300.0: Anion | 5 | | |
| Client ID: | LCSW | Batc | h ID: R2 | 1640 | F | RunNo: 2 | 1640 | | | | |
| Prep Date: | | Analysis [| Date: 1 | 0/2/2014 | 5 | SeqNo: 6 | 34800 | 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:

* 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

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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 | 1 ID: R2 | 1653 | F | RunNo: 2 | 1653 | | | | |
| Prep Date: | Analvsis D | ate: 1 | 0/3/2014 | e | SeaNo: 6 | 36225 | Units: ua/L | | | |
| Anglista | Desult | | | |)/ ח ביי | Loud inst | | <u>م</u> م /۷ | DDDI imit | Qual |
| Renzeno | Kesuit | FQL 1 A | SPK Value | SPK KET Val | %REC | LOWLIMI | HighLimit | %К₽U | REALIUI | Qual |
| Tokiono | | 1.0 | | | | | | | | |
| | | 1.0 | | | | | | | | |
| Ethydenzene Matsulaat but datum (MTDE) | | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-1 nmethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-1 nmethylbenzene | ND | 1.0 | | | | | | | | |
| T,Z-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 | 10 | | | | | | | | |
| 1 2-Dichloropropage | ND | 10 | | | | | | | | |
| | | 10 | | | | | | | | |

Qualifiers:

2,2-Dichloropropane

* Value exceeds Maximum Contaminant Level.

2.0

ND

- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
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- 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

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1410102 23-Oct-14

Client: Western Refining Southwest, Inc.

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

| Sample ID 5ml-rb | SampType: MBLK | | | Tesi | TestCode: EPA Method 8260B: VOLATILES | | | | | |
|-----------------------------|----------------|---------------|-----------|-------------|---------------------------------------|-----------|-------------|--------|----------|------|
| Client ID: PBW | Batch | ID: R2 | 1653 | R | tunNo: 2 | 1653 | | | | |
| Prep Date: | Analysis D | ate: 10 |)/3/2014 | S | SeqNo: 6 | 36225 | 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 Ics | Samp | Type: LO | วร | Tes | stCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSW | Batc | h ID: R | 21653 | ۱ | RunNo: 2 | 21653 | | | | |
| Prep Date: | Analysis [| Date: 1 | 0/3/2014 | : | SeqNo: 6 | 536227 | 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
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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
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1410102 23-Oct-14

WO#:

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Client: Western Refining Southwest, Inc.

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

| Sample ID 100ng Ics | SampT | ype: LC | S | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
|-----------------------------|------------|------------------|-----------|-------------|---------------------|-----------|-------------|--------|----------|------|
| Client ID: LCSW | Batch | Batch ID: R21653 | | | RunNo: 21653 | | | | | |
| Prep Date: | Analysis D |)ate: 10 | 0/3/2014 | 8 | SeqNo: 6 | 36227 | 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.
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- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- Р Sample pH greater than 2.
- RL Reporting Detection Limit

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WO#: 1410102

23-Oct-14

Hall Environmental Analysis Laboratory, Inc.

Client: Western Refining Southwest, Inc.

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

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|-----------------------------|------------|----------|-----------|-------------|----------|-----------|-------------|-----------|----------|------|
| Sample ID mb-15747 | SampT | ype: ME | BLK | Tes | Code: EF | PA Method | 8270C: Semi | volatiles | | |
| Client ID: PBW | Batch | ID: 15 | 747 | R | unNo: 2' | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis D | ate: 10 |)/9/2014 | S | eqNo: 64 | 40784 | 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:

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- O RSD is greater than RSDlimit
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- ND Not Detected at the Reporting Limit
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1410102 23-Oct-14

Client: Western Refining Southwest, Inc.

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

| Sample ID mb-15747 | SampType: MBLK | | | TestCode: EPA Method 8270C: Semivolatiles | | | | | | |
|----------------------------|----------------|-------|-----------|---|----------|----------|-------------|------|----------|------|
| Client ID: PBW | Batch I | D: 15 | 747 | F | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis Da | te: 1 | 0/9/2014 | 5 | BeqNo: 6 | 40784 | 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 | | | |

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- в Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH greater than 2.
- RL Reporting Detection Limit

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23-Oct-14

WO#:

1410102

Client: Western Refining Southwest, Inc. **Project:**

Injection Well 4th QTR 10-1-14

| Sample ID Ics-15747 | SampT | ype: LC | S | Tes | tCode: El | volatiles | | | | |
|----------------------------|------------|-----------------|-----------|-------------|-----------|-----------|-------------|-----------|----------|------|
| Client ID: LCSW | Batch | n ID: 15 | 747 | न | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis D | ate: 10 |)/9/2014 | 8 | SeqNo: 6 | 40785 | 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 | | | |
| Pentachiorophenol | 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 |
| Sun: 4-Terphenyl-d14 | 75 | | 100.0 | | 75.1 | 44 | 113 | | | |
| Sample ID Icsd-15747 | SampT | ype: LC | SD | Tes | tCode: E | PA Method | 8270C: Semi | volatiles | | |
| Client ID: LCSS02 | Batch | n ID: 15 | 747 | F | RunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis D |)ate: 10 |)/9/2014 | 5 | SeqNo: 6 | 40786 | 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 | |

| 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. *

Value above quantitation range Е

- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits s
- Analyte detected in the associated Method Blank в
- Н Holding times for preparation or analysis exceeded

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- ND Not Detected at the Reporting Limit
- Sample pH greater than 2. Р
- RL Reporting Detection Limit

WO#: 1410102

23-Oct-14

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

_

| Sample ID Icsd-15747 | SampTy | pe: LC | SD | Tes | Code: E | PA Method | 8270C: Semi | volatiles | | |
|-----------------------|-------------|---------------|-----------|-------------|----------|-----------|-------------|-----------|----------|------|
| Cilent ID: LCSS02 | Batch | ID: 15 | 747 | ਜ | lunNo: 2 | 1803 | | | | |
| Prep Date: 10/7/2014 | Analysis Da | ate: 10 |)/9/2014 | 5 | eqNo: 6 | 40786 | 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

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Client: Western Refining Southwest, Inc.

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

| Sample ID MB-15770 Client ID: PBW | SampType: MBLK Batch ID: 15770 | TestCode: EPA Method RunNo: 21753 | 7470: Mercury | |
|---|--|--|--|---------------|
| 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 | |
| Sample ID LCS-15770 Client ID: LCSW | SampType: LCS Batch ID: 15770 | TestCode: EPA Method RunNo: 21753 | 7470: Mercury | |
| Sample ID LCS-15770 Client ID: LCSW Prep Date: 10/7/2014 | SampType: LCS Batch ID: 15770 Analysis Date: 10/8/2014 | TestCode: EPA Method RunNo: 21753 SeqNo: 639034 | 7470: Mercury Units: mg/L | |
| Sample ID LCS-15770 Client ID: LCSW Prep Date: 10/7/2014 Analyte | SampType: LCS Batch ID: 15770 Analysis Date: 10/8/2014 Result PQL SPK value | TestCode: EPA Method RunNo: 21753 SeqNo: 639034 SPK Ref Val %REC LowLimit | 7470: Mercury Units: mg/L HighLimit %RPD | RPDLimit Qual |

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

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| Ha | II | Envire | onmental | Ana | lysi | s La | borat | tory, | Inc. |
|----|----|--------|----------|-----|------|------|-------|-------|------|
|----|----|--------|----------|-----|------|------|-------|-------|------|

Client: Western Refining Southwest, Inc. Injustion Wall 4th OTP 10 1.14 Project

| roject: | injection | weii 4ii QTK 10-1-14 | |
|---------|-----------|----------------------|--|
| | | | |

| Sample ID MB-15825 | Samp | Туре: МЕ | 3LK | Test | iCode: El | PA 6010B: 1 | Fotal Recover | able Meta | ils | |
|---|--|---|--|---|--|---|---|-------------------|-----------------|------|
| Client ID: PBW | Bato | h ID: 15 | 325 | R | tunNo: 2 | 1801 | | | | |
| Prep Date: 10/9/2014 | Analysis | Date: 10 | /10/2014 | s | eqNo: 6 | 40639 | 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 | Samp | Type: LC | S | Tes | tCode: El | PA 6010B: ' | Total Recover | able Meta | ls | |
| Sample ID LCS-15825 Client ID: LCSW | Samp Bate | Type: LC | S 825 | Tes R | tCode: El RunNo: 2 | PA 6010B: ⁻ 1801 | Total Recover | able Meta | lls | |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 | Samp Bato Analysis | Type: LC ch ID: 15 Date: 10 | S 825 0/10/2014 | Tes R S | tCode: El RunNo: 2 SegNo: 6 | PA 6010B: ⁻ 1801 40640 | Total Recover | able Meta | als | |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte | Samp Bato Analysis Result | Type: LC ch ID: 15 Date: 10 PQL | S 825 0/10/2014 SPK value | Tesi F S SPK Ref Val | tCode: El RunNo: 2 SeqNo: 6 %REC | PA 6010B: ⁻ 1801 40640 LowLimit | Total Recover Units: mg/L HighLimit | vable Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic | Samp Bato Analysis Result 0.52 | Type: LC ch ID: 15 Date: 10 PQL 0.020 | S 825 0/10/2014 SPK value 0.5000 | Tesi F S SPK Ref Val 0 | tCode: El RunNo: 2 SegNo: 6 %REC 104 | PA 6010B: ⁻ 1801 40640 LowLimit 80 | Total Recover Units: mg/L HighLimit 120 | able Meta %RPD | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium | Samp Bate Analysis Result 0.52 0.49 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 | S 825 0/10/2014 SPK value 0.5000 0.5000 | Tesi R SPK Ref Val 0 0 | tCode: El RunNo: 2 SegNo: 6 %REC 104 98.9 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 | Total Recover Units: mg/L HighLimit 120 120 | able Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium | Samp Bate Analysis Result 0.52 0.49 0.49 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 0.0020 | S 825 0/10/2014 SPK value 0.5000 0.5000 0.5000 | Tesi F SPK Ref Val 0 0 0 0 | tCode: El RunNo: 2 SegNo: 6 %REC 104 98.9 98.9 98.9 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 | able Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium | Samp Bate Analysis Result 0.52 0.49 0.49 52 | Type: LC ch ID: 15 Date: 10 PQL 0.020 0.020 0.0020 1.0 | S 825 0/10/2014 SPK value 0.5000 0.5000 0.5000 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 | tCode: El RunNo: 2 SegNo: 6 %REC 104 98.9 98.9 104 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 | Units: mg/L HighLimit 120 120 120 120 | vable Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 | S 825 5/10/2014 SPK value 0.5000 0.5000 0.5000 50.00 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 98.9 104 96.8 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 | vable Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 | S 825 0/10/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 98.9 104 96.8 97.6 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 | *able Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 | S 825 0/10/2014 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 | Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 | *able Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 | S 825 5/10/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 | vable Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 0.50 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0060 0.0050 1.0 1.0 0.050 | S 825 5/10/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 0.5000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 100 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | vable Meta | als RPDLimit | Qual |
| Sample ID LCS-15825 Client ID: LCSW Prep Date: 10/9/2014 Analyte Arsenic Barium Cadmium Calcium Chromium Lead Magnesium Potassium Selenium Silver | Samp Bate Analysis Result 0.52 0.49 0.49 52 0.48 0.49 51 49 0.50 0.10 | Type: LC ch ID: 15 Date: 10 0.020 0.020 0.0020 1.0 0.0050 1.0 1.0 0.050 0.0050 | S 825 5/10/2014 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 | Tesi F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | tCode: El RunNo: 2 SeqNo: 6 %REC 104 98.9 98.9 104 96.8 97.6 103 98.8 100 102 | PA 6010B: ⁻ 1801 40640 LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80 | Total Recover Units: mg/L HighLimit 120 120 120 120 120 120 120 120 120 120 | vable Meta | als RPDLimit | Qual |

Qualifiers:

Value exceeds Maximum Contaminant Level. *

Е Value above quantitation range

- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- Р Sample pH greater than 2.
- Reporting Detection Limit RL

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1410102

Hall Environmental Analysis Laboratory, Inc.

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 Ics-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 |
| Sampie ID Ics-2 | SampType: LCS TestCode: SM2320B: Alkalinity |
| Client ID: LCSW | Batch ID: R21715 RunNo: 21715 |
| Pren Date: | Analysis Date: 10/6/2014 SeqNo: 637475 Units: mg/L CaCO3 |
| 1 Top Datos | |
| Analyte | Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual |

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Value above quantitation range Ε

- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank в
- н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
 - P Sample pH greater than 2.
 - Reporting Detection Limit RL

1410102 23-Oct-14

WO#;

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Hall Environmental Analysis Laboratory, Inc.

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

| Sample ID MB-15759 | SampType: MBLK | TestCode: SM2540C M | OD: 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 M | OD: 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.
- Value above quantitation range Е
- J Analyte detected below quantitation limits
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- в Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Р Sample pH greater than 2.
- Reporting Detection Limit RL

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| | 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 | | ReptNo: 1 | |
|--|----------------------|----------------|-----------|-----------------|--|
| Received by/date: LM1002/1 | <i>'</i> u | , , | | | |
| Logged By: Anne Thorne | 10/2/2014 6:50:00 AM | | are An | - | |
| Completed By: Anne Thorne | 10/2/2014 | | Am. Al | , | |
| Reviewed By: | 10/02 Jul | | Olive Jor | | |
| Chain of Custody | | | | | ······································ |
| 1 Custody seals intact on sample bottles? | | Yes 🗌 | No 🗖 | Not Present 🗹 | |
| Is Chain of Custody complete? | | Yes 🗹 | No 🗌 | Not Present | |
| 3, How was the sample delivered? | | <u>Courier</u> | | | |
| <u>Log In</u> | | | | | |
| 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 | 5)? | Yes 🗹 | No 🗆 | | |
| 8. Are samples (except VOA and ONG) proper | ly 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 broke | en? | Yes 🗌 | No 🗹 🛛 | # of processied | <u> </u> |
| | | | | bottles checked | 20 |
| 12. Does paperwork match bottle labels? | | Yes 🗹 | No | for pH: | 12 unless noted |
| (Note discrepancies on chain of custody) | F Custody2 | Vas 🗸 | No 🗌 | Adjusted | NO |
| 13. Are mainces conecuy identified on official of | Clatudy: | Yes 🔽 | No 🗆 | | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | | Yes 🗹 | No 🗖 | Checked by: | A |
| Special Handling /if applicable) | | | | | |
| 40 Mas alight patilled of all disposances with | this order? | Yes | No 🗔 · | NA 🗹 | |

| Person Notified: | | Date |
|---------------------|--|---|
| By Whom: | | Via: 🔄 eMail 📄 Phone 🗍 Fax 🔄 In Person |
| Regarding: | the second second second second second second second second second second second second second second second s | |
| Client Instructions | · · · · · · · · | and a second a second a second a second a second a second a second a second a second a second a second a second |

4

17. Additional remarks:

18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By | |
|-----------|---------|-----------|-------------|---------|-----------|-----------|--|
| 1 | 1.3 | Good | Yes | | | | |

| Monthly Biology Monthly Biology Monthly Biology Monthly Biology Image: Solution of the solutin of the solution of the solu | M Ket $MiNg$ X Standard R $#$ 53 $CR.4992$ $Project$ Name: M N N $BYMS$ $Project$ Manager: $V = 33 - W/35$ $Project$ Manager: $X = 10$ $N = 100$ $Rrolect #:$ $Matrix$ Sampler: Bab Matrix Sampler ID $Rolect #:$ $Matrix$ Sample Request ID $Role #:$ $Matrix$ Sample Request ID $Type and #$ $Type$ $Matrix$ Sample Request ID $Type and #$ $Type$ | Well 215 | | A | AL | iis) | 5 | C | | C | Y |
|---|---|-------------------|----------------------------------|--|-------------|--------------------------|------------|-----------|-----------|------------------|---------------------|
| All H. H. L. H. L. L. L. L. L. L. L. L. L. L. L. L. L. | So CR. 4990 Twject i ou N.M. 87413 Project Manager: A.M. 87413 Project Manager: XLevel 4 (Full Validation) Project Manager: XLevel 4 (Full Validation) Sampler: Bab Mer Sampler: Bab Mer Sampler: Bab Instruction Sampler: Bab Mer Sampler: Bab Instruction Sampler: Bab | Well ATE | | | | | | | 5 | | |
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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.



| | Length | Тор | 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

| Woll Name INDIN #9 | | | | |
|--|-------------|--------------------------|--------|--|
| 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 | |
| | | 5,100 | 5,100 | |
| Sufface Facility Installation | | | | |
| Restore Location | | | | |
| Well Site Supervision | | 4,100 | 4,100 | |
| Engineering | | 1,000 | 1,000 | |
| Bits | | | | |
| Labor & Trucking to remove surface equipment | | | | |
| Track and Installation | | | | |
| Pierces Costs | | | | |
| Disposal Costs Motor | | 1,250 | 1,250 | |
| Nieler Surface Basiametian | | | | |
| Bla marker | | 5,125 | 5,125 | |
| r oca indikel | | 135 | 135 | |
| Workover Costs | 0 | 79,780 | 79,780 | |
| 10% Contingency | 0 | 7 978 | 7 978 | |
| Total Workover Costs | ň | 87 758 | 87 758 | |
| | | | 01,100 | |

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

| 12 DATE IN | 30 15 sus | PENSE | ENGINEER G | 1-4-2016 LOGGED IN | SUD | PMAMI600432.778 |
|---------------|-------------------------------|--|---|---|---|---|
| | | NEW N 122 | AB 1EXICO OIL CO - Enginee 0 South St. Francis | OVE THIS LINE FOR DAVISION USE ONLY DNSERVATION I ering Bureau - Drive, Santa Fe, NM | DIVISION 87505 | |
| | | ADMI | NISTRATIV | E APPLICATI | ON CHEC | KLIST |
| Т | HIS CHECKLIST IS | MANDATOR | FOR ALL ADMINISTRA | TIVE APPLICATIONS FOR I | EXCEPTIONS TO DIV | ISION RULES AND REGULATIONS |
| | [NSL-Non-S [DHC-Do [PC- | tandard Lo wnhole Co Pool Comn [WFX-Wa [SV ualified Enl | cation] [NSP-Non- mmingling] [CTI hingling] [OLS - (aterflood Expansio VD-Salt Water Disp hanced Oil Recove | Standard Proration I B-Lease Commingling Off-Lease Storage] n] [PMX-Pressure osal] [IPI-Injection ry Certification] [F | Jnit] [SD-Simuli] [PLC-Pool/L [OLM-Off-Lease Maintenance Ex Pressure Increa PR-Positive Pro | aneous Dedication] ease Commingling] Measurement] spansion] ase] duction Response] |
| [1] | TYPE OF A | APPLICAT Locatio | FION - Check Thoson - Spacing Unit - SL NSP | se Which Apply for [A Simultaneous Dedica] SD | A] - 5 A tion | ANJHANDEFININGE 37218 |
| | Che [B] | ck One On Comm | ly for [B] or [C] ingling - Storage - 1 HC [] CTB [| Measurement | | Supt - pending 0-045 |
| | [C] | Injectio | on - Disposal - Pres FX 🔲 PMX 🚺 | sure Increase - Enhan SWD 🔲 IPI | ced Oil Recovery | PPR |
| | [D] | Other: | Specify | 5.02 | | |
| [2] | NOTIFICA [A] | TION RE | QUIRED TO: - Ch orking, Royalty or (| eck Those Which Ap Overriding Royalty In | ply, or Does N terest Owners | ot Apply & |
| | [B] | 🔀 Oi | ffset Operators, Lea | seholders or Surface | Owner | Pool |
| | [C] | | oplication is One W | hich Requires Publis | ned Legal Notice | -Swoj Entrada |
| | [D] | | Dification and/or C Bureau of Land Managemen | oncurrent Approval b | y BLM or SLO 3, State Land Office | 26 I W |
| | [E] | 🗌 Fo | or all of the above, I | Proof of Notification of | or Publication is | Attached, and/or, |
| | [F] | 🗆 w | aivers are Attached | | | |
| (21 | | ooup am | | | | |

[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 | The the | Accus / Engineer | 12/15/2015 |
|--------------------|-----------|------------------|------------|
| Print or Type Name | Signature | Title | Date |

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

APPLICATION FOR AUTHORIZATION TO INJECT

| I. | PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Stor | age |
|-----|---|------|
| | Application qualifies for administrative approval?YesNo | |
| Π. | 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 | |
| HI. | 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 circl | le |
| | 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. Su | uch |
| | data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schema | atic |
| | 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 | 1 | | TITLE: | Agent/Engi | neer |
|------------|------------------|---|------|--------|------------|------------|
| SIGNATURE: | Th | | 1 tr | a: | _DATE: | 12/15/2015 |

E-MAIL ADDRESS: ____john@waisheng.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

Side 2

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

| Тι | ubing Size: <u>4-1/2", 10.5 ppf</u> Lining Material: <u>Plastic Lined</u> |
|----|--|
| Ту | pe of Packer:7" Baker "FAB-1" (or similar model" |
| Pa | cker Setting Depth: <u>~7265</u> |
| Ot | her 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? <u>X</u> 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: <u>Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota</u> |
| | |
| | |



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

- 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.

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.



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.

1 04 2 5 9 13 0 # 4 8 ** R 0 0 0 'n. a -40 ŧ ħ 2 8 9 * ų 5 a a 2 8.0 . の間 ø 8 NO ענ RP. 8 8 0.3 28 W k 2 20 * = 28N -¢ ... 82 16, 00 R æ P s\$ 49 1 ** 08 ×. -6 6³⁸ ٠ 0 (Å. đ 24 뽘 ž 8 4.8 B 8 a N.00 ŝ -ø e 0 2) (0,0) 5 • 10 2 à 2 8 . .0 RETTYLADY 30 11 34 8 nie: -4 * * 1 12 . Έ e -R ** 8, ٦, Well Base Map * 9 0 ۰. ø ģu 2 N 11W 1 18 d * 8 04. 0 28N 10 10 a)a 2 18 16 8 R • -. 8 -18 Red * 14 15 3 ١ŧ, . -* 18 ø 15 ** 'n. -. " 8 0 ₀ 8 P . ile: 4 * λŧ. . 8 a е в, -1 8 8 . 0 7 10 * a ¢ 36 9 **P** % . * 8 # # # 1 3 8 à 管理 * Ľ 2 * 0 ž 10 10 ٩, ISPOSAL B a 10 10 ł HJLDE # 11 w ø s^a nia N ĸ * 200 R a^e * * 8 ж. Ж **MILEGOS** e W ф Ц a ... ŧ. -. . ų, 狭腰 8 ** R 90 12W i) R 28 ġ * ła. 0 3 8 4 8 * ø 8 2 8 100 æ . 3 28N 监 -e ۵ • 1 \$ 1 a. . . . 4 . . n Ng . . 17 2 R -8 8 . 볛 8 . 4 e.0 -4 -

| *** | ~~~ ~ ≈ *** ~ | * ** ** * | й ***@ | œ * * | *** | **** |
|--------------------|---|---------------------------------------|--------------------|---------------------------------------|-----------------------|--|
| **• *** ** | ★ | ASHCROFT SWD #1 * | 26 ** * * | •**• • % * | • 森 本 森 城 | × * ◆ * * * * * * * * * * * * * * * * * |
| * ~ * 6 * N | * * * 8 * * * | 本 Disposal #1 | * | × × × × × × × × × × × × × × × × × × × | *** * * * | ◆ * * * * * * * * * * * * * * * * * * * * |
| | * + * * * * | ····································· | **** | · 33 | ** | * **** **** |
| *** | * [*] [*] [*] [*] [*] [*] [*] | * * * 50 * * * | * [*] | * 33 <i>2</i> | * | Ø ₩ * |
| | \$ \$\$ \$ \$ | * | ** | ¥ | | ж ж |

Г

| eologic Prognosis | | Entrada & Bluff | WOW San Juar | County | | |
|--|--|----------------------|---|---|--------------------------------------|--------------------------------------|
| | | Entraua & DIUI | Juni, San Juar | County | | estern |
| <u>Header</u> Well Name & Number API: Objective: | Entrada/Bluff WDW Pending Entrada & Bluff FM | #1 Water Disposal | Latitude (NAD 83): Longitude (NAD 83); | 36 698499 -107 971156 | | efining |
| Location: Surface Location Footage: Bottom Hole Location Footage: Lease: Surface Owner | TWP: 29 N - Range: 1980 FNL, 330 FEL Same as Surface | 11 W - Sec. 27 | Field: County: State: GL Elevation: KB Elevation: | Basin San Juan New Mexico 5538 5550 | | |
| Type: Expiration Date: Depth: | | ł | Proposed TD: Proposed Plugback: | 7500 | | November 25, Geologist: Peter Ko |
| Formation Tops | Top MD (KB) | Top Subsea (KB) | Thickness (FT) | Rock Type | Drilling Notes | Depositional Environment |
| Quatemary Alluvium | 0 | 5550 | 10 | Unconsolidated Gravels | Boulders water lost cirriculation | Continental River |
| Naciemento FM | 10 | 5540 | 505 | Shale & Sandstone | Water, gas | Continental River |
| Ojo Alamo Sandstone | 515 | 5035 | 110 | Sandstone & Shate | Water, gas | Continental River |
| Kirtland Shale | 625 | 4925 | 578 | Interbeddded Shale, sandstone | Water, gas | Coastal to Alluvia |
| Fruitland FM | 1203 | 4347 | 515 | Interbeddded Shale, sandstone & coal | Coalbed methane | Coastal Plain |
| Pictured Cliffs Sandstone | 1718 | 3832 | 162 | Sandstone | Gas, water | Regressive Marin |
| Lewis Shale | 1880 | 3670 | 780 | Shale, thin limestones | Gas | Offshore Marine |
| Huerfanito Bentonite Bed | 2660 | 2890 | 28 | Alterted volcanic ash, | Swalling clou | Velessie Arb Lau |
| Chacm EM | 2698 | 2000 | 100 | Conduine Ded | Swelling clay | Offshore Marine |
| | 2000 | 2002 | 109 | Sandstone, siltstone | Gas, water | Sands |
| Lower Lewis Shale | 28/7 | 26/3 | 458 | Shale, thin limestones | Gas, Water | Offshore Marine Transgressive Ma |
| Cliff House Sandstone | 3335 | 2215 | 59 | Sandstone Interbeddded Shale | Gas. Water, Oil | Beach |
| Menafee Member | 3394 | 2156 | 643 | sandstone & coal | Gas, Water, Oil | Coastal Plain Regressive Marin |
| Point Lookout Sandstone | 4037 | 1513 | 386 | Sandstone Shale, thin sandstones & | Gas, Water, Oil | Beach |
| Mancos Shale | 4423 | 1127 | 869 | siltstones Interbeddded Shale | Gas, Water, Oil | Offshore Marine |
| Niobrara A | 5292 | 258 | 102 | sandstone | Oil, Gas, Water | Sands |
| Nióbrara B | 5394 | 156 | 123 | sandstone | Oil, Gas, Water | Sands |
| Niobrara C | 5517 | 33 | 82 | sandstone | Oil, Gas, Water | Sands |
| Gallup FM | 5599 | -49 | 243 | sandstone | Oil, Gas, Water | 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 Coa Plain to Marine |
| Burro Canyon FM | 6365 | -815 | 46 | Sandstones, some conglomerate & mudstone | Oil, Gas, Water | Braided Fluvial Fit |
| Morrison FM | 6411 | -861 | 635 | Mudstones, sandstone | Oil Gas Water | Continental River |
| Bluff Sandstone (aka Junction ireek Sandstone), Morrison FM | | | | | | Aliuvial Plain and |
| Mømber | 7046 | -1496 | 118 | Sandstone | Oil, Gas, Water | Eolian Altuvial Plain and |
| Wanakah FM | 7164 | -1614 | 123 | Siltstone, Sandstone | Oil, Gas, Water | Eolian |
| Todilto Limestone & Anhydrite | 7287 | -1737 | 28 | Anhydrite | Anyhydrite | Eolian |
| Entrada Sandstone | 7315 | -1765 | 168 | Sandstone | Oil, Gas, Water | Eolian Sand Dune |
| Chinle FM | 7483 | -1933 | 17 | sandstone | Oil, Gas, Water | Continental Rivers |
| Browned TD | 7500 | 1070 | | | | |



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

Western Refining SWD #2 Well Tabulation Sheet

Status N: Upper Perf Lower Perf 6240 6348 6242 2810 3514 2839 6262 1645 4030 2772 5646 6308 1689 1714 3276 6215 6176 6086 2827 6163 3970 1543 2701 1462 2631 5314 6177 1483 INACTIVE 4331 INACTIVE ACTIVE ACTIVE ACTIVE ACTIVE ACTIVE ACTIVE ACTIVE ACTIVE ACTIVE P&A P&A P&A 1890 6365 6450 2951 6329 6386 6386 4331 9 1897 **First Prod Date** 1960-12-01 1963-03-01 1981-01-01 1980-09-01 1981-05-01 2008-04-01 1985-02-01 1983-05-01 2008-02-01 1981-06-01 2002-05-01 2002-03-01 2008-01-01 30045240830000 29N 11W 26F NW SE NW 30045253290000 29N 11W 26F NW SE NW 29N 11W 26F NW 5E NW 29N 11W 26F NW SE NW 30045240840000 29N 11W 27H NW SE NE 30045240840000 29N 11W 27H NW SE NE 29N 11W 27H NW SE NE 30045290020000 29N 11W 27I NW NE SE 29N 31W 27I SW NE SE 30045235540000 29N 11W 27I SW NE SE 29N 11W 27I SW NE SE 29N 11W 27I SW NE SE 29N 11W 26M SW SW Location 30045344630000 29N 11W 27L 30045078250000 30045253290000 30045253290000 30045120030000 30045308330001 30045308330000 30045344090000 Primary API Well Num щ **1**E 믭 **1**R 38 , N XTO ENERGY INCORPORATEI SULLIVAN GAS COM D BP AMERICA PRODUCTION C DAVIS GAS COM F XTO ENERGY INCORPORATEL DAVIS GAS COM G XTO ENERGY INCORPORATE! DAVIS GAS COM F XTO ENERGY INCORPORATEI DAVIS GAS COM F XTO ENERGY INCORPORATEL DAVIS GAS COM F XTO ENERGY INCORPORATEL DAVIS GAS COM F HOLCOMB OIL & GAS INCOR DAVIS GAS COM J HOLCOMB OIL & GAS INCOR DAVIS GAS COM J XTO ENERGY INCORPORATEL DAVIS GAS COM J Lease Name SAN JUAN REFINING COMPA DISPOSAL HOLCOMB OIL & GAS INCOR JACQUE HOLCOMB OIL & GAS INCOR JACQUE BURLINGTON RESOURCES OF CALVIN **Operator Name**

San Juan Refining Co./Western Refining Southwest

| | Depth to Groundwater | Approximate GW Elevation |
|----------|----------------------|--------------------------|
| <u> </u> | (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 |
| | | |

Monitor Well Information



Comprehensive Water Analysis

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

| | | | | | | Lab Order 1507094 | |
|--|-------------|-----------|------|----------------|---------|-------------------------|---------------|
| Hall Environmental Analysis | Labor | atory, In | c. | | | Date Reported: 8/6/2015 | 5 |
| CLIENT: Western Refining Southwest, In | c. | | C | lient Sample I | D: Inj | ection Well | |
| Project: Injection Well 7-1-15 | | | | Collection Dat | te: 7/1 | 2015 9:00:00 AM | |
| Lah ID: 1507094-001 | Matrix | AOUFOUS | 2 | Received Dat | ta: 7/2 | 2015 7:00:00 AM | |
| | wiatina. | AQUEUU | | Received Dat | le: 112 | 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 | IDD |
| Bicarbonate (As CaCO3) | 274 6 | 20.00 | | ma/l CaCO3 | 1 | 7/6/2016 11-21-17 AM | JKK 027220 |
| Carbonate (As CaCO3) | 274.0 ND | 20.00 | | | 1 | 7/6/2015 11:51:17 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 SOL | IDS | | | | · | Analyst | KS |
| Total Dissolved Solids | 1220 | 40.0 | * | ma/l | 1 | 7/8/2015 5:09:00 PM | 20129 |
| | 1220 | 100 | | | • | Analust | 100 |
| 5004500-11+B. F11 | 7 45 | 4.60 | | -11 | | Analyst | JKK |
| | 7.40 | 1.68 | М | 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 MET | TALS | | | | | 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 | NU | 0.050 | | mg/L | 1 | 7/16/2015 12:13:28 PM | 20102 |
| Sadium | | 0.0050 | | mg/L | ĩ | 7/16/2015 12:13:28 PM | 20102 |
| | 260 | 5.0 | | mg/L | 5 | //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 |
| Azodenzene | ND | 10 | | µg/L | 1 | 7/10/2015 1:30:30 PM | 20095 |
| | NU | 10 | | µg/L | 1 | //10/2015 1:30:30 PM | 20095 |
| Benzo(b)@vorsethese | ND | 10 | | hâir Nau | 1 | 7/10/2015 1:30:30 PM | 20095 |
| Benzo(a h i)nervlene | | 10 | | µg/L µg/l | 1 | 7/10/2015 1:30:30 PM | 20095 |
| | | | | hAr hAr | | 110/2010 1 00.00 PM | 20093 |

Qualifiers:

٠ Value exceeds Maximum Contaminant Level, D

Sample Diluted Due to Matrix

В Analyte detected in the associated Method Blank

- E Value above quantitation range Analyte detected below quantitation limits Page 1 of 20 J
- 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

Р Sample pH Not In Range

RL Reporting Detection Limit

| | | | | Analytical Report | |
|--|-----------|------------|-------------------|------------------------------|-------|
| | | | | Lab Order 1507094 | |
| Hall Environmental Analysis | Labora | tory, Inc. | | Date Reported: 8/6/2015 | |
| | | | | | |
| CLIENT: Western Refining Southwest, Inc. | 3. | (| Client Sa | mple ID: Injection Well | |
| Project: injection Well 7-1-15 | | | Collecti | on Date: 7/1/2015 9:00:00 AM | |
| Lab ID: 1507094-001 | Matrix: | AOUEOUS | Receiv | ed Date: 7/2/2015 7:00:00 AM | |
| | - | | | | |
| Analyses | Result | RL Qual | Units | DF Date Analyzed E | Batch |
| EPA METHOD 8270C: SEMIVOLATILES | | | | Analyst: [| MAC |
| Benzo(k)fluoranthene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Benzoic acid | ND | 20 | μg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Benzyl alcohol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Bis(2-chloroethoxy)methane | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Bis(2-chloroethyl)ether | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Bis(2-chloroisopropyl)ether | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Bis(2-ethylhexyl)phthatate | ND | 10 | uq/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| 4-Bromophenyl phenyl ether | ND | 10 | ua/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Butyl benzyl phthalate | ND | 10 | ua/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| Carbazole | ND | 10 | ua/L | 1 7/10/2015 1:30:30 PM 2 | 20095 |
| 4-Chloro-3-methylphenol | ND | 10 | ua/L | 1 7/10/2015 1 30 30 PM 2 | 0095 |
| 4-Chloroaniline | ND | 10 | ua/L | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| 2-Chloronaphthalene | ND | 10 | uo/l. | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| 2-Chlorophenol | ND | 10 | uo/l | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| 4-Chlorophenyl phenyl ether | ND | 10 | ua/L | 1 7/10/2015 1 30 30 PM 2 | 0095 |
| Chrysene | ND | 10 | uo/L | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| Dł-n-butyl phthalate | ND | 10 | uo/L | 1 7/10/2015 1 30 30 PM 2 | 0095 |
| Di-n-octvl phthalate | ND | 10 | ua/L | 1 7/10/2015 1 30 30 PM 2 | 0095 |
| Dibenz(a,h)anthracene | ND | 10 | но/L | 1 7/10/2015 1 30 30 PM 2 | 0095 |
| Dibenzofuran | ND | 10 | н о /I | 1 7/10/2015 1 30 30 PM 2 | 0000 |
| 1.2-Dichlorohenzene | ND | 10 | ua/1 | 1 7/10/2015 1-30-30 PM 2 | 0000 |
| 1.3-Dichlorobenzene | ND | 10 | µ9/5 ug/l | 1 7/10/2015 1:30:30 PM 2 | 0005 |
| 1 4-Dichlorobenzene | ND | 10 | µ9/⊂ ⊔σ/l | 1 7/10/2015 1:30:30 PM 2 | 0000 |
| 3 3'-Dichlorobenzidine | ND | 10 | ug/l | 1 7/10/2015 1:30:30 PM 2 | 0000 |
| Diethyl phthalate | ND | 10 | ua/l | 1 7/10/2015 1:30:30 PM 2 | 0000 |
| Dimethyl obthalate | ND | 10 | µ9/⊏ µ// | 1 7/10/2015 1:30:30 PM 2 | 0000 |
| 2 4-Dichlorophenol | ND | 20 | µ9/E | 1 7/10/2015 1:30/30 PM 2 | 0000 |
| 2 4-Dimethylohenol | ND | 10 | µg/E | 1 7/10/2015 1:30:30 PM 2 | 0000 |
| 4 6-Dinitro-2-methylobenol | ND | 20 | ug/l | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| 2 4-Dinitrophenol | ND | 20 | µg/L | 1 7/10/2015 1:30 30 PM 2 | 0095 |
| 2 4-Dinitrotoluene | ND | 10 | uo/l | 1 7/10/2015 1:30 30 PM 2 | 0095 |
| 2 6-Dinitrotoluene | ND | 10 | ug/L | 1 7/10/2015 1:30 30 PM 2 | 0095 |
| Fluoranthene | ND | 10 | ug/L | 1 7/10/2015 1:30 30 PM 2 | 0095 |
| Fluorene | ND | 10 | µg/⊏ ug/l | 1 7/10/2015 1:30:30 PM 2 | 0095 |
| Hexachlorobenzene | ND | 10 | pg/c | 1 7/10/2015 1.30 30 PM 2 | 0095 |
| Hexachlorobutadiene | | 10 | µ9/⊑ | 1 7/10/2015 1-30-30 PM 2 | 0090 |
| Hexachlorocyclopentadiene | | 10 | μg/L μα/Ι | 1 7/10/2015 1.30.30 PM 2 | 0090 |
| Hexachloroethane | | 10 | 199/L | 1 7/10/2015 1.30.30 PM 2 | 0093 |
| Indeno(1.2.3.cd)nyrene | םא חוא | 10 | µ9/L | 1 7/10/2015 1:30:30 PM 2 | 0005 |
| mound reason pyrene | ND | 10 | µу/∟ | 1 110/2015 1:30:30 PM Z | 0090 |

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 Page 2 of 20
- P Sample pH Not In Range
- RL Reporting Detection Limit

| | | | | Analytical Report | |
|--|---------|------------|------------|-----------------------------|------|
| | | | | Lab Order 1507094 | |
| Hall Environmental Analysis | Labora | tory, Inc. | | Date Reported: 8/6/2015 | |
| CLIENT: Western Refining Southwest, Inc. | 2. | C | lient Sam | nle ID: Injection Well | |
| Project: Injection Well 7-1-15 | | | Collection | Date: 7/1/2015 9:00:00 AM | |
| Lab ID: 1507004 001 | B.Ø 41 | AOUEOUE | Desizioni | DALC: 7172015 7.00.00 AM | |
| Lab 1D: 1507094-001 | watrix: | AQUEUUS | Received | 1 Date: //2/2015 7:00:00 AM | |
| Analyses | Result | RL Qual | Units | DF Date Analyzed Ba | itch |
| EPA METHOD 8270C: SEMIVOLATILES | | | | Analyst: DA | ٩M |
| Isophorone | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| 1-Methylnaphthalene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| 2-Methylnaphthalene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| 2-Methylphenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| 3+4-Methylphenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| N-Nitrosodi-n-propylamine | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| N-Nitrosodimethylamine | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| N-Nitrosodiphenylamine | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 20 | 095 |
| Naphthalene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 2-Nitroaniline | NÐ | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 3-Nitroaniline | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 4-Nitroaniline | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Nitrobenzene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 2-Nitrophenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 4-Nitrophenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Pentachiorophenol | ND | 20 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Phenanthrene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Phenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Pyrene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Pyridine | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 1,2,4-Trichlorobenzene | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 2,4,5-Trichtorophenol | ND | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| 2,4,6-Trichlorophenol | NÐ | 10 | µg/L | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: 2-Fluorophenol | 66.2 | 14.9-111 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: Phenol-d5 | 64.1 | 11.3-108 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: 2,4,6-Tribromophenol | 75.7 | 15.7-154 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: Nitrobenzene-d5 | 84.6 | 47.8-106 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: 2-Fluorobiphenyl | 63.7 | 21.3-123 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| Surr: 4-Terphenyl-d14 | 51.4 | 14.3-135 | %REC | 1 7/10/2015 1:30:30 PM 200 | 095 |
| EPA METHOD 8260B: VOLATILES | | | | Analyst: BC | N. |
| Benzene | ND | 1.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |
| Toluene | 1.5 | 1.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |
| Ethylbenzene | ND | 1.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |
| Methyl tert-butyl ether (MTBE) | NÐ | 1.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | µg/L | 1 7/9/2015 8 19:52 PM R2 | 7397 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | µg/L | 1 7/9/2015 8 19 52 PM R2 | 7397 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | µg/L | 1 7/9/2015 8 19:52 PM R2 | 7397 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |
| Naphthalene | ND | 2.0 | µg/L | 1 7/9/2015 8:19:52 PM R2 | 7397 |

Qualifiers:

. Value exceeds Maximum Contaminant Level. D

Sample Diluted Due to Matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range Analyte detected below quantitation limits Page 3 of 20 J

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

Sample pH Not In Range RL Reporting Detection Limit

Р

| | | | | Lab Order 1507094 |
|--------------------------------------|----------|------------|------------|--|
| Hall Environmental Analysi | s Labora | tory, Inc. | | Date Reported: 8/6/2015 |
| CLIENT: Western Refining Southwest 1 | nc | (| `lient Sar | mple ID: Injection Well |
| Project: Injection Well 7-1-15 | | | Collectiv | an Data: $7/1/2015 0.00.00 \text{ AM}$ |
| Troject. Injection wen 7-1-15 | | | Conecta | on Date: //1/2013 9:00:00 AM |
| Lab ID: 1507094-001 | Matrix: | AQUEOUS | Receive | ed 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 |
| Dichtorodifluoromethane | 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 |
| Hexachtorobutadiene | 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 |
| | | | | |

Qualifiers:

٠ Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix

- Holding times for preparation or analysis exceeded 11
- ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 20 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit

Analytical Report

| Hall E | nvironmental Analys | sis Labora | tory, Inc. | Date Reported: 8/6/2015 | | | | | | |
|---------------------|--|------------|------------------------------------|--------------------------|-------------------------|---------------------------------|--------|--|--|--|
| CLIENT: Project: | Western Refining Southwest, Injection Well 7-1-15 | Inc. | C | lient Samp Collection | le ID: Inj Date: 7/1 | ection Well /2015 9:00:00 AM | | | | |
| Lab ID: | 1507094-001 | Matrix: | Received Date: 7/2/2015 7:00:00 AM | | | | | | | |
| Analyses | | Result | RL Qual | Units | DF | Date Analyzed | Batch | | | |
| EPA MET | HOD 8260B: VOLATILES | | | | | Analys | BCN | | | |
| sec-Buty | lbenzene | ND | 1.0 | µq/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-Butyl | lbenzene | NÐ | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,1,1,2-T | etrachloroethane | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,1,2,2-T | etrachloroethane | ND | 2.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| Tetrachic | proethene (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-Tric | chlorobenzene | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,2,4-Tric | chlorobenzene | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,1,1-Tric | chloroethane | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,1,2-Tric | chloroethane | ND | 1.0 | µg/L | 1 | 7/9/2015 8 19:52 PM | R27397 | | | |
| Trichloro | ethene (TCE) | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| Trichloro | fluoromethane | ND | 1.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| 1,2,3-Tric | chloropropane | ND | 2.0 | µg/L | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |
| Vinyl chlo | oride | 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: D | Dibromofluoromethane | 103 | 70-130 | %REC | 1 | 7/9/2015 8 19 52 PM | R27397 | | | |
| Surr: T | oluene-d8 | 95.5 | 70-130 | %REC | 1 | 7/9/2015 8:19:52 PM | R27397 | | | |

Qualifiers:

- . Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 20 J
- р Sample pH Not In Range
- RL Reporting Detection Limit

Analytical Report Lab Order 1507094

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 Client Sample ID | Sample Number 150707035-001 Client Sample ID 1507094-001E / INJECT | | oling Date | 7/1/2015 | Date/ Sam; | Date/Time Received 7/7/2015 Sampling Time 9:00 AM | | | | | |
|-----------------------------------|--|--------|--------------|----------|---------------|--|-------------|-----------|--|--|--|
| Matrix Comments | Water | Samj | ole Location | 1 | | | | | | | |
| Parameter | | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier | | | |
| Cyanide (reacti | va) | 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

. Call

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. Soll/solid results are reported on a dry-weight basis unless otherwise noted.

Centrications he d by Anatek Labe ID., EPA ID50013, AZ 0701, CO-ID00013, FL(NELAP), E37593, ID JD00013, MT CERT0028, NM: ID00013, OR ID200001-082; WA C595 Centrications he d by Anatek Labe WA: EPA:WA00169; ID WA00159; WA C585 MT CanC095, FL(NELAP), E871099

Wednesday, July 22, 2015

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 • Spokana 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

Quality Control Data

| Parameter Reactive sulfide LCS Result 0.816 Units mg/L 0.907 90.0 70-130 7/15/2015 Analysis 7/15/2015 Cyanide (reactive) 0.486 mg/L 0.5 97.2 80-120 7/15/2015 <t< th=""><th>Lab Control San</th><th>nple</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<> | Lab Control San | nple | | | | | | | | | | |
|--|--------------------|-------------------------------|---------------|-------|--------------|--------|----------|-------|---------------|--------|-----------|---------------|
| Reactive sulfide 0.816 mg/L 0.907 90.0 70-130 7/15/2015 7/15/20 Cyanide (reactive) 0.486 mg/L 0.5 97.2 80-120 7/15/2015 7/15/20 Matrix Spike Sample Number Parameter Sample Result Units Spike %Rec | Parameter | LC | CS Result | Units | | pike (| %Rec | AR | %Rec | Prep | Date | Analysis Date |
| Cyanide (reactive) 0.486 mg/L 0.5 97.2 80-120 7/15/2015 7/15/20 Matrix Spike Sample Number Parameter Sample MS MS AR Spike %Rec | Reactive sulfide | | 0.816 | mg/L | 0.90 | 7 | 90.0 | 70 | -130 | 7/15/ | 2015 | 7/15/2015 |
| Matrix Spike Sample Number Parameter Sample Result MS MS AR 150707035-001A Reactive sulfide ND 0.816 mg/L 0.907 90.0 70-130 7/15/2015 7/15/2 150707035-001 Cyanide (reactive) ND 0.462 mg/L 0.5 92.4 80-120 7/15/2015 7/15/2 Matrix Spike Duplicate MSD MSD MSD MSD AR AR Parameter Result Units Spike %Rec %RPD %RPD Prep Date Analysis Cyanide (reactive) 0.454 mg/L 0.5 90.8 1.7 0-25 7/15/2015 7/15/2015 | Cyanide (reactive) | | 0.486 | mg/L | 0.5 | | 97.2 80- | | 120 7/15 | | 2015 | 7/15/2015 |
| Sample Number Parameter Sample Result MS MS AR 150707035-001A Reactive sulfide ND 0.816 mg/L 0.907 90.0 70-130 7/15/2015 7/15/2 150707035-001 Cyanide (reactive) ND 0.462 mg/L 0.5 92.4 80-120 7/15/2015 7/15/2 Matrix Spike Duplicate MSD MSD MSD AR Parameter MSD MSD MSD AR Cyanide (reactive) 0.454 mg/L 0.5 92.4 80-120 7/15/2015 7/15/2 | Matrix Spike | | | | | | | | | | | |
| Sample Number Parameter Result Result Spike Spike Acc Ac | Pamula Number | Deservator | Sa | mple | MS | Unite | | MS | */Dac | AR | Rean Date | Analysic Date |
| MD 0.816 Mg/L 0.807 50.0 70135 7112013 77137 150707035-001 Cyanide (reactive) ND 0.462 mg/L 0.5 92.4 80-120 7/15/2015 7/15 | Asozozoze oot A | Parameter Desetive sulfide | r.e | ND | 0.946 | mail | 1 | D 007 | | 70-120 | 7/15/2015 | 7/15/2015 |
| MD U.452 mg/L U.5 92.4 80-120 //15/2015 //15/2015 Matrix Spike Duplicate MSD MSD AR Parameter Result Units Spike %Rec %RPD Prep Date Analysis Cyanide (reactive) 0.454 mg/L 0.5 90.8 1.7 0-25 7/15/2015 7/15/2015 | 150707035-001A 1 | | | | 0.010 | iiiy/L | | 0.807 | 00.0 | 10-100 | 7/15/2015 | 7/15/2010 |
| Matrix Spike Duplicate MSD AR Parameter Result Units Spike %Rec %RPD Prep Date Analysis Cyanide (reactive) 0.454 mg/L 0.5 90.8 1.7 0-25 7/15/2015 7/15/2015 | 150707035-001 | | | | 0.462 | mg/L | | 0.5 | 92.4 | 00-120 | 115/2015 | 119/2019 |
| MSD MSD AR Parameter Result Units Spike %Rec %RPD %Rep Data Analysis Cyanide (reactive) 0.454 mg/L 0.5 90.8 1.7 0-25 7/15/2015 7/15/20 | Matrix Spike Du | plicate | | | | | | | | | | |
| Cyanide (reactive) 0.454 mg/L 0.5 90.8 1.7 0-25 7/15/2015 7/15/20 | B | | MSD Besult | Inite | MSD | %.Da | | «ppn | AR | Dem | n Data | Analysis Date |
| | | | | | apike 0.5 | 00.1 | | 17 | 78KFL 0.25 | 7/1 | 5/2016 | 7/15/2015 |
| | | ······ | 0.434 1 | | 0.0 | 50. | | 1.7 | -23 | 2210 | | |
| Method Blank | Method Blank | | | _ | | | | | | | | |
| Parameter Result Units PQL Prep Date Analysis | Parameter | | | Res | ult | Uni | ts | | PQL | Pr | ep Date | Analysis Date |
| Cyanide (reactive) ND mg/L 1 7/15/2015 7/15/20 | Cvanide (reactive) | | | NE |) | ma | L | | 1 | 7/1 | 5/2015 | 7/15/2015 |
| Beactive suifide ND mg/L 1 7/15/2015 7/15/20 | Reactive sulfide | | | NF |) | ma | ٨. | | 1 | 7/1 | 5/2015 | 7/15/2015 |

AR Acceptable Range

ND Not Detected

PQL Practical Quantitation Limit

RPD Relative Percentage Difference

Comments:

Centifications held by Analek Labs ID: EPA:ID:00013, AZ:0701, CO:ID:00013; FL(NELAP):E87993; ID:ID:00013, MT.CERT0028; NM: ID:00013; OR:ID:200001-002; WA:C595 Certifications held by Analek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT.Cent0095; FL(NELAP). E871099

| Client: Project: | | Western Refining S Injection Well 7-1- | outhwe | est, Inc. | | | | | 224 | | |
|---------------------|------|---|----------|-----------|-------------|----------|-----------|--------------|------|----------|------|
| Sample ID N | ИВ | SampT | ype: Mi | BLK | Tes | tCode: E | PA Method | 300.0: Anlon | s | | |
| Client ID: P | PBW | Batcl | n ID: R2 | 27295 | F | RunNo: 2 | 7295 | | | | |
| Prep Date: | | Analysis D | ate: 7 | /2/2015 | 5 | SeqNo: 8 | 17819 | Units:: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | - | NÐ | 0.50 | | | | | | | | |
| Sulfate | | ND | 0.50 | | | | | | | | |
| Sample ID L | .cs | SampT | ype: LC | s | Tes | tCode: E | PA Method | 300.0: Anion | S | | |
| Client ID: L | .csw | Batch | n ID: R2 | 7295 | F | RunNo: 2 | 7295 | | | | |
| Prep Date: | | Analysis D | ate: 7/ | 2/2015 | 5 | SeqNo: 8 | 17820 | 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:

- * 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

WO#: 1507094

06-Aug-15

Page 6 of 20

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 Batch ID: R27397 Client ID: PBW RunNo: 27397 Prep Date: Analysis Date: 7/9/2015 SeqNo: 822418 Units: µg/L SPK value SPK Ref Val Analyte Result PQL %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 NÐ 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

Qualifiers:

Chloromethane

2-Chlorotoluene

- * Value exceeds Maximum Contaminant Level:
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

ND

ND

3.0

1.0

- 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

WO#: 1507094

06-Aug-15

Page 7 of 20

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: W | estern Refining S | outhwe | st, Inc. | | | | | | | |
|----------------------------|-------------------|---------|-----------|------------------|----------|-----------|-------------|--------|----------|------|
| Project: Inj | ection Well 7-1- | 15 | | | | | | | | |
| Sample ID rb1 | Samp | vpe: ME | 3LK | Tes | tCode: E | PA Method | 8260B; VOL | ATILES | | |
| Client ID: PBW | Batcl | h ID R2 | 7397 | F | RunNo: 2 | 7397 | | | | |
| Prep Date: | Analysis E | ate: 7/ | 9/2015 | S | SeaNo: 8 | 22418 | Units: ua/L | | | |
| America | D ecently | | 0.014 | 0014 0 - 0 4 - 1 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ret Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| 4-Uniorotoluene | ND | 1.0 | | | | | | | | |
| cis 1 2 Dicklemannana | ND | 1.0 | | | | | | | | |
| 1.2 Distance 2 ablamations | ND | 1.0 | | | | | | | | |
| Dibromochloromothopa | ND | 2.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1.2.Dichlombenzene | | 1.0 | | | | | | | | |
| 1.3-Dichlombenzene | | 1.0 | | | | | | | | |
| 1,3-Dichlombenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1 1-Dichlomethane | ND | 1.0 | | | | | | | | |
| 1 1-Dichlomethene | ND | 1.0 | | | | | | | | |
| 1.2-Dichlomoropane | 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:

1,1,2-Trichloroethane

Trichloroethene (TCE)

Trichlorofluoromethane

1,2,3-Trichloropropane

- Value exceeds Maximum Contaminant Level,
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

ND

ND

ND

ND

1.0

1.0

1.0

2.0

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- l Analyte detected below quantitation limits
- р Sample pH Not In Range
- RL Reporting Detection Limit

Page 8 of 20

WO#: 1507094

| Client: | Western Refining Southwest, Inc. |
|----------|----------------------------------|
| Project: | Injection Well 7-1-15 |

| | Comol | | | Tee | 10-1-1 F | | 00000 | | | |
|----------------------------|------------------|----------|-----------|--------------|----------|-----------|-------------|--------|----------|------|
| Sample ID 101 | Sampi | ype: Mit | SLK | Tes | Code: E | PA Method | 8260B: VOL | AIILES | | |
| Client ID: PBW | Batch ID: R27397 | | | RunNo: 27397 | | | | | | |
| Prep Date: | Analysis D | ate: 7/ | 9/2015 | 5 | SeqNo: 8 | 22418 | 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 | | | | | | | | |
| Sur: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 102 | 70 | 130 | | | |
| Sur: 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.
- 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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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 SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** PQL 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 ND 20 Benzoic acid ND Benzyl alcohol 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 ND 10 4-Bromophenyl phenyl ether 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 ND 10 Chrysene Di-n-butyl phthalate ND 10 ND 10 Di-n-octyl phthalate ND 10 Dibenz(a,h)anthracene Dibenzofuran ND 10 1,2-Dichlorobenzene ND 10 1,3-Dichlorobenzene ND 10 1,4-Dichlorobenzene ND 10 ND 10 3,3'-Dichlorobenzidine Diethyl phthalate ND 10 ND 10 **Dimethyl phthalate**

Qualifiers:

2,4-Dichlorophenol

2,4-Dimethylphenol

2,4-Dinitrophenol

4,6-Dinitro-2-methylphenol

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

NÐ

NÐ

NÐ

ND

20

10

20

20

- 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

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WO#: 1507094

| Client: | Western Refining S | Southwes | st, Inc. | | | | | | | | |
|---------------------------|---------------------|-----------|-----------|--------------|----------|-----------|-------------|-----------|----------|------|--|
| Project: | Injection Well 7-1- | 15 | | | | | | | | | |
| Sample ID mb-2009 | 15 Samp | Туре: МЕ | BLK | Tes | tCode: E | PA Method | 8270C: Semi | volatiles | | | |
| Client ID: PBW | Batc | h ID: 200 | 095 | RunNo: 27414 | | | | | | | |
| Prep Date: 7/6/201 | 5 Analysis (| Date: 7/ | 10/2015 | 5 | SeqNo: 8 | 22558 | 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 | | | | | | | | | |
| Hexachlorocyclopentadien | e 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-Methyiphenoi | ND | 10 | | | | | | | | | |
| N-Nitrosodi-n-propylamine | NÐ | 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 | NÐ | 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 | NÐ | 10 | | | | | | | | | |
| 2,4,5-Trichlorophenol | NÐ | 10 | | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | | | | | | | | | |
| Sum 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-Tribromopher | nol 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 | | | | |
| Sun: 4-Terphenyl-d14 | 52 | | 100.0 | | 52.2 | 14.3 | 135 | | | | |

Qualifiers:

- ٠ Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- p Sample pH Not In Range
- RL Reporting Detection Limit

WO#: 1507094

| Client: Western | Refining S | outhwe | st, Inc. | | | | | | | |
|----------------------------|-------------------|----------|-----------|-------------|----------|-----------|--------------|-----------|----------|------|
| Project: Injection | Well 7-1- | 15 | | | | | | | | |
| | 0 | | | | | | | | | |
| Sample ID Ics-20095 | Samp1 | Type: LC | S | Tes | tCode: E | PA Method | 8270C: Semi | volatiles | | |
| Client ID: LCSW | Batcl | h ID: 20 | 095 | F | RunNo: 2 | 7414 | | | | |
| Prep Date: 7/6/2015 | Analysis D |)ate: 7/ | 10/2015 | 5 | SeqNo: 8 | 22559 | Units: µg/L | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimlt | 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 | | | |
| Sur: 2-Fluorophenol | 67 | | 200.0 | | 33.4 | 14.9 | 111 | | | |
| Surt Phenol-d5 | 86 | | 200.0 | | 43.0 | 11.3 | 108 | | | |
| Surr: 2.4.6-Tribromophenol | 120 | | 200.0 | | 62.3 | 15.7 | 154 | | | |
| Sur: Nitrobenzene-d5 | 47 | | 100.0 | | 46.6 | 47.8 | 106 | | | s |
| Sur: 2-Fluorobiphenyl | 53 | | 100.0 | | 53.0 | 21.3 | 123 | | | Ŭ |
| Sum: 4-Terphenyl-d14 | 44 | | 100.0 | | 44.1 | 14.3 | 135 | | | |
| Sample ID Icsd-20095 | SamoT | vpe LC | SD. | Tesi | Code E | PA Method | 8270C: Semis | volatiles | | |
| Client ID: LCSS02 | Batch | D 200 | 095 | R | unNo: 2 | 7414 | | olutioo | | |
| Prep Date: 7/6/2015 | Analysis D | ate: 7/ | 10/2015 | S | eqNo: 8 | 22560 | 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-Nitropheno! | 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 |

Qualifiers:

Surr: 2-Fluorophenol

Sur: Nitrobenzene-d5

Surr: 2-Fluorobiphenyl

Surr: 2,4,6-Tribromophenol

Surr: Phenol-d5

۰ Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Holding times for preparation or analysis exceeded Н

140

160

160

80

77

200.0

200.0

200.0

100.0

100.0

р

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

14.9

11.3

15.7

47.8

21.3

E Value above quantitation range

70.6

79.2

82.0

79.5

77.3

J Analyte detected below quantitation limits

Page 12 of 20

0

0

0

0

0

111

108

154

106

123

0

0

0

0

0

Sample pH Not In Range RL **Reporting Detection Limit** WO#: 1507094

QC SUMMARY REPORT

Western Refining Southwest, Inc.

Client:

Hall Environmental Analysis Laboratory, Inc.

Injection Well 7-1-15 **Project:** Sample ID Icsd-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** Surr: 4-Terphenyl-d14 51 100.0 51.2 14.3 0 135 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** Surr: 2-Fluorophenol 90 200.0 45.0 14,9 111 Sur: 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 Sur: 2-Fluorobiphenyl 61 100.0 61.2 21.3 123 Surr: 4-Terphenyl-d14 45 100.0 45.2 14.3 135

| Sample ID Ics-20218 | SampType: LCS | | | Tes | tCode: El | ode: EPA Method 8270C: Semivolatiles | | | | |
|---|--|-------------------------------------|--|--------------------------|---|--|--|---|-----------------------------------|------|
| Client ID: LCSW | Batch ID: 20218 | | | RunNo: 27531 | | | | | | |
| Prep Date: 7/13/2015 | Analysis D | ate 7 | /15/2015 | s | eqNo: 8 | 26537 | Units: %RE | с | | |
| 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 | | | |
| Sum 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 | | | |
| Sur: 4-Terphenyl-d14 | 44 | | 100.0 | | 44.2 | 14.3 | 135 | | | |
| | | | | | | | | | | |
| Sample ID Icsd-20218 | SampT | ype: LC | SD | Tes | Code: El | PA Method | 8270C: Semi | ivolatiles | | |
| Sample ID Icsd-20218 Client ID: LCSS02 | SampT Batch | ype: LC | SD 218 | Test | Code: El tunNo: 2 | PA Method 7531 | 8270C: Semi | volatiles | | |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 | SampT Batch Analysis D | ype: LC ID: 20 ate: 7/ | :SD 218 /15/2015 | Tesi R S | Code: El unNo: 2 ieqNo: 8 | PA Method 7531 26538 | 8270C: Semi Units: %RE | ivolatiles C | | |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte | SampT Batch Analysis D Result | ype: LC ID: 20 ate: 7/ PQL | SD 218 /15/2015 SPK value | Test R SPK Ref Val | Code: El unNo: 2 seqNo: 8 %REC | PA Method 7531 26538 LowLimit | 8270C: Semi Units: %RE HighLimit | volatiles C %RPD | RPDLimit | Qual |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte Sum 2-Fluorophenol | SampT Batch Analysis D Result 100 | ype: LC ID: 20 ate: 7/ PQL | 218 218 115/2015 SPK value 200.0 | Test R SPK Ref Val | Code: El tunNo: 2 teqNo: 8 %REC 52.2 | PA Method 7531 26538 LowLimit 14.9 | 8270C: Semi Units: %RE HighLimit 111 | volatiles C %RPD 0 | RPDLimit 0 | Qual |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte Sur: 2-Fluorophenol Sur: Phenol-d5 | SampT Batch Analysis D Result 100 84 | ype: LC ID: 20 ate: 7/ PQL | 218 218 115/2015 SPK value 200.0 200.0 | Tesi R SPK Ref Val | Code: El tunNo: 2 teqNo: 8 %REC 52.2 41.8 | PA Method 7531 26538 LowLimit 14.9 11.3 | 8270C: Semi Units: %RE HighLimit 111 108 | volatiles C %RPD 0 0 | RPDLimit 0 0 | Qual |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol | SampT Batch Analysis D Result 100 84 150 | ype: LC ID: 20 ate: 7/ PQL | 218 218 /15/2015 SPK value 200.0 200.0 200.0 | Tesi R SPK Ref Val | Code: El RunNo: 2 ReqNo: 8 %REC 52.2 41.8 75.7 | PA Method 7531 26538 LowLimit 14.9 11.3 15.7 | 8270C: Semi Units: %RE HighLimit 111 108 154 | volatiles C %RPD 0 0 0 0 | RPDLimit 0 0 0 | Qual |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte Sum 2-Fluorophenol Sum Phenol-d5 Sum 2,4,6-Tribromophenol Sum Nitrobenzene-d5 | SampT Batch Analysis D Result 100 84 150 76 | ype: LC ID: 20 ate: 7/ PQL | 218 218 /15/2015 SPK value 200.0 200.0 200.0 100.0 | Tesi R SPK Ref Val | Code: El anNo: 2 eqNo: 8 %REC 52.2 41.8 75.7 76.0 | PA Method 7531 26538 LowLimit 14.9 11.3 15.7 47.8 | 8270C: Semi Units: %RE HighLimit 111 108 154 106 | volatiles C %RPD 0 0 0 0 0 | RPDLimit 0 0 0 0 | Qual |
| Sample ID Icsd-20218 Client ID: LCSS02 Prep Date: 7/13/2015 Analyte Sur: 2-Fluorophenol Sur: Phenol-d5 Sur: 2,4,6-Tribromophenol Sur: Nitrobenzene-d5 Sur: 2-Fluorobiphenyl | SampT Batch Analysis D Result 100 84 150 76 69 | ype: LC ID: 20 ate: 7/ PQL | 218 218 /15/2015 SPK value 200.0 200.0 200.0 100.0 100.0 | Tesi R SPK Ref Val | Code: El unNo: 2 ieqNo: 8 %REC 52.2 41.8 75.7 76.0 68.5 | PA Method 7531 26538 LowLimit 14.9 11.3 15.7 47.8 21.3 | 8270C: Semi Units: %RE HighLimit 108 154 106 123 | volatiles C %RPD 0 0 0 0 0 0 0 | RPDLimit 0 0 0 0 0 | Qual |

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- J Analyte detected below quantitation limits
- р Sample pH Not In Range
- RL **Reporting Detection Limit**

06-Aug-15

Qual

Qual



| Client: | Western Ref | ining Southwest, Inc. | |
|-----------|------------------|-----------------------|---|
| Project: | Injection We | 7-1-15 | |
| | | | |
| Sample ID | 1507094-001b dup | SampType: DUP | TesiCode: SM2510B: Specific Conductance |

| Client ID: Injection Well | Batch | ID: R2 | 7329 | F | RunNo: 2 | 7329 | | | | | |
|---------------------------|------------|---------|-----------|-------------|----------|----------|-------------|--------|----------|------|--|
| Prep Date: | Analysis D | ate: 7/ | 6/2015 | S | SeqNo: 8 | 19171 | Units: µmhe | os/cm | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Conductivity | 2000 | 0.010 | | | | | | 0.0491 | 20 | | |

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

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WO#: 1507094

| Chent: | Western | Kelining | Southw | est, Inc. | | | | | | | |
|---|---|--|--|--|---|---|--|---|------------------------|----------|------|
| Project: | Injection | Well 7-1 | -15 | | | | | | | | |
| Sample ID | MB-20158 | Sam | Туре∷№ | IBLK | Tes | tCode: E | PA Method | 7470: Mercu | у | | |
| Client ID: | PBW | Bat | ch iD: 2 | 0158 | F | RunNo: 2 | 7365 | | | | |
| Prep Date: | 7/8/2015 | Analysis | Date: | 7/8/2015 | ę | SeqNo: 8 | 20590 | Units: mg/L | | | |
| Analyte Mercury | | Result ND | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Sample ID | LCS-20158 | Samr | Type | CS. | Tes | tCode [®] E | PA Method | 7470: Moreu | | | |
| Client ID12 | LCSW | Bat | ch ID 2 | 0158 | res F | | 7365 | rero, morcu | У | | |
| Prep Date: | 7/8/2015 | Analysis | Date | 7/8/2015 | 5 | SeqNo: 8 | 20591 | 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 | Samp | Type: N | IS | Tes | tCode; E | PA Method | 7470: Mercur | <u>у</u> | | |
| Sample ID Client ID: | 1507094-001DMS Injection Well | Samp Bate | Type: № ch ID: 2 | is 0158 | Tes F | 1Code: E RunNo: 2 | PA Method 7365 | 7470: Mercur | y | | |
| Sample ID Client ID: Prep Date: | 1507094-001DMS Injection Well 7/8/2015 | Samp Bate Analysis | oType: № ch ID: 2 Date: 7 | IS 0158 7/8/2015 | Tes F | 1Code: E RunNo: 2 SeqNo: 8 | PA Method 7365 20635 | 7470: Mercur Units: mg/L | | | |
| Sample ID Client ID: Prep Date: Analyte | 1507094-001DMS Injection Well 7/8/2015 | Samp Bat Analysis Result | Type: № ch ID: 2 Date: 7 PQL | IS 0158 7/8/2015 SPK value | Tes F S SPK Ref Val | 1Code: El RunNo: 2 SeqNo: 8 %REC | PA Method 7365 20635 LowLimit | 7470: Mercur Units: mg/L HighLimit | y %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Mercury | 1507094-001DMS Injection Well 7/8/2015 | Samp Bate Analysis Result 0.0059 |)Type: M ch ID: 2 Date: 7 PQL 0.0010 | IS 0158 7/8/2015 SPK value 0 0.005000 | Tes F S SPK Ref Val 0 | ICode: E RunNo: 2 GeqNo: 8 %REC 118 | PA Method 7365 20635 LowLimit 75 | 7470: Mercur Units: mg/L HighLimit 125 | y %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Mercury Sample ID | 1507094-001DMS Injection Well 7/8/2015 1507094-001DMS | Samp Bate Analysis Result 0.0059 Samp |)Type: M ch ID: 2 Date: 7 PQL 0.0010 | IS 0158 7/8/2015 SPK value 0.005000 SD | Tes F SPK Ref Val 0 Tes | ICode: El RunNo: 2 GeqNo: 8 %REC 118 ICode: El | PA Method 7365 20635 LowLimit 75 PA Method | 7470: Mercur Units: mg/L HighLimit 125 7470: Mercur | y %RPD | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Mercury Sample ID Client ID: | 1507094-001DMS Injection Well 7/8/2015 1507094-001DMS0 Injection Well | Samp Bate Analysis Result 0.0059 Samp Bate | oType: M ch ID: 2 Date: 7 PQL 0.0010 Type: M ch ID: 2 | IS 0158 7/8/2015 SPK value 0.005000 SD 0158 | Tes F SPK Ref Val 0 Tes F | tCode: El RunNo: 2 SeqNo: 8 %REC 118 tCode: El RunNo: 2 | PA Method 7365 20635 LowLimit 75 PA Method 7365 | 7470: Mercur Units: mg/L HighLimit 125 7470: Mercur | y %RPD y | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Mercury Sample ID Client ID: Prep Date: | 1507094-001DMS Injection Well 7/8/2015 1507094-001DMS Injection Well 7/8/2015 | Samp Bata Analysis Result 0.0059 O Samp Bata Analysis | DType: M ch ID: 2 Date: 7 PQL 0.0010 Type: M ch ID: 2 Date: 7 | IS 0158 7/8/2015 SPK value 0 0.005000 SD 0158 7/8/2015 | Tes F SPK Ref Val 0 Tes F S | tCode: El RunNo: 2 SeqNo: 8 %REC 118 tCode: El RunNo: 2 SeqNo: 8 | PA Method 7365 20635 LowLimit 75 PA Method 7365 20638 | 7470: Mercur Units: mg/L HighLimit 125 7470: Mercur Units: mg/L | y %RPD y | RPDLimit | Qual |
| Sample ID Client ID: Prep Date: Analyte Mercury Sample ID Client ID: Prep Date: Analyte | 1507094-001DMS Injection Well 7/8/2015 1507094-001DMS0 Injection Well 7/8/2015 | Samp Bate Analysis Result 0.0059 D Samp Bate Analysis Result | Type: M ch ID: 2 Date: 7 PQL 0.0010 Type: M ch ID: 2 Date: 7 PQL | IS 0158 7/8/2015 SPK value 0.005000 SD 0158 7/8/2015 SPK value | Tes F SPK Ref Val 0 Tes F SPK Ref Val | tCode: El RunNo: 2 SeqNo: 8 %REC 118 tCode: El RunNo: 2 SeqNo: 8 %REC | PA Method 7365 20635 LowLimit 75 PA Method 7365 20638 LowLimit | 7470: Mercur Units: mg/L HighLimit 125 7470: Mercur Units: mg/L HighLimit | y %RPD y %RPD | RPDLimit | Qual |

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

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WO#: 1507094
| Client: | Weste | ern Refining | Southwe | est, Inc. | | | | | | | | |
|------------|-----------|--------------|-----------|-----------|--------------|-----------|-------------|---------------|-----------|----------|------|--|
| Project: | Inject | ion Well 7-1 | -15 | | | | | | | | | |
| Sample ID | MB-20102 | Samp | Type: M | BLK | Tes | tCode: E | PA 6010B: | Total Recove | rable Met | als | | |
| Client ID: | PBW | Bate | ch ID: 20 | 102 | I | RunNo: 2 | 7378 | | | | | |
| Prep Date: | 7/6/2015 | Analysis | Date: 7 | /9/2015 | : | SeqNo: 8 | 21352 | 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 | | NU | 1.0 | | | | | | | | | |
| | | ND | 1.0 | | | | | | | | | |
| Sample ID | LCS-20102 | Samp | Type: LC | s | Tes | tCode: El | PA 6010B: | Total Recover | able Meta | als | | |
| Client ID: | LCSW | Bato | :h ID: 20 | 102 | F | RunNo: 2 | 7378 | | | | | |
| Prep Date: | 7/6/2015 | Analysis I | Date: 7 | 9/2015 | 5 | SeqNo: 8 | 21353 | 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 | | | | |
| Polassium | | 48 | 1.0 | 50.00 | 0 | 96.8 | 80 | 120 | | | | |
| Sodium | | 49 | 1.0 | 50.00 | 0 | 98.9 | | 120 | | | | |
| Sample ID | MB-20102 | Samp | Туре: М | BLK | Tes | tCode: El | PA 6010B: 1 | Total Recover | able Meta | IIS | | |
| Client ID: | PBW | Batc | h ID: 20 | 102 | F | lunNo: 2 | 7491 | | | | | |
| Prep Date: | 7/6/2015 | Analysis (| Date: 7/ | 14/2015 | 5 | eqNo: 8 | 24974 | Units: mg/L | | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Quat | |
| Chromium | | ND | 0.0060 | | | | | | | | | |
| Sample ID | LCS-20102 | Samp | Type: LC | S | Tes | Code: EF | PA 6010B: " | Fotal Recover | able Meta | ils | | |
| Client ID: | LCSW | Batc | h ID: 20 | 102 | F | unNo; 2 | 7491 | | | | | |
| Prep Date: | 7/6/2015 | Analysis [| Date: 7/ | 14/2015 | s | eqNo: 8 | 24975 | 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 | Samp | Type: ME | BLK | Tes | Code: EF | PA 6010B: 1 | Fotal Recover | able Meta | ls | | |
| Client ID: | PBW | Batc | h ID: 20 | 102 | RunNo: 27540 | | | | | | | |
| Prep Date: | 7/6/2015 | Analysis [| Date: 7/ | 16/2015 | s | eqNo: 8 | 26932 | Units: mg/L | | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |

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

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E Value above quantitation range

- J Analyte detected below quantitation limits
 - Sample pH Not In Range
- RL Reporting Detection Limit

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WO#: 1507094

| Client: Project: | Weste Injecti | rn Refining S on Well 7-1- | Southwe -15 | st, Inc. | | | | | | | |
|---------------------|------------------|-------------------------------|-------------------|-----------|-------------|-----------|-------------|---------------|-----------|----------|------|
| Sample ID | MB-20102 | Samp | Туре: МІ | BLK | Tes | tCode: E | PA 6010B: | Total Recover | able Met | als | |
| Client ID: | PBW | Bato | :h ID: 20 | 102 | F | RunNo: 2 | 7540 | | | | |
| Prep Date: | 7/6/2015 | Analysis | Date: 7/ | 16/2015 | ę | SegNo: 8 | 26932 | 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 | Samp | Type: LC | s | Tes | tCode: El | PA 6010B: 1 | Total Recover | able Meta | als | |
| Client ID: | LCSW | Bato | :h ID:: 20 | 102 | F | RunNo: 2 | 7540 | | | | |
| Prep Date: | 7/6/2015 | Analysis I | Date: 7/ | 16/2015 | 5 | SeqNo: 8 | 26933 | 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.
- 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

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7.46

1.68

| Client: | Western R | efining So | outhwe | st, Inc. | | | | | | | |
|------------|------------------|-------------|---------|-----------|-------------|----------|-----------|-------------|------|----------|------|
| Project: | Injection V | Vell 7-1-1 | 5 | | | | | | | | |
| Sample ID | 1507094-001b dup | SampTy | /pe: Dl | JP | Tes | tCode: S | M4500-H+B | : pH | | | |
| Client ID: | Injection Well | Batch | ID: R2 | 27329 | F | RunNo: 2 | 7329 | | | | |
| Prep Date: | 8 | Analysis Da | ate: 7/ | /6/2015 | S | SeqNo: 8 | 19204 | Units∷ pH u | nits | | |
| Analyte | _ | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |

Qualifiers:

pН

- * Value exceeds Maximum Contaminant Level
- D Sample Diluted Due to Matrix
- Н 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL

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WO#: 1507094

Н

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1507094

06-Aug-15

| Client: | | Western Refining S | Southwe | st, Inc. | | | | | | | |
|------------------|----------|---------------------|----------|------------------|-------------|-----------|------------|--------------|---------|----------|------|
| Project: | | Injection Well 7-1- | 15 | | | | | | | | |
| Sample ID | mb-1 | Samp | Гуре: М | BLK | Tes | tCode: S | M2320B: A | Ikalinity | | | |
| Client ID: | PBW | Batc | h ID: R | 27329 | F | RunNo: 2 | 7329 | | | | |
| Prep Date: | | Analysis I | Date: 7 | /6/2015 | 5 | SeqNo: 8 | 19128 | Units:: mg/l | _ CaCO3 | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity | (as CaCO | 3) ND | 20.00 | | | | | | | | |
| Sample ID | lcs-1 | Samp | lype: LC | s | Tes | tCode: SI | M2320B: A | Ikalinity | | | |
| Client ID: | LCSW | Batc | h ID: R2 | 27329 | F | RunNo: 2 | 7329 | | | | |
| Prep Date: | | Analysis [| Date: 7/ | 6/2015 | 5 | SeqNo: 8 | 19129 | Units: mg/L | CaCO3 | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity | (as CaCO | 3) 78.36 | 20.00 | 80.00 | 0 | 98.0 | 90 | 110 | | | |
| Sample ID | mb-2 | Samp' | îype∷ Mi | BLK | Tes | tCode: SI | M2320B: AI | kalinity | | | |
| Client ID: | PBW | Batc | h ID: R2 | 732 9 | F | lunNo: 2 | 7329 | | | | |
| Prep Date: | | Analysis E | ate: 7/ | 6/2015 | S | SeqNo: 8 | 19152 | Units: mg/L | . CaCO3 | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity | (as CaCO | 3) ND | 20.00 | | | | | | | | |
| Sample ID | lcs-2 | Samp1 | ype: LC | s | Tes | Code: SI | M2320B: AI | kalinity | | | |
| Client ID: | LCSW | Batcl | ID: R2 | 7329 | R | unNo: 2 | 7329 | | | | |
| Prep Date: | | Analysis D | ate: 7/ | 6/2015 | s | eqNo: 8 | 19153 | Units: mg/L | . CaCO3 | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity | (as CaCO | 3) 79.44 | 20.00 | 80.00 | 0 | 99.3 | 90 | 110 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level,
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R1. Reporting Detection Limit

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- etterion chint

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 1000 20.0 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

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| MALL ENVIRONMENTAL ANALYSIS LABORATORY | Ilus Environmente Albug TEL: 505-345-3975 I Website: www.hali | 4901 querqu FAX: 5 lenviro | Hawki | uury ns NE 87109 Sam -4107 1.com | iple Log-In Cl | neck List |
|---|--|-------------------------------------|---|---|--|-----------------------|
| Client Name: Western Refining Southw | Work Order Number: | 15070 | 094 | | RcptNo: | 1 |
| Received by/date: AT-07/02 | 1/5 | | | | · | |
| Logged By: Anne Thome 7/2 | 2/2015 7:00:00 AM | | | am Im | - | |
| Completed By: Anne Thome 7/2 | /2015 | | | Om So- | _ | |
| Reviewed By: (19 6 | Ilazlis | | | | | |
| 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? | | <u>Cour</u> | <u>ier</u> | | | |
| <u>Log In</u> | | | | | | |
| 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 p | reserved? | Yes | \checkmark | 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 🗹 | # of preserved | |
| 12. Does paperwork match bottle labels? | | Yes | | No 🗔 | for pH: | Z F12unless noted) |
| 13 Are matrices correctly identified on Chain of Cus | stody? | Yes | | No 🛄 | Adjusted? | |
| 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 🗖 | Checked by: | <u>9</u> 4 |
| Special Handling (If epplicable) | | | | | | |
| 16. Was client notified of all discrepancies with this | order? | Yes | | No 🗍 | | |
| Remon NotiRed | | | | | | |
| By Whom: | | l aMa | а н П | Phone T Fay | | |
| Regarding: | v itz. | , cane | | | | |
| Client Instructions: | an an Adresse - Second Star | 2. 14 . | | nem ferning of the rest | an a transmission and an an an an an an an an an an an an an | |
| 17. Additional remarks: | | 1.4 | | | 44.14.44 | 0 |
| 18. <u>Cooler Information</u> Cooler No Temp C Condition Seal I | ntact Seal No S | eal Da | ite | Signed By | | |
| 1 1.0 Good Yes | | | | | ļ | |

Page 1 of 1

| | | www.hatlenvironmental.com | 4901 Hawkins NE - Albuquerque, NM 87109 | Tel. 505-345-3975 Fax 505-345-4107 | Analysis Request | | ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ | | 1 I I I I I I I I I I I I I I I I I I I | | атех + МТ ВТЕХ + МТ ВТЕХ + МТ ВТЕХ + МТ ВТЕХ + МТ ВТЕХ + МЕ ВТЕХ + МЕ | | | | | | | | | | | Remarks: | 041 |
|-------------------------|-------------------------|---------------------------|---|------------------------------------|-----------------------|------------------|--|--|---|--------------------------------|--|--------------------------------|-----------------|-----------|-------------|-------------------|-----------------|------------------|-----------------------|--|--|--|--|
| Tum-Around Time: | K Standard 🗆 Rush | Project Name: | Injection well 7-1-15 | Project #: | PO#12610939 | Project Manager: | | | Sampler: 786 6 of the Sector | A REAL PRIME CONTRACTOR STATES | Container Preservative Type and # Type | 5-VOA HCI -0 | 1-literamber -0 | 1-50ml -1 | 1-200 mag-1 | 1-125-1 HaSON -20 | 1-50m/ HNO3 -00 | 1-5am/ NaOtt -20 | 1-5com/20 acitete -20 | | | Repealment by: Date Time The 1/1/5 12 Received by: Deter The Deter Time | Appendix 1 |
| Chain-of-Custody Record | Client Western Refining | | Mailing Address 450 CP 4990 | B/OBMP ie/d. NNBML3 | Phone #: 525-632-1/35 | email or Fax#: | QAVQC Package: | A Standard D Level 4 (Full Validation) | Accreditation | D EDD (Type) | Date Time Matrix Sample Request ID | 7-1-15 9:00 Had injection well | | | | | | | | | | Date: Time: Relinquished by: 7-1-15 12/5 Vober Knollow Date: Time: Relinquished by: 11.1. 10th Volument by: | the representation of the representation |

Water Analysis of Entrada Formation Water

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

Muiti-Chern Analytical Laboratory

1122 S. FM1788 Midland, TX 76706

multi-chem

A HALLIBURTON SERVICE

(PTB = Pounds per Thousand Barrels)

Units of Measurement: Standard

| State of the second second | and the second second second second | |
|----------------------------|-------------------------------------|--|
| Production Company: | TNT Environmental | Sales Rep: Greg Ramalho |
| Well Name: | SWD ENTRADA | Lab Tech: Andrew Callaghan |
| Sample Point: | SWD | |
| Sample Date: | 11/20/2014 | Scaling potential predicted using ScaleSoftPitzer from |
| Sample ID: | WA-294316 | Brine Chemistry Consortium (Rice University) |

| | | | | 11 L AND DO LONG T | |
|----------------------------|------------|------------------|-----------------|--|--------------------|
| Sample Specifi | cs | A DAVID RIVE C | Analysis @ Prop | erties in Sample Specifics | Contemporariles In |
| Test Date: | 11/25/2014 | Cations | mg/L | Anions | mg/L |
| System Temperature 1 (°F): | 31 | Sodium (Na): | 4455.35 | Chloride (CI): | 6000.00 |
| System Pressure 1 (psig): | 15 | Potassium (K): | 44.79 | Sulfate (SO4): | 1094.00 |
| System Temperature 2 (*F): | 300 | Magnesium (Mg):: | 23.10 | Bicarbonate (HCO3): | 427.00 |
| System Pressure 2 (psig): | 300 | Calcium (Ca): | 115.67 | Carbonate (CO3): | 120.00 |
| Calculated Density (g/ml): | 1.0059 | Strontium (Sr): | 7.60 | Acetic Acid (CH3COO) | |
| pH: | 7.60 | Barium (Ba): | 9.30 | Propionic Acid (C2H5COO) | |
| Calculated TDS (mg/L): | 12320.63 | Iron (Fe): | 1.82 | Butanoic Acid (C3H7COO) | |
| CO2 in Gas (%): | | Zinc (Zn): | 0.10 | Isobutyric Acid ((CH3)2CHCOO) | |
| Dissolved CO2 (mg/L)): | 80.00 | Lead (Pb): | 0.00 | Fluoride (F): | |
| H2S in Gas (%): | | Ammonia NH3; | | Bromine (Br): | |
| H2S in Water (mg/L): | 2.50 | Manganese (Mn): | 0.55 | Silica (SiO2): | 21.35 |

Notes:

Celestite Halite Zinc Sulfide Banum Sulfate Gypsum CaSO4·2H2O Calcium Iron NaCl SrSO4 Sulfide Carbonate Carbonate Si SI PTB PTB SI PTB PTB S! PTB PTB SI PTB PTB SI Temp PSI (°E) 1.31 0.00 0.09 1.02 0.00 0.00 6.95 0.05 0.00 2.21 0.99 1.95 300.00 300.00 1.90 85.63 1.92 5.47 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 0.05 270.00 268.00 1.68 0.05 1.29 0.00 0.00 0.00 0.00 0.00 0.00 7.17 240.00 236.00 1.47 68.31 1.90 5.47 1.89 0.98 1.63 1.45 0.00 0.00 0.00 0.00 7.32 0.05 5.47 1.76 0.97 1.27 0.00 0.00 1.92 210.00 205.00 1.26 57.99 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 0.05 180.00 173.00 1.06 47.51 0.00 7.79 0.05 0.00 0.00 0.00 0.00 0.00 5.49 1.03 1.19 150.00 141.00 0.88 37.61 2.08 1.62 0.96 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 0.05 120.00 110.00 0.71 29.02 0.00 0.00 0.00 8.56 0.05 22.00 2.44 5.52 1.73 0.97 0.59 0.96 0.00 0.00 0.00 90.00 78.00 0.57 0.05 0.00 0.00 0.00 0.00 0.00 9.11 2.73 5.53 1.92 0.98 0,36 0.73 0.00 60.00 46.00 0.46 16.76 0.39 0.00 0.00 0.00 0.00 0.00 0.00 9.83 0.05 13.73 3.10 5.53 2.26 0.99 0.16 31.00 15.00 0.39

| | | Hemi CaSO | hydrate 4⁻0 5H2 O | Anhydrate CaSO4 | | Calcium Fluoride | | Zinc Carbonate | | Lead Sulfide | | Mg Silicate | | Ca Mg Silicate | | Silicate | |
|--------------|--------|--------------|-------------------------|--------------------|-------|---------------------|------|-------------------|------|-----------------|------|----------------|-------|-------------------|-------|----------|------|
| Temp (°F) | PSI | SI | РТВ | SI | РТВ | SI | РТВ | Si | PTB | SI | РТВ | SI | РТВ | 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 |

Multi-Chem - A Halliburton Service

Tuesday, November 25, 2014

Innovation

Excellence

Ethics

Commitment

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



COPY OF PUBLICATION

Western Refining Southwest, Inc., represented by John Thompson (505) 327-4892, has applied to the New Mexico Oll Conservation Division for administrative approval to be authorized to Inject nonhazardous treated water generated from the Bioomfield 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, PtilW, San Juan County, New Mexico.

ty, 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 THIS SECTION ON DELIVERY |
|--|--|
| 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. | A. Signature X. Active Agent B. Received by (Project Name) D. Is delinger address different from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is delinger from here 12 D. Is |
| 1. Article Addressed to: Burlington Resources Oil Gra Attn: Austal Walkov 21101 C 20111 Ct | If YES, enter delivery address below: |
| Farmington, NM 8740 | 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 19 | 570 0001 0594 4465 |
| PS Form 3811, February 2004 Domestic Re | tum Receipt 102595-02-M-1540 |

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| SENDER: COMPLETE THIS SECTION | COMPLETE THIS SECTION ON DELIVERY | | | | | | |
|--|--|--|--|--|--|--|--|
| 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 fmpt if space permits | A. Signature X G Agent B. Received by (Printed Name) C. Date of Delivery | | | | | | |
| 1. Article Addressed to: Hokomb Oil+Gras clinc Attn: Regulatory Coordinator 512 W. Arrigton | D. Is delivery address different from item 1? If YES, enter delivery address below: No DEC 17 | | | | | | |
| Farmington Win 82402 | 3. Service Type Certified Mail Depress Mail Registered Return Receipt for Merchandise Insured Mail C.O.D. | | | | | | |
| 2. Article Number (Transfer from service lebel) 7011 15 | 4. Restricted Delivery? (Extra Fee) □ Yes 70 0001 0594 4458 | | | | | | |

McMillan, Michael, EMNRD

| From: | John Thompson <john@walsheng.net></john@walsheng.net> |
|----------|--|
| Sent: | Monday, January 04, 2016 10:23 AM |
| То: | 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 <u>Michael.mcmillan@state.nm.us</u>