GW - 040

ANNUAL REPORT

2018

Western Refining

WNR LISTED NYSE

February 15, 2019

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

FEDEX delivery to OCD

Re: 2018 Annual Report and Partial Remediation System Closure Request
Former Giant Bloomfield Refinery
Bloomfield, New Mexico
OCD Discharge Permit GW-040

Dear Mr. Griswold:

Western Refining Southwest, Inc. (WRSWI) submits the 2018 Annual Report and Partial Remediation System Closure Request for the former Giant Bloomfield Refinery. The Annual Report summarizes groundwater monitoring and remediation activities in 2018.

As discussed previously, the remediation system located south of the US Highway 64 was shutdown prior to 2007 because cleanup goals had been achieved. NMDOT plans to improve the highway intersection. The Partial Remediation System Closure Request proposes to abandon the system under the highway and in the neighborhood to the south.

If you have questions or would like to discuss any aspect of the submittals, please contact Gregory McCartney at (419) 421-2338.

Sincerely,

Allen S. Hains

ALLEN S. HAINS
Manager Remediation Projects
Western Refining Southwest, Inc.

Enc.

2018 ANNUAL REPORT

FORMER GIANT BLOOMFIELD REFINERY
BLOOMFIELD, NEW MEXICO
DISCHARGE PERMIT GW-040

December 2018

Prepared for:

WESTERN REFINING SOUTHWEST, INC.
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BLOOMFIELD, NEW MEXICO 87413

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Advancing Opportunity

TABLE OF CONTENTS

EXECUTIVE SUMMARY ii

1.0 INTRODUCTION 1

1.1 SITE DESCRIPTION 1

1.1.1 SITE HISTORY 1

1.1.1.1 SITE HYDROLOGY 3
1.1.1.2 SCOPE OF WORK 4

2.0 METHODOLOGY 5

2.1 ANNUAL GROUNDWATER MONITORING COMPLIANCE 5

2.1.1 SHS WELL CLOSURE SAMPLING 5

3.0 RESULTS 6

3.1 ANNUAL GROUNDWATER MONITORING COMPLIANCE 6

3.1.1 SHS WELL CLOSURE SAMPLING 7

4.0 CONCLUSIONS 8

5.0 REFERENCES 5-1

FIGURES

FIGURE 1 SITE LOCATION MAP
FIGURE 2 SITE MAP
FIGURE 3 CROSS SECTION A-A'
FIGURE 4 CROSS SECTION B-B'
FIGURE 5 GROUNDWATER POTENTIOMETRIC SURFACE MAP (JANUARY 2018)
FIGURE 6 GROUNDWATER POTENTIOMETRIC SURFACE MAP (OCTOBER 2018)

TABLES

TABLE 1 GROUNDWATER ELEVATIONS AND THICKNESS OF PHASE-SEPARATED HYDROCARBONS
TABLE 2 2018 ANNUAL COMPLIANCE – GROUNDWATER LABORATORY ANALYTICAL RESULTS
TABLE 3 2018 SHS WELL CLOSURE SAMPLING – GROUNDWATER LABORATORY ANALYTICAL RESULTS

APPENDICES

APPENDIX A LABORATORY ANALYTICAL REPORTS

EXECUTIVE SUMMARY

This 2018 Annual Report summarizes work completed from January 2018 through December 2018 at the former Giant Bloomfield Refinery (Site) in Bloomfield, New Mexico. The scope of work for this project was the continued monitoring of petroleum hydrocarbon impacts to groundwater identified upon cessation of refinery operations. The Site is operated by Western Refining Southwest, Inc. (Western) and regulated by the New Mexico Oil Conservation Division (NMOCD) through Discharge Permit GW-040 that was originally issued for a groundwater recovery and remediation system consisting of groundwater recovery wells, a carbon filtration unit, and a treated-water infiltration trench. Prior to August 2015, the groundwater recovery system had been in operation for approximately 27 years and had significantly improved groundwater conditions over that time. As noted in previous annual reports, sampling of the influent to the treatment system had not detected the presence of volatile organic compounds (VOCs) in 13 years. Due to these observed conditions, in 2015, Western implemented more intensive monitoring of the groundwater to evaluate background water quality and the extent of any residual impact. To facilitate the evaluation, compliance samples were analyzed for additional parameters and additional groundwater samples were collected. The recovery system was shut off in August 2015, and Western monitored groundwater elevations, water quality, and phase-separated hydrocarbon (PSH) accumulation for a 5-month period under static conditions. Observations indicated no measurable change in groundwater conditions after ceasing the recovery operations.

Based on the favorable observations in 2015, Western did not resume pumping operations, but continued more frequent groundwater monitoring in 2016 and 2017 to confirm equilibrium conditions and better characterize residual impact. Monthly voluntary monitoring of static groundwater conditions occurred throughout 2017.

In January 2018, additional sampling was conducted for monitoring wells SHS-6, SHS-8, SHS-9, and SHS-13 through SHS-19. Sampling activities were conducted as described above. Monitoring wells samples were analyzed for VOCs according to EPA Method 8260B, GRO by EPA method 8015D, DRO and MRO by EPA method 8015M/D. During 2018, static groundwater conditions were monitored in January and October. Annual groundwater monitoring was conducted in October 2018. Groundwater samples were analyzed in accordance with Discharge Permit GW-040. Laboratory analytical results indicated VOCs and polycyclic aromatic hydrocarbons (PAHs) were not detected in exceedance of the New Mexico Water Quality Control Commission (NMWQCC) standards in groundwater samples collected from monitoring wells and recovery wells.

1.0 INTRODUCTION

This 2018 Annual Report summarizes groundwater monitoring activities completed between January 2018 and December 2018 at the former Giant Bloomfield Refinery (Site) in Bloomfield, New Mexico. The Site is operated by Western Refining Southwest, Inc. (Western) and currently regulated by the New Mexico Oil Conservation Division (NMOCD) under a discharge permit (GW-040); however, Western did not discharge any water at the Site during 2018. Prior to August 2015, the groundwater recovery system had been in operation for approximately 27 years and had significantly improved groundwater conditions over that time. As noted in previous annual reports, sampling of the influent to the treatment system had not detected the presence of volatile organic compounds (VOCs) in 13 years. Due to these observed conditions, in 2015 Western implemented more intensive monitoring of the groundwater to evaluate background water quality and the extent of any residual impact. To facilitate the evaluation, compliance samples were analyzed for additional parameters and additional groundwater samples were collected. The recovery system was shut off in August 2015, and Western monitored groundwater elevations, water quality, and phase-separated hydrocarbon (PSH) accumulation for a 5-month period under static conditions. Observations indicated no measurable change in groundwater conditions after ceasing the recovery operations. Based on the favorable observations in 2015, Western did not resume pumping operations, but continued more frequent groundwater monitoring in 2016 and 2017 during the time period covered by this report. Western conducted measured groundwater elevations in January and October, conducted closure sampling for monitoring wells, (SHS-6, SHS-8, SHS-9, and SHS-13 through SHS-19) and performed annual compliance sampling in October 2018.

1.1 SITE DESCRIPTION

The Site is on the northeast corner of United States Highway 64 and County Road 3500, approximately five miles west of Bloomfield, New Mexico, in the southwest quarter of Section 22 and the northwest quarter of Section 27, Township 29 North, Range 12 West in San Juan County, New Mexico (Figure 1). Components of the former remediation system still on site include two control buildings, two carbon filtration tanks, an aboveground storage tank, an infiltration trench, groundwater monitoring wells, and groundwater recovery wells (Figure 2).

1.2 SITE HISTORY

The former refinery, under ownership of Giant Industries (Giant), Arizona, produced leaded and unleaded gasoline, diesel, kerosene, and other refined petroleum products from 1974 to 1982 and is currently inactive. The refining operations and subsequent truck loading and unloading activities impacted groundwater, which was identified and investigated as part of the site closure requirements prescribed by the NMOCD in 1986. Details of a subsurface investigation and initial remediation efforts are contained in a 1987 report entitled, *Soil and Groundwater Investigations and Remedial Action Plan, Giant Industries, Inc. Bloomfield Refinery, Bloomfield, New Mexico*. The investigation identified three source areas (Figure 2).

- Northern Area (Diesel Spill Area): 10,000 to 15,000 gallons of diesel were released from a pipeline in 1985;

- Central Area (Truck Fueling Area): 15,000 gallons of diesel were released from a pipeline in 1986; and
- Southern Area: Historical releases from a former firefighting drill area east and upgradient of the Site that may have collected in a former seep and a stormwater catchment area.

Concurrent with refinery operations, the former Lee Acres Landfill located upgradient of the Site operated as a San Juan County landfill from 1962 to 1986 (Figure 1). Landfill operations included solid waste disposal in trenches and a series of lagoons used for disposal of a variety of liquid wastes. The NMOCD sampled the lagoons in 1985 and demonstrated that the liquids in the impoundments contained a variety of chlorinated solvents, petroleum hydrocarbon constituents, heavy metals, and salts. In April 1985, a breach in the dike retaining the lagoons released liquid wastes into an arroyo west of the Site. The arroyo drains south toward the Lee Acres Subdivision, where the NMOCD and the New Mexico Environment Department (NMED) identified impacted groundwater in domestic water wells in 1988. In response, the NMOCD required Giant to investigate petroleum hydrocarbon impacts to groundwater downgradient of the refinery in the Lee Acres Subdivision, and the NMED conducted a separate investigation to identify potential impacts from the landfill. The results of the subsurface investigation conducted by Giant south of the refinery are contained in three volumes of the 1992 report, *Remedial Investigation Report for Lee Acres Landfill*. The NMED, in conjunction with the Bureau of Land Management (BLM) and the United States Geological Survey (USGS), published their results in three reports referenced in Section 5.0 of this report.

The investigations identified two separate plumes of impacted groundwater that commingled across the refinery and flowed downgradient into the Lee Acres Subdivision. Groundwater contaminants detected in the refinery plume included PSH and dissolved-phase petroleum hydrocarbons. The dissolved-phase constituents included benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and 1,2-dichloroethane (EDC). The landfill contaminant plume contained total dissolved solids (TDS), chloride, sulfate, manganese, metals, BTEX, naphthalene, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, and trichloroethene (TCE).

Beginning in 1988, Giant installed a groundwater recovery, treatment, and disposal system in stages to restrict migration of contaminants and to remediate groundwater impacts caused by Giant's former operations. A total of 45 monitoring wells were initially installed and designated GBR monitoring wells (Figure 2). Of these 45 monitoring wells, 11 were converted to recovery wells and re-named with GRW designations. An additional 17 monitoring wells were installed in the Lee Acres Subdivision and designated as SHS monitoring and recovery wells. Four SHS wells initially operated as recovery wells. Giant pumped groundwater from the recovery wells into storage tanks, then treated the groundwater with an air stripper and carbon filtration and re-injected treated groundwater into the subsurface through two infiltration trenches. Western acquired the Site from Giant in June 2007.

As groundwater quality improved over time, the remediation system was gradually simplified and eventually shut down following extensive assessment of site conditions. The air stripper was eliminated in the 1980s once product accumulation declined. In 2008, Western conducted a supplemental evaluation of the remedial operations, which included shutting down the remediation system and sampling groundwater wells under static conditions to redefine the area of impact and assess effectiveness of the remediation system. Existing equipment was inspected and repaired to optimize performance. Results from the sampling event were included in the *2008 Annual Report* submitted to the NMOCD. Pumping and treating operations were resumed in February 2009.

Western stopped recovering groundwater south of Highway 64 in 2009 as groundwater sampling results indicated no change to contaminant concentrations. Aboveground storage of groundwater was eliminated in 2014 based on reduced groundwater recovery volumes. By 2015, the system consisted of only 9 active groundwater recovery wells that pumped groundwater directly into the carbon filtration tanks. The water then passed through the treated water infiltration trench.

Following 13 years of regular influent and effluent sampling without the detection of VOCs, Western conducted another assessment of site groundwater conditions in 2015. Western sampled and monitored select wells to characterize groundwater under active pumping conditions, then shut down the recovery system to allow groundwater to equilibrate. A second sampling and monitoring event was conducted on the same groundwater monitoring wells to compare active groundwater recovery to static conditions. Assessment results suggested the remediation system had successfully remediated the groundwater impact it was originally designed to address but was no longer an effective method for remediating residual impact at the Site. As such, Western did not turn the recovery system back on, focusing instead on monitoring existing site conditions to better characterize the residual impact. Results of the assessment were included in the *2015 Annual Report*.

In August 2015, additional groundwater samples were collected from select monitoring wells to establish a reference for groundwater conditions when the remediation system is operational. Historical documentation was reviewed to determine which wells had the most potential to contain impacted groundwater or to exhibit a change in water quality before and after the remediation system was inactivated. Monitoring wells GBR-8, GBR-11, GBR-20, GBR-21D, GBR-22, GBR-25, GBR-26, GBR-34, SHS-2, SHS-8, and SHS-9 were selected due to radius of influence of actively pumping recovery wells and/or historical documentation of PSH measured in the monitoring wells. Samples from these monitoring wells were collected and analyzed for chloride by United States Environmental Protection Agency (EPA) Method 300.0, BTEX by EPA Method 8260B, total petroleum hydrocarbon (TPH)-gasoline range organics (GRO) by EPA Method 8015D, and TPH-diesel range organics (DRO) by EPA Method 8015M/D. Follow-up samples were collected after the system was turned off and groundwater conditions were allowed to equilibrate. Sampling from these monitoring wells under equilibrium conditions continued in March, July, and October of 2016 and were documented in the *2016 Annual Report*.

At the request of the New Mexico Department of transportation (NMDOT), Western submitted Well Plugging Plans of Operations to the New Mexico Office of State Engineer (NMOSE) to plug and abandon SHS-1, SHS-2, SHS-3, SHS-4, and SHS-5 on June 5, 2017, approved on June 7, 2017. These wells were in the right of way of the highway and in the way of pending construction. On June 14, 2017, each well was cemented to the surface and the well vault was removed per the NMOSE requirements. Sampling activities were documented in the *2017 Annual Report*.

1.2.1 SITE HYDROLOGY

The Site is located on weathered outcrops of the Nacimiento Formation, which is comprised of shales, sandstones, and siltstones of Cretaceous-Tertiary age. The San Juan River is approximately 2,000 feet south of the Site. Immediately west is a large unnamed arroyo, which is underlain by 30 feet to 60 feet of Quaternary alluvial sediments. Older Quaternary terrace deposits of cobbles and boulders were observed on the interfluvial ridges adjacent to the arroyo. These terrace deposits may have been used as fill on the Site. The outcropping surfaces of the Nacimiento Formation have been eroded to form a paleo channel that appears to be similar in morphology to the existing surface arroyo located to the

west of the Site. The bedrock is overlain by recent alluvial deposits (gravel, sand, silt, and clay), which thicken toward the south-southwest as illustrated on the cross section on Figure 3 and Figure 4.

The subsurface geology is a controlling feature for groundwater flow direction and potential contaminant migration. Shallow groundwater is generally unconfined with some local areas potentially under semi-confined conditions. There are two aquifers of concern that are in direct hydraulic communication: a shallow aquifer composed of recent alluvial materials and a bedrock aquifer that exists in the underlying Nacimiento Formation (Figures 3 and 4, respectively). The alluvial aquifer generally has the higher permeability of the two aquifers, and recovery wells completed within this aquifer have higher yields with larger radii of influence.

1.2.2 SCOPE OF WORK

The scope of work for this project in 2018 included semi-annual monitoring of groundwater elevations and the presence of PSH under equilibrium conditions, an annual compliance groundwater sampling event, and the plugging and closure sampling of wells (SHS-6, SHS-8, SHS-9, and SHS-13 through SHS-19). A summary of field activities, results, and conclusions, as related to annual discharge permit compliance and monitoring results are presented in the subsequent sections of this report.

2.0 METHODOLOGY

2.1 ANNUAL GROUNDWATER MONITORING COMPLIANCE

Although no discharge occurred during 2018, Western conducted annual compliance sampling of wells specified in Discharge Permit GW-040. Western measured depth to groundwater semi-annually in 53 monitoring wells and 15 former recovery wells with a Keck oil-water interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water before each measurement. Depth to groundwater measurements were used to calculate quarterly groundwater elevations at the Site to determine direction of groundwater flow.

Annual groundwater compliance samples were collected in October 2018. Samples were collected from groundwater monitoring wells and former recovery wells within and south of Highway 64 as specified in Discharge Permit GW-040. The volume of groundwater in the wells was calculated and a minimum of three well casing volumes of groundwater was purged from each well using a disposable bailer. As groundwater was extracted, pH, electrical conductivity (EC), and temperature were monitored. Wells were purged until these properties stabilized or the well was bailed dry, indicating the purge water was representative of aquifer conditions. Stabilization was defined as three consecutive stable readings for each water property (plus or minus (±) 0.4 units for pH, ±10 percent for EC, and ±2 degrees Celsius for temperature). Once each well was properly purged, groundwater samples were collected in bottles or vials and shipped to Hall Environmental Analysis Laboratory (HEAL) of Albuquerque, New Mexico. Groundwater samples collected from monitoring wells GRW-3, GRW-6, GBR-17, GBR-24D, GBR-30, GBR-31, GBR-32, GBR-48, GBR-49, GBR-50, GBR-51, GBR-52, and SHS-8 were analyzed for VOCs according to EPA Method 8260B and general water chemistry (GWC) parameters including pH by EPA Standard Method 4500, EC by EPA Method 2510B, TDS by EPA Standard Method 2540C, alkalinity by EPA Standard Method 2320B, hardness by EPA Standard Method 2340B, anions (bromide, chloride, sulfate, fluoride, nitrite-nitrate, and phosphorus) by EPA Method 300.0, and cations (calcium, iron, magnesium, potassium, and sodium) by EPA Method 200.7. In addition, groundwater samples collected from monitoring wells GRW-3, GRW-6, GBR-17, GBR-24D, GBR-30, and GBR-31 were analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270C, and groundwater samples collected from GBR-32, GBR-48, GBR-49, and GBR-50 were analyzed for metals (barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, zinc, antimony, arsenic, selenium, thallium, and mercury).

2.1.1 SHS WELL CLOSURE SAMPLING

In January 2018, additional sampling was conducted for monitoring wells SHS-6, SHS-8, SHS-9, and SHS-13 through SHS-19. Sampling activities were conducted as described above. Monitoring wells samples were analyzed for VOCs according to EPA Method 8260B, GRO by EPA method 8015D, DRO and MRO by EPA method 8015M/D.

3.0 RESULTS

3.1 ANNUAL GROUNDWATER MONITORING COMPLIANCE

Groundwater elevations measured in groundwater monitoring and recovery wells are presented in Table 1, and semi-annual potentiometric surface maps are depicted on Figures 5 and 6. Groundwater flow direction was consistently toward the southwest throughout the year. Phase-separated hydrocarbons were encountered in GBR-7, GBR-22, and GBR-41.

Laboratory analytical results from annual groundwater compliance sampling are presented in Table 2, and the complete laboratory analytical reports are presented in Appendix A. Isopach maps and geologic cross sections illustrating the distribution of analytes are not included due to the fact that sampling events do not include wells from all of the current source areas. Such a presentation of results would not be indicative of actual conditions at the Site. Laboratory analytical results from 2018 as compared to New Mexico Water Quality Control Commission (NMWQCC) standards are summarized below:

- VOCs were detected in the annual groundwater samples in trace concentrations that did not exceed NMWQCC standards;
    - EDC was detected in groundwater from monitoring well GBR-24D;
    - PCE was detected in groundwater from monitoring well GBR-48; and
    - Sec-butylbenzene and tert-butylbenzene were detected in groundwater from monitoring well GRW-3;
- TDS exceeded the NMWQCC standard in all samples collected from the groundwater monitoring and former recovery wells;
- Chloride concentrations exceeded the NMWQCC standard in groundwater samples collected from up-gradient well GBR-48;
- Nickel concentrations exceeded the NMWQCC standard in groundwater samples collected from up-gradient well GBR-49;
- Sulfate concentrations exceeded the NMWQCC standard in all samples collected from groundwater monitoring and former recovery wells;
- Chromium concentrations exceeded the NMWQCC standard in groundwater samples collected from monitoring wells GBR-32 and GBR-49, which are located within the arroyo adjacent to and upgradient of the Site;
- Iron was detected in concentrations exceeding the NMWQCC standard in groundwater samples from all groundwater monitoring and former recovery wells, except up-gradient wells GBR-51 and GBR-52; and
- Manganese was detected in concentrations exceeding the NMWQCC standard in groundwater samples from all groundwater monitoring and former recovery wells, except up-gradient wells GBR-50, GBR-51 and GBR-52.

3.1.1 SHS WELL CLOSURE SAMPLING

Laboratory analytical results from groundwater samples collected at SHS-6, SHS-8, SHS-9, and SHS-13 through SHS-19 are presented in Table 3, and the complete laboratory analytical reports are presented in Appendix A. Laboratory analytical results from 2018 are summarized below:

- DRO was detected in groundwater samples collected from down-gradient wells SHS—8, SHS-9, and SHS-13;
- GRO was detected in groundwater samples collected from down-gradient well SHS-9;
- Naphthalene was detected in groundwater samples collected from down-gradient well SHS-9;
- 1-methylnaphthalene was detected in groundwater samples collected from down-gradient well SHS-9; and

All detected analytes did not have correlating NMWQCC standards.

4.0 CONCLUSIONS

By 2015, Western had documented over 13 years of pumping and treating groundwater that did not contain detectable concentrations of VOCs. Western shut down the pump and treatment system in August 2015, to evaluate its effectiveness at addressing residual impact at the Site. Continued monitoring and sampling conducted under equilibrium conditions suggest the remediation system was not actively remediating contaminants of concern at the Site, therefore Western did not reactivate the system.

Conclusions from the continued monitoring of static groundwater conditions at the Site include:

- PSH accumulation did not change significantly from observations during pumping conditions:
  - Although measurable PSH was observed in monitoring wells GBR-7, GBR-22, and GBR-41, these wells have historically contained PSH;
  - There was no PSH migration into monitoring wells where PSH had not previously been observed;
- Groundwater impacted by petroleum hydrocarbons is characterized by presence of PSH and little to no dissolved-phase hydrocarbons regulated by the NMWQCC; and
- Field observations and laboratory analytical results indicate impacted areas are consistent with previously identified source areas and do not appear to have been affected by the cessation of pump and treat remediation efforts.

Annual compliance sampling was conducted in October 2018. Contaminants of concern were either not detected in groundwater samples or, if detected, can be attributed to an upgradient source or naturally occurring background conditions. Annual groundwater samples collected from monitoring and recovery wells did not contain VOCs or PAHs exceeding NMWQCC standards.

Annual groundwater monitoring well sampling results are consistently compliant with standards for general chemistry parameters and metals, with the exception of TDS, chloride, and sulfate. Elevated TDS, chloride, and sulfate are historically characteristic of groundwater at the Site and are most likely related to historical releases at the Lee Acres Landfill reported in 1985. These analytes were identified in earlier studies as constituents within the groundwater contaminant plume that originated from the landfill. Previous investigations of the landfill reported elevated levels of chloride present in the water sampled from the liquid waste lagoons (McQuillan, D. and Longmire, P., *Water Quality Investigations at the Lee Acres Landfill and Vicinity, San Juan County, New Mexico*), and the landfill accepted produced water from natural gas well operations in the San Juan Basin. During initial landfill investigations, the upgradient area near GBR-32, GBR-48, GBR-49, and GBR-50 was identified as the “northern containment slug.” Groundwater representative of this area contained TDS concentrations ranging from 2,125 milligrams per kilogram (mg/kg) to 6,068 mg/kg, chloride concentrations ranging from 14.7 mg/kg to 2,110 mg/kg, and sulfate concentrations ranging from 1,920 mg/kg to 5,830 mg/kg (Roy F. Weston, Inc., *Remedial Investigation Report for Lee Acres Landfill, Volume 1*).

Heavy metals, including chromium, iron, manganese, and nickel were detected in groundwater monitoring and former recovery wells during the annual sampling in October 2018. Additionally,

chromium, iron, nickel, and manganese concentrations exceeded NMWQCC standards. Previous studies conducted for the Lee Acres Landfill identified chromium, iron, lead, manganese, nickel, and selenium in groundwater sampled upgradient of the Site. *The Remedial Investigation Report for Lee Acres Landfill, Volume 1* states that the upgradient background alluvial aquifer contains elevated levels of chromium and manganese and suggests an unidentified source that is unrelated to the landfill or the Site.

It is apparent that the remediation system successfully remediated petroleum hydrocarbon impacts as designed. Following the reduction in petroleum hydrocarbon concentrations, the remediation system's primary purpose was to provide hydraulic control and restrict migration of potential contaminants off site. By shutting down the system to re-establish equilibrium conditions, Western has demonstrated the remediation system has no effect on existing petroleum hydrocarbon groundwater impacts or the migration of impacts off site. Residual impacts at the Site consist of PSH accumulations, which based on thicknesses measured and locations consistent with original source areas, are likely to be adsorbed by soil in the three original source areas. With no active source, the residual contaminants are not likely to migrate with or without the hydraulic barrier introduced by the remediation system.

5.0 REFERENCES

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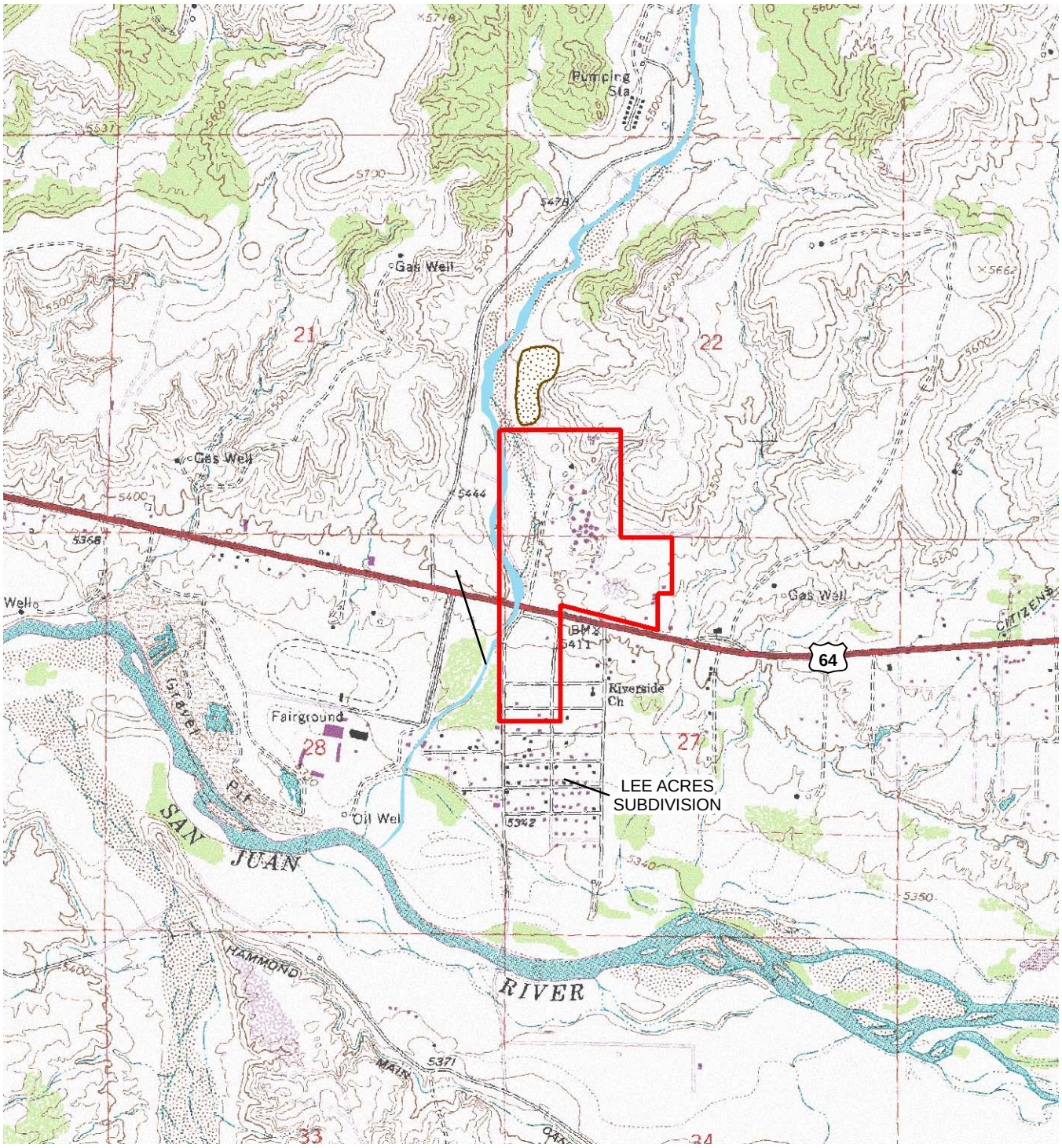


IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

0 2,000 4,000

Feet

N

LEGEND

- SITE LOCATION
- ARROYO
- FORMER LEE ACRES LANDFILL

FIGURE 1
SITE LOCATION MAP
FORMER GIANT BLOOMFIELD REFINERY
SWSW SEC 22 & WNW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1009 GIANT\WR1009_GIANT_FIG01_SL.mxd

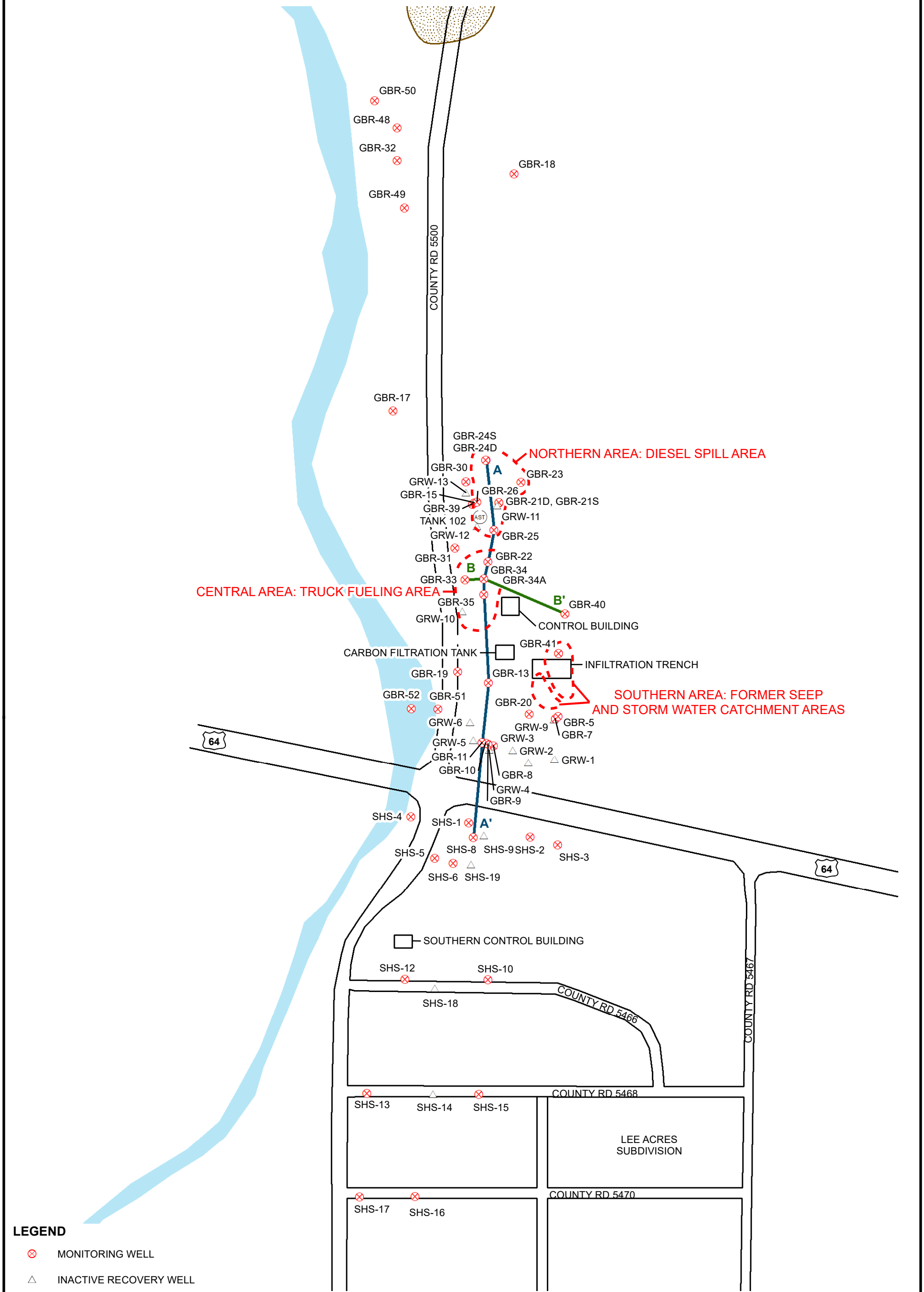


FIGURE 2
SITE MAP
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1009 GIANT\WR1009_GIANT_FIG02_SITE.mxd

NORTH

A

SOUTH

A'

ELEVATION IN FEET

5,400
5,395
5,390
5,385
5,380
5,375
5,370
5,365
5,360
5,355
5,350
5,345
5,340
5,335
5,330

GBR 24D

TD =
49 FEET BGS

GBR 25

TD =
48 FEET BGS

GBR 22

SILTED IN

TD =
48 FEET BGS

GBR 34

TD =
48' FEET BGS

GBR 35

TD =
50 FEET BGS

GBR 13

TD =
48 FEET BGS

GBR 11

TD =
55 FEET BGS

SHS 8

TD =
53 FEET BGS

SCREENED
INTERVAL
UNKNOWN

LEGEND

- SANDY SILT
- CLAYEY SAND
- SILTY SAND
- SAND
- PEBBLES/GRAVEL
- NACIMIENTO SHALE
- NACIMIENTO SANDSTONE

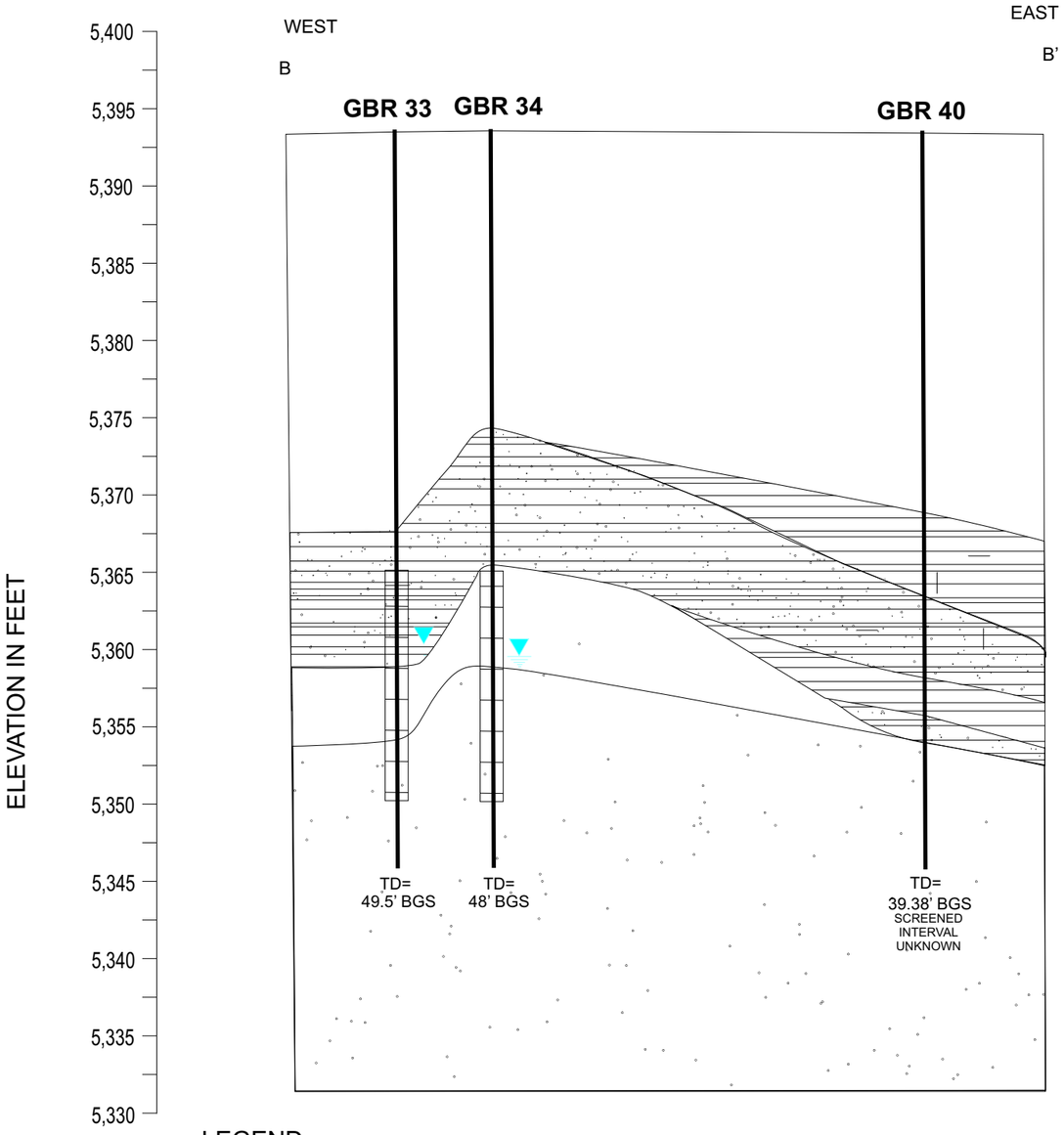
- BOREHOLE
- SCREENED INTERVAL
- BGS — BELOW GROUND SURFACE
- TD — TOTAL DEPTH IN FEET
- GROUNDWATER ELEVATION FROM OCTOBER 2018

HORIZONTAL SCALE
1" = 10 FEET

VERTICAL SCALE
1" = 90 FEET

FIGURE 3
CROSS SECTION A-A'
FORMER GIANT BLOOMFIELD REFINERY
SWSW SEC 22 &WNW SEC 27 T29N R12W
WESTERN REFINING SOUTHWEST, INC.

WR1009 1/16



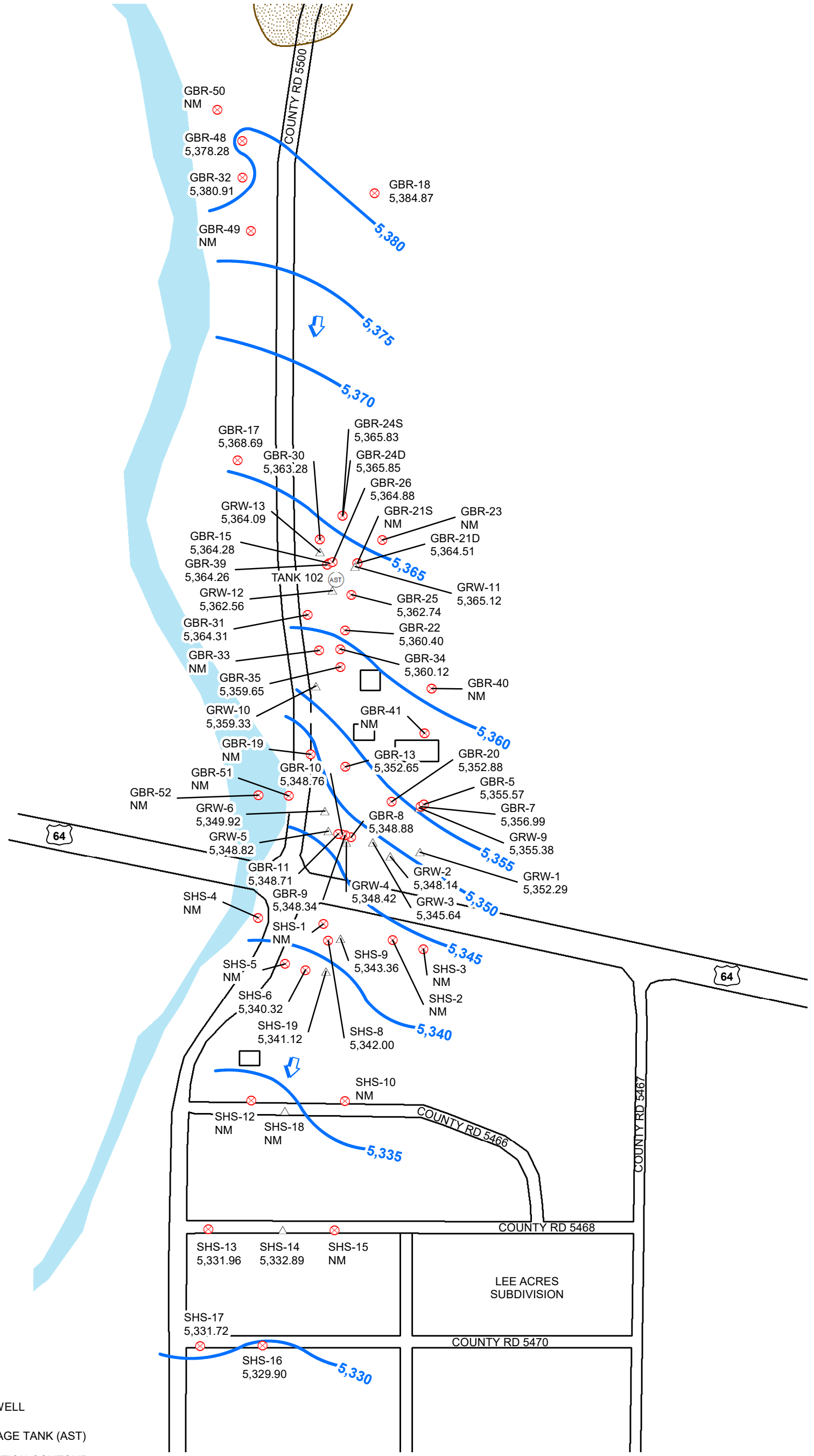
LEGEND

- CLAYEY SAND
- CLAY
- SAND
- NACIMIENTO SANDSTONE
- DRY
- BOREHOLE
- SCREENED INTERVAL
- BGS BELOW GROUND SURFACE
- TD TOTAL DEPTH IN FEET
- GROUNDWATER ELEVATION OCTOBER 2017

HORIZONTAL SCALE
1" = 10 FEET

VERTICAL SCALE
1" = 90 FEET

FIGURE 4
CROSS SECTION B-B'
FORMER GIANT BLOOMFIELD REFINERY
SWSW SEC 22 &WNW SEC 27 T29N R12W
WESTERN REFINING SOUTHWEST, INC.



LEGEND

NM: NOT MEASURED

PO: PAVED OVER

- MONITORING WELL
- INACTIVE RECOVERY WELL
- ABOVEGROUND STORAGE TANK (AST)
- GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 5 FEET
  GROUNDWATER ELEVATION MEASURED IN FEET
  ABOVE MEAN SEA LEVEL IN JANUARY, 2018
- ARROYO
- FORMER LEE ACRES LANDFILL
- ESTIMATED GROUNDWATER FLOW DIRECTION

FIGURE 5
GROUNDWATER POTENTIOMETRIC SURFACE MAP (JANUARY 2018)
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

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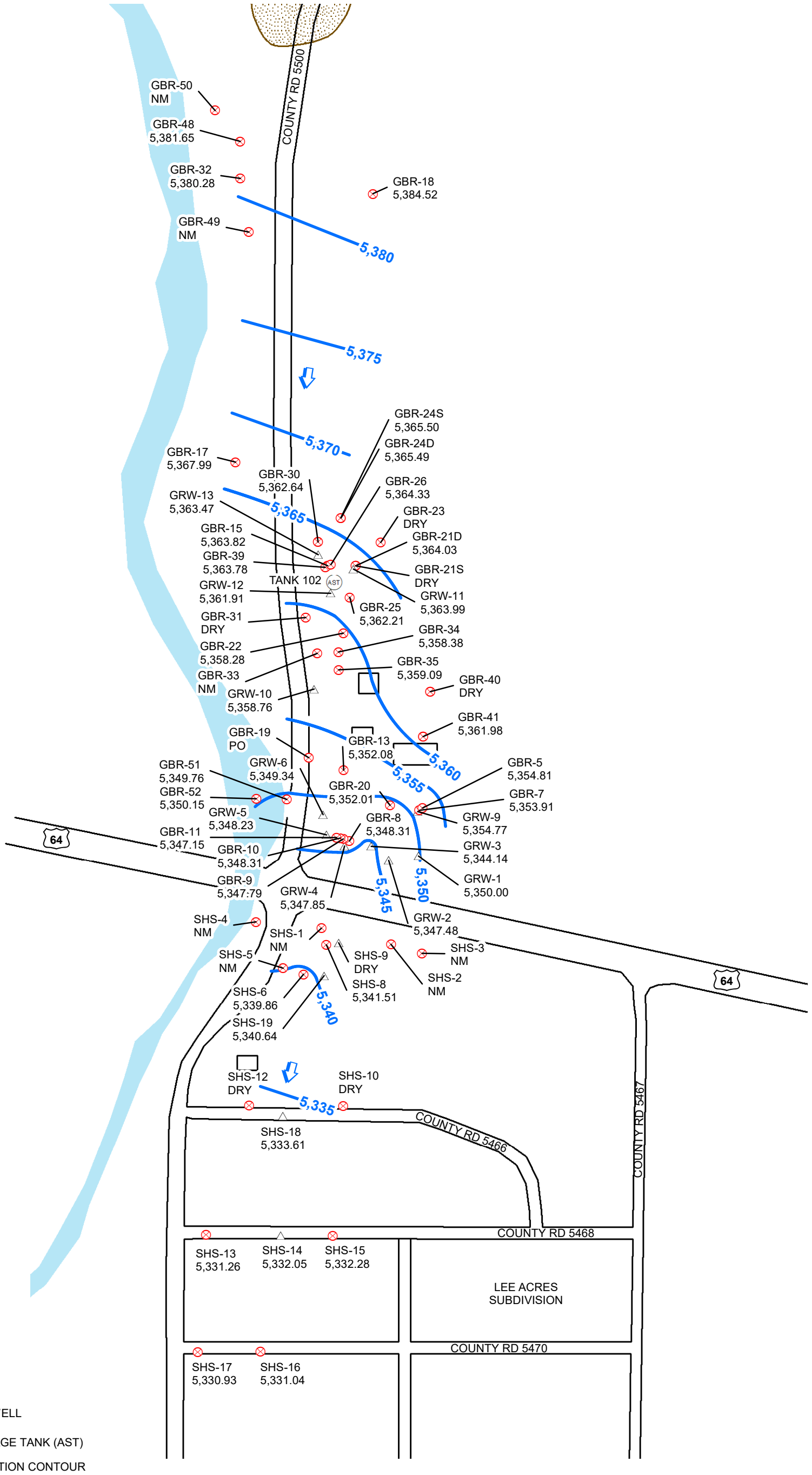

LEGEND

NM: NOT MEASURED

PO: PAVED OVER

- MONITORING WELL
- INACTIVE RECOVERY WELL
- ABOVEGROUND STORAGE TANK (AST)
- GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 5 FEET
  GROUNDWATER ELEVATION MEASURED IN FEET
  ABOVE MEAN SEA LEVEL IN OCTOBER, 2018
- ARROYO
- FORMER LEE ACRES LANDFILL
- ESTIMATED GROUNDWATER FLOW DIRECTION

FIGURE 6
GROUNDWATER POTENTIOMETRIC SURFACE MAP (OCTOBER 2018)
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

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TABLE 1
GROUNDWATER ELEVATIONS AND THICKNESS OF PHASE-SEPARATED HYDROCARBONS

FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, INC.
SAN JUAN COUNTY, NEW MEXICO

Well Number	Wellhead Elevation (feet)	Total Depth (feet)	January 2018				October 2018			
			Depth to Water (feet BTOC)	Depth to Product (feet)	PSH Thickness (feet)	Adjusted GWEL (feet)	Depth to Water (feet) BTOC	Depth to Product (feet)	PSH Thickness (feet)	Adjusted GWEL (feet)
GRW-1	5,394.30	73.35	42.01	-	-	5,352.29	44.30	-	-	5,350.00
GRW-2	5,391.28	61.00	43.14	-	-	5,348.14	43.80	-	-	5,347.48
GRW-3	5,388.77	58.30	43.13	-	-	5,345.64	44.63	-	-	5,344.14
GRW-4	5,390.02	60.00	41.60	-	-	5,348.42	42.17	-	-	5,347.85
GRW-5	5,390.56	68.30	41.74	-	-	5,348.82	42.33	-	-	5,348.23
GRW-6	5,390.81	53.80	40.89	-	-	5,349.92	41.47	-	-	5,349.34
GRW-9	5,395.70	54.40	40.32	-	-	5,355.38	40.93	-	-	5,354.77
GRW-10	5,395.02	66.02	35.69	-	-	5,359.33	36.26	-	-	5,358.76
GRW-11	5,397.85	64.00	32.73	-	-	5,365.12	33.86	-	-	5,363.99
GRW-12	5,397.24	48.00	34.68	-	-	5,362.56	35.33	-	-	5,361.91
GRW-13	5,396.90	61.30	32.81	-	-	5,364.09	33.43	-	-	5,363.47
GBR-5	5,395.07	47.08	39.50	-	-	5,355.57	40.26	-	-	5,354.81
GBR-7	5,395.85	51.65	38.86	-	-	5,356.99	41.94	41.71	0.23	5,353.91
GBR-8	5,390.50	50.90	41.62	-	-	5,348.88	42.19	-	-	5,348.31
GBR-9	5,389.92	67.22	41.58	-	-	5,348.34	42.13	-	-	5,347.79
GBR-10	5,390.57	47.56	41.81	-	-	5,348.76	42.26	-	-	5,348.31
GBR-11	5,389.43	51.87	40.72	-	-	5,348.71	42.28	-	-	5,347.15
GBR-13	5,393.04	45.47	40.39	-	-	5,352.65	40.96	-	-	5,352.08
GBR-15	5,397.99	58.42	33.71	-	-	5,364.28	34.17	-	-	5,363.82
GBR-17	5,402.69	43.20	34.00	-	-	5,368.69	34.70	-	-	5,367.99
GBR-18	5,421.68	47.85	36.81	-	-	5,384.87	37.16	-	-	5,384.52
GBR-19* **	5,393.83	46.23	-	-	-	-	-	-	-	-
GBR-20	5,393.47	54.57	40.59	-	-	5,352.88	41.46	-	-	5,352.01
GBR-21D	5,400.19	49.77	35.68	-	-	5,364.51	36.16	-	-	5,364.03
GBR-21S	5,400.65	49.77	Dry		-	-	Dry	-	-	-
GBR-22	5,395.91	38.73	35.51	-	-	5,360.40	37.63	37.60	0.03	5,358.28
GBR-23** **	5,403.72	39.45	Dry	-	-	-	37.33	-	-	5,366.39
GBR-24D	5,396.77	51.40	30.92	-	-	5,365.85	31.28	-	-	5,365.49
GBR-24S	5,396.08	37.05	30.25	-	-	5,365.83	30.58	-	-	5,365.50
GBR-25	5,397.03	37.12	34.29	-	-	5,362.74	34.82	-	-	5,362.21
GBR-26	5,396.72	41.29	31.84	-	-	5,364.88	32.39	-	-	5,364.33
GBR-30	5,395.59	41.66	32.31	-	-	5,363.28	32.95	-	-	5,362.64
GBR-31	5,396.58	43.50	32.27	-	-	5,364.31	Dry	-	-	-
GBR-32	5,414.86	47.83	33.95	-	-	5,380.91	34.58	-	-	5,380.28
GBR-33	5,396.28	45.72	Dry	-	-	-	34.44	-	-	5,361.84
GBR-34	5,394.00	42.20	33.88	-	-	5,360.12	35.62			5,358.38
GBR-35	5,393.66	42.35	34.01	-	-	5,359.65	34.57	-	-	5,359.09
GBR-39	5,397.55	41.42	33.29	-	-	5,364.26	33.77	-	-	5,363.78
GBR-40	5,400.76	39.38	Dry	-	-	-	Dry	-	-	-
GBR-41	5,396.35	34.28	34.31	34.28	0.03	5,362.04	34.37	34.25	0.12	5,361.98
GBR-48	5,413.90	43.54	35.62	-	-	5,378.28	32.25	-	-	5,381.65
GBR-49	*	40.30	32.06	-	-	-	32.71	-	-	-
GBR-50	*	44.37	31.26	-	-	-	31.94	-	-	-
GBR-51	5,389.68	57.07	NM	-	-	-	39.92	-	-	5,349.76
GBR-52	5,387.74	52.73	NM	-	-	-	37.59	-	-	5,350.15
SHS-1**** **	5,383.54	50.40	P&A	-	-	-	P&A	-	-	-

TABLE 1
GROUNDWATER ELEVATIONS AND THICKNESS OF PHASE-SEPARATED HYDROCARBONS

FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, INC.
SAN JUAN COUNTY, NEW MEXICO

Well Number	Wellhead Elevation (feet)	Total Depth (feet)	January 2018				October 2018			
			Depth to Water (feet BTOC)	Depth to Product (feet)	PSH Thickness (feet)	Adjusted GWEL (feet)	Depth to Water (feet) BTOC	Depth to Product (feet)	PSH Thickness (feet)	Adjusted GWEL (feet)
SHS-2	5,381.66	44.56	P&A	-	-	-	P&A	-	-	-
SHS-3**	5,383.33	-	P&A	-	-	-	P&A	-	-	-
SHS-4	5,383.62	52.16	P&A	-	-	-	P&A	-	-	-
SHS-5	5,378.36	47.85	P&A	-	-	-	P&A	-	-	-
SHS-6	5,378.17	52.78	37.85	-	-	5,340.32	38.31	-	-	5,339.86
SHS-8	5,380.25	50.92	38.25	-	-	5,342.00	38.74	-	-	5,341.51
SHS-9	5,380.79	46.25	37.43	-	-	5,343.36	Dry	-	-	-
SHS-10	5,373.80	45.80	Dry	-	-	-	Dry	-	-	-
SHS-12	5,373.94	52.41	Dry	-	-	-	Dry	-	-	-
SHS-13	5,367.81	47.51	35.85	-	-	5,331.96	36.55	-	-	5,331.26
SHS-14	5,367.07	52.71	34.18	-	-	5,332.89	35.02	-	-	5,332.05
SHS-15***	5,366.21	47.78	33.00	-	-	5,333.21	33.93	-	-	5,332.28
SHS-16	5,362.58	42.20	32.68	-	-	5,329.90	31.54	-	-	5,331.04
SHS-17	5,364.35	46.21	32.63	-	-	5,331.72	33.42	-	-	5,330.93
SHS-18	5,373.64	47.36	39.24	-	-	5,334.40	40.03	-	-	5,333.61
SHS-19	5,378.89	52.40	37.77	-	-	5,341.12	38.25	-	-	5,340.64

Notes:
BTOC - below top of casing
D - designates that the well screen is deep
GWEL - groundwater elevation
NM - not measured
P&A - plugged and abandoned
PSH - phase-separated hydrocarbon
S - designates that the well screen is shallow
* Top-of-casing elevation is unknown
** Well is damaged by a tree root
*** Well was paved over in June 2010
**** Well hit by a vehicle May 2014
***** Well visibly broken/buried January 2016
****** Well buried and unable to locate May 2016
- indicates no GWEL or PSH measured
When PSH is detected, the GWEL is corrected using an estimated density correction factor of 0.88.

TABLE 2
2018 ANNUAL COMPLIANCE - GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Analyte	NMWQCC Standard	Unit	GRW-3 11-Oct	GRW-6 12-Oct	GBR-17 12-Oct	GBR-24D 15-Oct	GBR-30 15-Oct	GBR-31 15-Oct	GBR-32 15-Oct	GBR-48 15-Oct	GBR-49 15-Oct	GBR-50 15-Oct	GBR-51 11-Oct	GBR-52 12-Oct	SHS-8 11-Oct
USEPA Method 8260B - Volatiles															
benzene	**10**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**750**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**750**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	**620**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**10**	µg/L	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
naphthalene	**NE**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1-methylnaphthalene	**NE**	µg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
2-methylnaphthalene	**NE**	µg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	**NE**	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
bromobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	**NE**	µg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	**NE**	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	**NE**	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**10**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	**NE**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	**NE**	µg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-DCE	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	**NE**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	**NE**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	**NE**	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1.0
isopropylbenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	**NE**	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**100**	µg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	**NE**	µg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	**NE**	µg/L	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	**NE**	µg/L	3.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

TABLE 2
2018 ANNUAL COMPLIANCE - GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Analyte	NMWQCC Standard	Unit	GRW-3 11-Oct	GRW-6 12-Oct	GBR-17 12-Oct	GBR-24D 15-Oct	GBR-30 15-Oct	GBR-31 15-Oct	GBR-32 15-Oct	GBR-48 15-Oct	GBR-49 15-Oct	GBR-50 15-Oct	GBR-51 11-Oct	GBR-52 12-Oct	SHS-8 11-Oct
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-DCE	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**60**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**10**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	**NE**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	**NE**	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**1**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 8270C: Polycylic Aromatic Hydrocarbons															
naphthalene	**30**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
1-methylnaphthalene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
2-methylnaphthalene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
acenaphthylene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
acenaphthene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
fluorene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	0.96	NT	NT	NT	NT	NT	NT	NT
phenanthrene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
anthracene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
fluoranthene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
pyrene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
benz(a)anthracene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
chrysene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
benzo(b)fluoranthene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
benzo(k)fluoranthene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
benzo(a)pyrene	**0.7**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
dibenz(a,h)anthracene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
benzo(g,h,i)perylene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
indeno(1,2,3-cd)pyrene	**NE**	µg/L	<10	<0.50	<0.50	<0.50	<0.50	<0.50	NT	NT	NT	NT	NT	NT	NT
USEPA Method 300.0: Anions															
bromide	**NE**	mg/L	0.51	<0.50	0.15	0.60	0.77	1.1	0.47	0.79	0.47	0.24	0.26	0.28	0.84
chloride	**250**	mg/L	99	100	49	130	250	220	200	**300**	180	59	54	54	130
sulfate	**600**	mg/L	**640**	**1,300**	**1,200**	**2,300**	**1,500**	**1,400**	**1,700**	**1,800**	**1,800**	**1,700**	**1,300**	**1,500**	**890**
fluoride	**1.6**	mg/L	<0.50	1.1	0.64	0.92	0.62	0.50	0.39	0.34	0.52	0.60	0.33	0.71	<0.50
nitrate + nitrite as N	**NE**	mg/L	<0.50	<0.50	5.4	<0.10	<0.10	<0.10	0.65	2.7	0.84	6.9	7.1	6.9	<0.50
phosphorus, orthophosphate (As P)	**NE**	mg/L	<2.5	<2.5	<10	<10	<10	<0.50	<10	<10	<10	<10	<10	<10	<2.5
USEPA Method 200.7: Total Metals															
barium	**NE**	mg/L	NT	NT	NT	NT	NT	NT	0.021	0.13	0.22	0.023	NT	NT	NT
beryllium	**NE**	mg/L	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020	<0.0020	<0.0020	NT	NT	NT
cadmium	**0.01**	mg/L	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020	<0.0020	<0.0020	NT	NT	NT
calcium	**NE**	mg/L	230	430	440	460	480	440	430	500	420	460	420	440	300
chromium	**0.05**	mg/L	NT	NT	NT	NT	NT	NT	**0.074**	0.036	**1.2**	0.044	NT	NT	NT
iron	**1.0**	mg/L	**18**	**890**	**100**	**9.1**	**28**	**13**	**2.7**	**18**	**23**	**4.0**	0.059	0.12	**50**
magnesium	**NE**	mg/L	57	41	47	41	43	42	42	50	39	35	30	32	48
manganese	**0.2**	mg/L	**0.80**	**45**	**3.0**	**1.8**	**0.76**	**3.1**	**1.9**	**0.49**	**0.98**	0.13	<0.0020	0.0028	**3.1**
nickel	**0.2**	mg/L	NT	NT	NT	NT	NT	NT	0.086	0.067	**0.39**	0.035	NT	NT	NT
potassium	**NE**	mg/L	1.1	2.2	6.9	7.5	5.1	2.9	2.0	5.7	4.9	2.2	<1.0	<1.0	3.3
silver	**0.05**	mg/L	NT	NT	NT	NT	NT	NT	0.011	0.0094	0.0072	0.011	NT	NT	NT
sodium	**NE**	mg/L	500	390	260	660	420	390	490	550	440	340	290	310	540
zinc	**10**	mg/L	NT	NT	NT	NT	NT	NT	0.012	0.040	0.14	0.015	NT	NT	NT
USEPA Method 200.8: Total Metals															
antimony	**NE**	mg/L	NT	NT	NT	NT	NT	NT	<0.0010	<0.0010	<0.0010	<0.0010	NT	NT	NT

TABLE 2
2018 ANNUAL COMPLIANCE - GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Analyte	NMWQCC Standard	Unit	GRW-3 11-Oct	GRW-6 12-Oct	GBR-17 12-Oct	GBR-24D 15-Oct	GBR-30 15-Oct	GBR-31 15-Oct	GBR-32 15-Oct	GBR-48 15-Oct	GBR-49 15-Oct	GBR-50 15-Oct	GBR-51 11-Oct	GBR-52 12-Oct	SHS-8 11-Oct
arsenic	**0.1**	mg/L	NT	NT	NT	NT	NT	NT	0.0025	0.0054	0.012	0.0032	NT	NT	NT
copper	**1.0**	mg/L	NT	NT	NT	NT	NT	NT	0.0047	0.018	0.032	0.0036	NT	NT	NT
lead	**0.05**	mg/L	NT	NT	NT	NT	NT	NT	0.00096	0.011	0.015	0.0021	NT	NT	NT
selenium	**0.05**	mg/L	NT	NT	NT	NT	NT	NT	0.0010	0.0088	0.0048	0.0066	NT	NT	NT
thallium	**NE**	mg/L	NT	NT	NT	NT	NT	NT	<0.00050	<0.00050	<0.00050	<0.00050	NT	NT	NT
USEPA Method 245.1: Mercury															
mercury	**0.002**	mg/L	NT	NT	NT	NT	NT	NT	<0.00020	<0.00020	<0.00020	<0.00020	NT	NT	NT
SM 2340B: Hardness															
hardness (as CaCO3)	**NE**	mg/L	820	1200	1300	1,300	1,400	1,300	1,300	1,500	1,200	1,300	1,200	1,200	940
USEPA Method SM 2320B:															
alkalinity, total (As CaCO3)	**NE**	mg/L CaCO3	948.4	363.5	214.7	224.2	256.9	325.6	275.4	286.4	210.6	187.6	196.9	210.2	815.8
carbonate	**NE**	mg/L CaCO3	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000
bicarbonate	**NE**	mg/L CaCO3	948.4	363.5	214.7	224.2	256.9	325.6	275.4	286.4	210.6	187.6	196.9	210.2	815.8
USEPA Method 120.1:															
specific conductance	**NE**	µmhos/cm	2,900	3,000	2,400	4,300	3,400	3,300	3,700	4,100	3,600	3,000	2,700	2,800	3,200
USEPA Method SM4500-H+B: pH															
pH	**6-9**	pH units	7.53	7.55	7.63	7.68	7.59	7.57	7.71	7.57	7.24	7.58	7.51	7.53	7.63
USEPA Method SM2540C Modified: Total Dissolved Solids															
total dissolved solids	**1,000**	mg/L	**2,190**	**2,390**	**2,180**	**3,780**	**3,000**	**2,660**	**3,110**	**3,580**	**3,010**	**2,770**	**2,330**	**2,580**	**2,730**

Notes:
µg/L - micrograms per liter
BOLD - indicates concentration exceeds the NMWQCC standard
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
NT - not tested
USEPA - United States Environmental Protection Agency

TABLE 3
2018 SHS WELL CLOSURE SAMPLING - GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Analyte	NMWQCC Standard	Unit	SHS-6	SHS-8	SHS-9	SHS-13	SHS-14	SHS-15	SHS-16	SHS-17	SHS-18	SHS-19
			23-Jan	23-Jan	23-Jan	22-Jan	22-Jan	23-Jan	22-Jan	22-Jan	23-Jan	23-Jan
USEPA Method 8015M/D - Diesel Range												
Diesel Range Organics (DRO)	**NE**	mg/L	<0.20	5.8	13	1.2	<1.0	<0.20	<1.0	<1.0	<0.20	0.32
Motor Oil Range Organics (MRO)	**NE**	mg/L	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<5.0	<5.0	<2.5	<2.5
USEPA Method 8015D - Gasoline Range												
Gasoline Range Organics (GRO)	**NE**	mg/L	<0.05	<0.050	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
USEPA Method 8260B - Volatiles												
benzene	**10**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**750**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**750**	µg/L	<1.0	<1.0	32	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	**620**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**10**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
naphthalene	**NE**	µg/L	<2.0	<2.0	5.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1-methylnaphthalene	**NE**	µg/L	<4.0	<4.0	12	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
2-methylnaphthalene	**NE**	µg/L	<4.0	<4.0	<10	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	**NE**	µg/L	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10
bromobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	**NE**	µg/L	<3.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	**NE**	µg/L	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	**NE**	µg/L	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**10**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	**NE**	µg/L	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	**NE**	µg/L	<3.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-DCE	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	**NE**	µg/L	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	**NE**	µg/L	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	**NE**	µg/L	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	**NE**	µg/L	<1.0	<1.0	6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 3
2018 SHS WELL CLOSURE SAMPLING - GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Analyte	NMWQCC Standard	Unit	SHS-6	SHS-8	SHS-9	SHS-13	SHS-14	SHS-15	SHS-16	SHS-17	SHS-18	SHS-19
			23-Jan	23-Jan	23-Jan	22-Jan	22-Jan	23-Jan	22-Jan	22-Jan	23-Jan	23-Jan
4-isopropytoluene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	**NE**	µg/L	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**100**	µg/L	<3.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	**NE**	µg/L	<3.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	**NE**	µg/L	<1.0	<1.0	8.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	**NE**	µg/L	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
1,1,1,2-tetrachloroethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-DCE	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**60**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**10**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**100**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	**NE**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	**NE**	µg/L	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**1**	µg/L	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.5	<1.5	<3.8	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5

Notes:
mg/L - miligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
USEPA - United States Environmental Protection Agency
µg/L - micrograms per liter

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

January 30, 2018

Devin Hencmann

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GBR SHS Well Sampling OrderNo.: 1801A53

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 4 sample(s) on 1/23/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-16
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 12:15:00 PM
Lab ID: 1801A53-001 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/25/2018 2:21:13 PM	36184
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/25/2018 2:21:13 PM	36184
Surr: DNOP	111	77.5-161		%Rec	1	1/25/2018 2:21:13 PM	36184
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 12:08:47 PM	G48661
Surr: BFB	92.5	69.3-150		%Rec	1	1/24/2018 12:08:47 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 1:18:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 1:18:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 1:18:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-16
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 12:15:00 PM
Lab ID: 1801A53-001 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 1:18:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 1:18:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 1:18:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 1:18:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	85.9	70-130		%Rec	1	1/27/2018 1:18:00 AM	B48749
Surr: 4-Bromofluorobenzene	80.4	70-130		%Rec	1	1/27/2018 1:18:00 AM	B48749
Surr: Dibromofluoromethane	86.8	70-130		%Rec	1	1/27/2018 1:18:00 AM	B48749
Surr: Toluene-d8	88.8	70-130		%Rec	1	1/27/2018 1:18:00 AM	B48749

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

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-17
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 1:30:00 PM
Lab ID: 1801A53-002 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/25/2018 3:44:09 PM	36184
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/25/2018 3:44:09 PM	36184
Surr: DNOP	109	77.5-161		%Rec	1	1/25/2018 3:44:09 PM	36184
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 12:32:52 PM	G48661
Surr: BFB	94.0	69.3-150		%Rec	1	1/24/2018 12:32:52 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 1:41:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 1:41:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 1:41:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749

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

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-17
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 1:30:00 PM
Lab ID: 1801A53-002 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 1:41:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 1:41:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 1:41:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 1:41:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	85.1	70-130		%Rec	1	1/27/2018 1:41:00 AM	B48749
Surr: 4-Bromofluorobenzene	79.2	70-130		%Rec	1	1/27/2018 1:41:00 AM	B48749
Surr: Dibromofluoromethane	87.3	70-130		%Rec	1	1/27/2018 1:41:00 AM	B48749
Surr: Toluene-d8	89.8	70-130		%Rec	1	1/27/2018 1:41:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-13
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 2:15:00 PM
Lab ID: 1801A53-003 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	1.2	1.0		mg/L	1	1/25/2018 4:12:02 PM	36184
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/25/2018 4:12:02 PM	36184
Surr: DNOP	108	77.5-161		%Rec	1	1/25/2018 4:12:02 PM	36184
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 12:56:36 PM	G48661
Surr: BFB	90.0	69.3-150		%Rec	1	1/24/2018 12:56:36 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 2:04:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 2:04:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 2:04:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-13
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 2:15:00 PM
Lab ID: 1801A53-003 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 2:04:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 2:04:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 2:04:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 2:04:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	83.8	70-130		%Rec	1	1/27/2018 2:04:00 AM	B48749
Surr: 4-Bromofluorobenzene	78.5	70-130		%Rec	1	1/27/2018 2:04:00 AM	B48749
Surr: Dibromofluoromethane	87.1	70-130		%Rec	1	1/27/2018 2:04:00 AM	B48749
Surr: Toluene-d8	88.3	70-130		%Rec	1	1/27/2018 2:04:00 AM	B48749

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-14
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 3:30:00 PM
Lab ID: 1801A53-004 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/25/2018 4:39:34 PM	36184
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/25/2018 4:39:34 PM	36184
Surr: DNOP	113	77.5-161		%Rec	1	1/25/2018 4:39:34 PM	36184
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 1:20:29 PM	G48661
Surr: BFB	93.2	69.3-150		%Rec	1	1/24/2018 1:20:29 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 3:12:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 3:12:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 3:12:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-14
Project: GBR SHS Well Sampling **Collection Date:** 1/22/2018 3:30:00 PM
Lab ID: 1801A53-004 **Matrix:** AQUEOUS **Received Date:** 1/23/2018 6:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 3:12:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 3:12:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 3:12:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 3:12:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	85.3	70-130		%Rec	1	1/27/2018 3:12:00 AM	B48749
Surr: 4-Bromofluorobenzene	78.2	70-130		%Rec	1	1/27/2018 3:12:00 AM	B48749
Surr: Dibromofluoromethane	87.6	70-130		%Rec	1	1/27/2018 3:12:00 AM	B48749
Surr: Toluene-d8	90.2	70-130		%Rec	1	1/27/2018 3:12:00 AM	B48749

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A53**

31-Jan-18

Client: Western Refining Southwest, Inc.

Project: GBR SHS Well Sampling

Sample ID	**LCS-36184**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range**				
Client ID:	**LCSW**	Batch ID:	**36184**		RunNo:	**48690**				
Prep Date:	**1/24/2018**	Analysis Date:	**1/25/2018**		SeqNo:	**1566253**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	115	92.3	135			
Surr: DNOP	0.54		0.5000		108	77.5	161			

Sample ID	**MB-36184**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range**				
Client ID:	**PBW**	Batch ID:	**36184**		RunNo:	**48690**				
Prep Date:	**1/24/2018**	Analysis Date:	**1/25/2018**		SeqNo:	**1566254**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		104	77.5	161			

Sample ID	**1801A53-001BMS**	SampType:	**MS**		TestCode:	**EPA Method 8015M/D: Diesel Range**				
Client ID:	**SHS-16**	Batch ID:	**36184**		RunNo:	**48690**				
Prep Date:	**1/24/2018**	Analysis Date:	**1/25/2018**		SeqNo:	**1566503**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	83.3	151			
Surr: DNOP	0.55		0.5000		111	77.5	161			

Sample ID	**1801A53-001BMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8015M/D: Diesel Range**				
Client ID:	**SHS-16**	Batch ID:	**36184**		RunNo:	**48690**				
Prep Date:	**1/24/2018**	Analysis Date:	**1/25/2018**		SeqNo:	**1566504**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.9	1.0	5.000	0	118	83.3	151	1.50	20	
Surr: DNOP	0.56		0.5000		112	77.5	161	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A53**
31-Jan-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G48661**	RunNo: **48661**
Prep Date:	Analysis Date: **1/24/2018**	SeqNo: **1565743** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		89.0	69.3	150			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G48661**	RunNo: **48661**
Prep Date:	Analysis Date: **1/24/2018**	SeqNo: **1565744** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0	90.3	75.8	123			
Surr: BFB	19		20.00		94.6	69.3	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A53**

31-Jan-18

Client: Western Refining Southwest, Inc.

Project: GBR SHS Well Sampling

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568655** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.1	70	130			
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.0	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		80.5	70	130			
Surr: Dibromofluoromethane	8.8		10.00		88.0	70	130			
Surr: Toluene-d8	9.0		10.00		90.4	70	130			

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A53**
31-Jan-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A53**

31-Jan-18

Client: Western Refining Southwest, Inc.

Project: GBR SHS Well Sampling

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		86.6	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		79.6	70	130			
Surr: Dibromofluoromethane	8.8		10.00		88.2	70	130			
Surr: Toluene-d8	8.8		10.00		88.2	70	130			

Sample ID **1801a53-003ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **SHS-13**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/27/2018**	SeqNo: **1568666** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	96.7	70	130			
Surr: 1,2-Dichloroethane-d4	8.6		10.00		86.0	70	130			
Surr: 4-Bromofluorobenzene	7.9		10.00		79.0	70	130			
Surr: Dibromofluoromethane	8.7		10.00		86.6	70	130			
Surr: Toluene-d8	8.9		10.00		89.2	70	130			

Sample ID **1801a53-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **SHS-13**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/27/2018**	SeqNo: **1568667** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.1	70	130	3.13	20	
Toluene	20	1.0	20.00	0	101	70	130	2.09	20	
Chlorobenzene	20	1.0	20.00	0	101	70	130	3.59	20	
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130	0.772	20	
Trichloroethene (TCE)	19	1.0	20.00	0	94.9	70	130	1.79	20	
Surr: 1,2-Dichloroethane-d4	8.4		10.00		84.3	70	130	0	0	
Surr: 4-Bromofluorobenzene	8.1		10.00		81.3	70	130	0	0	
Surr: Dibromofluoromethane	8.6		10.00		85.9	70	130	0	0	
Surr: Toluene-d8	9.0		10.00		89.8	70	130	0	0	

Qualifiers:

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

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: 1801A53 RcptNo: 1

Received By: **Anne Thorne** 1/23/2018 6:55:00 AM

Completed By: **Dennis Suazo** 1/23/2018 10:43:54 AM

Reviewed By: SRE 01/23/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑

    # of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

    Adjusted? _____
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

    Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

    Person Notified: _____ Date: _____

    By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

    Regarding: _____

    Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Not Present			

Chain-of-Custody Record

Client: Allen Hains
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: 505-632-8613
email or Fax#: allen.s.hains@andeavor.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GBR SHS Well Sampling
Project #: ITE: WR1007 | Western PO: 12623210
Project Manager: Derik Hennmann
Sampler: Josh Adams
On Ice: ☑ Yes ☐ No
Sample Temperature: 2.4-CF-1.0=1.4

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8260 VOC	TPH GRO	TPH DRO Ext		Air Bubbles (Y or N)
1-22-18	1215	GW	SHS-16	5 VOA + 3 amber	HCl, NaOH	001												X	X	X		
	1330		SHS-17			002												X	X	X		
	1415		SHS-13			003												X	X	X		
↓	1530	↓	SHS-14	↓	↓	004												X	X	X		

Date	Time	Relinquished by:	Received by:	Date	Time
1-22-18	1625	Josh Adams			
1-22-18	1904	Christa Watts		01/23/18	0655

Remarks:
Bill western
cc: dhenmann@ltenv.com

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 06, 2018

Devin Hencmann

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

RE: GBR SHS Well Sampling OrderNo.: 1801A88

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 6 sample(s) on 1/24/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 31, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-15
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 11:30:00 AM
Lab ID: 1801A88-001 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	1/25/2018 3:15:10 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 3:15:10 PM	36182
Surr: DNOP	123	79.2-146		%Rec	1	1/25/2018 3:15:10 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 1:44:22 PM	G48661
Surr: BFB	92.5	69.3-150		%Rec	1	1/24/2018 1:44:22 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 5:06:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 5:06:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 5:06:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-15
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 11:30:00 AM
Lab ID: 1801A88-001 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 5:06:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 5:06:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 5:06:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 5:06:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	85.0	70-130		%Rec	1	1/27/2018 5:06:00 AM	B48749
Surr: 4-Bromofluorobenzene	79.8	70-130		%Rec	1	1/27/2018 5:06:00 AM	B48749
Surr: Dibromofluoromethane	88.0	70-130		%Rec	1	1/27/2018 5:06:00 AM	B48749
Surr: Toluene-d8	89.1	70-130		%Rec	1	1/27/2018 5:06:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-18
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 12:30:00 PM
Lab ID: 1801A88-002 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	1/25/2018 4:21:24 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 4:21:24 PM	36182
Surr: DNOP	128	79.2-146		%Rec	1	1/25/2018 4:21:24 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 2:08:16 PM	G48661
Surr: BFB	92.4	69.3-150		%Rec	1	1/24/2018 2:08:16 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 5:29:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 5:29:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 5:29:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-18
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 12:30:00 PM
Lab ID: 1801A88-002 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 5:29:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 5:29:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 5:29:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 5:29:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	84.9	70-130		%Rec	1	1/27/2018 5:29:00 AM	B48749
Surr: 4-Bromofluorobenzene	79.0	70-130		%Rec	1	1/27/2018 5:29:00 AM	B48749
Surr: Dibromofluoromethane	86.7	70-130		%Rec	1	1/27/2018 5:29:00 AM	B48749
Surr: Toluene-d8	88.3	70-130		%Rec	1	1/27/2018 5:29:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-9
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 1:15:00 PM
Lab ID: 1801A88-003 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	13	0.20		mg/L	1	1/25/2018 4:43:40 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 4:43:40 PM	36182
Surr: DNOP	98.3	79.2-146		%Rec	1	1/25/2018 4:43:40 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.38	0.25		mg/L	5	1/25/2018 10:19:50 AM	G48661
Surr: BFB	112	69.3-150		%Rec	5	1/25/2018 10:19:50 AM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Toluene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Ethylbenzene	32	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2,4-Trimethylbenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,3,5-Trimethylbenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Naphthalene	5.1	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1-Methylnaphthalene	12	10	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
2-Methylnaphthalene	ND	10	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Acetone	ND	25	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Bromobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Bromodichloromethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Bromoform	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Bromomethane	ND	7.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
2-Butanone	ND	25	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Carbon disulfide	ND	25	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Carbon Tetrachloride	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Chlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Chloroethane	ND	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Chloroform	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Chloromethane	ND	7.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
2-Chlorotoluene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
4-Chlorotoluene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
cis-1,2-DCE	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
cis-1,3-Dichloropropene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Dibromochloromethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Dibromomethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2-Dichlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-9
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 1:15:00 PM
Lab ID: 1801A88-003 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,4-Dichlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Dichlorodifluoromethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1-Dichloroethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1-Dichloroethene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2-Dichloropropane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,3-Dichloropropane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
2,2-Dichloropropane	ND	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1-Dichloropropene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Hexachlorobutadiene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
2-Hexanone	ND	25	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Isopropylbenzene	6.6	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
4-Isopropyltoluene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
4-Methyl-2-pentanone	ND	25	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Methylene Chloride	ND	7.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
n-Butylbenzene	ND	7.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
n-Propylbenzene	8.4	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
sec-Butylbenzene	2.8	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Styrene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
tert-Butylbenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Tetrachloroethene (PCE)	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
trans-1,2-DCE	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
trans-1,3-Dichloropropene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2,3-Trichlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2,4-Trichlorobenzene	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1,1-Trichloroethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,1,2-Trichloroethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Trichloroethene (TCE)	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Trichlorofluoromethane	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
1,2,3-Trichloropropane	ND	5.0	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Vinyl chloride	ND	2.5	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Xylenes, Total	ND	3.8	D	µg/L	5	1/27/2018 5:52:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	82.6	70-130	D	%Rec	5	1/27/2018 5:52:00 AM	B48749
Surr: 4-Bromofluorobenzene	83.3	70-130	D	%Rec	5	1/27/2018 5:52:00 AM	B48749
Surr: Dibromofluoromethane	85.8	70-130	D	%Rec	5	1/27/2018 5:52:00 AM	B48749
Surr: Toluene-d8	89.7	70-130	D	%Rec	5	1/27/2018 5:52:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-8
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 1:45:00 PM
Lab ID: 1801A88-004 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	5.8	0.20		mg/L	1	1/25/2018 5:05:47 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 5:05:47 PM	36182
Surr: DNOP	124	79.2-146		%Rec	1	1/25/2018 5:05:47 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 4:14:35 PM	G48661
Surr: BFB	96.9	69.3-150		%Rec	1	1/24/2018 4:14:35 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 6:14:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 6:14:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 6:14:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-8
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 1:45:00 PM
Lab ID: 1801A88-004 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 6:14:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 6:14:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 6:14:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 6:14:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	83.8	70-130		%Rec	1	1/27/2018 6:14:00 AM	B48749
Surr: 4-Bromofluorobenzene	80.9	70-130		%Rec	1	1/27/2018 6:14:00 AM	B48749
Surr: Dibromofluoromethane	86.5	70-130		%Rec	1	1/27/2018 6:14:00 AM	B48749
Surr: Toluene-d8	88.4	70-130		%Rec	1	1/27/2018 6:14:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-6
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 2:40:00 PM
Lab ID: 1801A88-005 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	1/25/2018 5:27:50 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 5:27:50 PM	36182
Surr: DNOP	118	79.2-146		%Rec	1	1/25/2018 5:27:50 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 4:38:38 PM	G48661
Surr: BFB	94.4	69.3-150		%Rec	1	1/24/2018 4:38:38 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 6:37:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 6:37:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 6:37:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-6
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 2:40:00 PM
Lab ID: 1801A88-005 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 6:37:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 6:37:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
tert-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 6:37:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 6:37:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	83.8	70-130		%Rec	1	1/27/2018 6:37:00 AM	B48749
Surr: 4-Bromofluorobenzene	80.7	70-130		%Rec	1	1/27/2018 6:37:00 AM	B48749
Surr: Dibromofluoromethane	86.6	70-130		%Rec	1	1/27/2018 6:37:00 AM	B48749
Surr: Toluene-d8	87.8	70-130		%Rec	1	1/27/2018 6:37:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-19
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 3:30:00 PM
Lab ID: 1801A88-006 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	0.32	0.20		mg/L	1	1/25/2018 5:49:55 PM	36182
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	1/25/2018 5:49:55 PM	36182
Surr: DNOP	118	79.2-146		%Rec	1	1/25/2018 5:49:55 PM	36182
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/24/2018 5:02:43 PM	G48661
Surr: BFB	97.6	69.3-150		%Rec	1	1/24/2018 5:02:43 PM	G48661
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Toluene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Ethylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Naphthalene	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
2-Methylnaphthalene	ND	4.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Acetone	ND	10		µg/L	1	1/27/2018 7:00:00 AM	B48749
Bromobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Bromodichloromethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Bromoform	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Bromomethane	ND	3.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
2-Butanone	ND	10		µg/L	1	1/27/2018 7:00:00 AM	B48749
Carbon disulfide	ND	10		µg/L	1	1/27/2018 7:00:00 AM	B48749
Carbon Tetrachloride	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Chlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Chloroethane	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Chloroform	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Chloromethane	ND	3.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
2-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
4-Chlorotoluene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
cis-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Dibromochloromethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Dibromomethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-19
Project: GBR SHS Well Sampling **Collection Date:** 1/23/2018 3:30:00 PM
Lab ID: 1801A88-006 **Matrix:** GROUNDWA **Received Date:** 1/24/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1-Dichloroethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1-Dichloroethene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,3-Dichloropropane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
2,2-Dichloropropane	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Hexachlorobutadiene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
2-Hexanone	ND	10		µg/L	1	1/27/2018 7:00:00 AM	B48749
Isopropylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
4-Isopropyltoluene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
4-Methyl-2-pentanone	ND	10		µg/L	1	1/27/2018 7:00:00 AM	B48749
Methylene Chloride	ND	3.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
n-Butylbenzene	ND	3.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
n-Propylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
sec-Butylbenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Styrene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
tert-Butylbenzene	1.5	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
trans-1,2-DCE	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Trichlorofluoromethane	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Vinyl chloride	ND	1.0		µg/L	1	1/27/2018 7:00:00 AM	B48749
Xylenes, Total	ND	1.5		µg/L	1	1/27/2018 7:00:00 AM	B48749
Surr: 1,2-Dichloroethane-d4	85.3	70-130		%Rec	1	1/27/2018 7:00:00 AM	B48749
Surr: 4-Bromofluorobenzene	81.1	70-130		%Rec	1	1/27/2018 7:00:00 AM	B48749
Surr: Dibromofluoromethane	87.7	70-130		%Rec	1	1/27/2018 7:00:00 AM	B48749
Surr: Toluene-d8	88.8	70-130		%Rec	1	1/27/2018 7:00:00 AM	B48749

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A88**
06-Feb-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **1801A88-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **SHS-15**	Batch ID: **36182**	RunNo: **48688**
Prep Date: **1/24/2018**	Analysis Date: **1/25/2018**	SeqNo: **1566496** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.20	2.500	0	117	89.6	145			
Surr: DNOP	0.29		0.2500		114	79.2	146			

Sample ID **1801A88-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **SHS-15**	Batch ID: **36182**	RunNo: **48688**
Prep Date: **1/24/2018**	Analysis Date: **1/25/2018**	SeqNo: **1566497** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.20	2.500	0	119	89.6	145	2.31	20	
Surr: DNOP	0.28		0.2500		113	79.2	146	0	0	

Sample ID **LCS-36182**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **36182**	RunNo: **48688**
Prep Date: **1/24/2018**	Analysis Date: **1/25/2018**	SeqNo: **1566498** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.3	0.20	2.500	0	90.8	76.5	158			
Surr: DNOP	0.23		0.2500		93.7	79.2	146			

Sample ID **MB-36182**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **36182**	RunNo: **48688**
Prep Date: **1/24/2018**	Analysis Date: **1/25/2018**	SeqNo: **1566499** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.60		0.5000		120	79.2	146			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A88**
06-Feb-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G48661**	RunNo: **48661**
Prep Date:	Analysis Date: **1/24/2018**	SeqNo: **1565743** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		89.0	69.3	150			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G48661**	RunNo: **48661**
Prep Date:	Analysis Date: **1/24/2018**	SeqNo: **1565744** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0	90.3	75.8	123			
Surr: BFB	19		20.00		94.6	69.3	150			

Sample ID **1801A88-003AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SHS-9**	Batch ID: **G48661**	RunNo: **48707**
Prep Date:	Analysis Date: **1/25/2018**	SeqNo: **1566585** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	2.7	0.25	2.500	0.3800	93.4	52.5	149			
Surr: BFB	120		100.0		119	69.3	150			

Sample ID **1801A88-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SHS-9**	Batch ID: **G48661**	RunNo: **48707**
Prep Date:	Analysis Date: **1/25/2018**	SeqNo: **1566586** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	2.7	0.25	2.500	0.3800	92.7	52.5	149	160	20	R
Surr: BFB	120		100.0		119	69.3	150	0	0	

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A88**
06-Feb-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568655** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.1	70	130			
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.0	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		80.5	70	130			
Surr: Dibromofluoromethane	8.8		10.00		88.0	70	130			
Surr: Toluene-d8	9.0		10.00		90.4	70	130			

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

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

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A88**
06-Feb-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

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

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1801A88**
06-Feb-18

Client: Western Refining Southwest, Inc.
Project: GBR SHS Well Sampling

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B48749**	RunNo: **48749**
Prep Date:	Analysis Date: **1/26/2018**	SeqNo: **1568656** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		86.6	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		79.6	70	130			
Surr: Dibromofluoromethane	8.8		10.00		88.2	70	130			
Surr: Toluene-d8	8.8		10.00		88.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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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: 1801A88 RcptNo: 1

Received By: Anne Thorne 1/24/2018 7:00:00 AM Anne Thorne
Completed By: Anne Thorne 1/24/2018 8:48:49 AM Anne Thorne
Reviewed By: JMO 1/24/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

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

Chain-of-Custody Record

Client: Allen Hains
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #: 505-632-8013
email or Fax#: allen.s.hains@andeavor.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GBR SHS well sampling
Project #: Western PO = 12623210
Project Manager: Devin Hencmann
Sampler:
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.6

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8260 VOC	TPH GRO	TPH DRO extended	Air Bubbles (Y or N)
1-23-18	1130	GW	SHS-15	5 VOA's 1 250 amber	HCl, ice	1801A88 001												X	X	X	
	1230		SHS-18			002												X	X	X	
	1315		SHS-9			003												X	X	X	
	1345		SHS-8			004												X	X	X	
	1440		SHS-6			005												X	X	X	
	1530		SHS-A			006												X	X	X	

Date	Time	Relinquished by	Received by	Date	Time
1-23-18	1600			1/23/18	1600
1/23/18	1720			01/24/18	0700

Remarks: Bill western PO
cc: dhencmann@ltenv.com

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

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

October 30, 2018

Devin Hencmann

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GBR Annual Sampling OrderNo.: 1810743

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/12/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-8
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 12:35:00 PM
Lab ID: 1810743-001 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	940	6.6		mg/L	1	10/24/2018	R55135
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	ND	0.50		mg/L	5	10/12/2018 6:00:54 PM	R54864
Chloride	130	10		mg/L	20	10/12/2018 6:13:44 PM	R54864
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	10/12/2018 6:00:54 PM	R54864
Bromide	0.84	0.50		mg/L	5	10/12/2018 6:00:54 PM	R54864
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	10/12/2018 6:00:54 PM	R54864
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	10/12/2018 6:00:54 PM	R54864
Sulfate	890	10	*	mg/L	20	10/12/2018 6:13:44 PM	R54864
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3200	5.0		µmhos/c	1	10/18/2018 5:24:28 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	815.8	20.00		mg/L Ca	1	10/18/2018 5:24:28 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 5:24:28 PM	R55027
Total Alkalinity (as CaCO3)	815.8	20.00		mg/L Ca	1	10/18/2018 5:24:28 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2730	200	*D	mg/L	1	10/17/2018 6:17:00 PM	41026
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.63		H	pH units	1	10/18/2018 5:24:28 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	300	10		mg/L	10	10/24/2018 5:49:33 PM	41058
Iron	50	2.0	*	mg/L	100	10/24/2018 5:56:48 PM	41058
Magnesium	48	1.0		mg/L	1	10/18/2018 12:10:06 AM	41058
Manganese	3.1	0.020	*	mg/L	10	10/24/2018 5:49:33 PM	41058
Potassium	3.3	1.0		mg/L	1	10/18/2018 12:10:06 AM	41058
Sodium	540	10		mg/L	10	10/24/2018 5:49:33 PM	41058
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-8
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 12:35:00 PM
Lab ID: 1810743-001 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 5:49:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 5:49:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 5:49:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 5:49:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 5:49:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SHS-8
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 12:35:00 PM
Lab ID: 1810743-001 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
sec-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
tert-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 5:49:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 5:49:00 PM	R54984
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/18/2018 5:49:00 PM	R54984
Surr: 4-Bromofluorobenzene	99.4	70-130		%Rec	1	10/18/2018 5:49:00 PM	R54984
Surr: Dibromofluoromethane	102	70-130		%Rec	1	10/18/2018 5:49:00 PM	R54984
Surr: Toluene-d8	95.3	70-130		%Rec	1	10/18/2018 5:49:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-51
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 2:15:00 PM
Lab ID: 1810743-002 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1200	6.6		mg/L	1	10/24/2018	R55135
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.33	0.10		mg/L	1	10/12/2018 6:26:36 PM	R54864
Chloride	54	10		mg/L	20	10/12/2018 6:39:28 PM	R54864
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/12/2018 6:26:36 PM	R54864
Bromide	0.26	0.10		mg/L	1	10/12/2018 6:26:36 PM	R54864
Nitrogen, Nitrate (As N)	7.1	2.0		mg/L	20	10/12/2018 6:39:28 PM	R54864
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/12/2018 6:39:28 PM	R54864
Sulfate	1300	25	*	mg/L	50	10/23/2018 6:18:08 PM	R55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	2700	5.0		µmhos/c	1	10/18/2018 5:54:26 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	196.9	20.00		mg/L Ca	1	10/18/2018 5:54:26 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 5:54:26 PM	R55027
Total Alkalinity (as CaCO3)	196.9	20.00		mg/L Ca	1	10/18/2018 5:54:26 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2330	20.0	*	mg/L	1	10/17/2018 6:17:00 PM	41026
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.51		H	pH units	1	10/18/2018 5:54:26 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	420	10		mg/L	10	10/24/2018 5:58:49 PM	41058
Iron	0.059	0.020		mg/L	1	10/18/2018 12:12:08 AM	41058
Magnesium	30	1.0		mg/L	1	10/18/2018 12:12:08 AM	41058
Manganese	ND	0.0020		mg/L	1	10/18/2018 12:12:08 AM	41058
Potassium	ND	1.0		mg/L	1	10/18/2018 12:12:08 AM	41058
Sodium	290	10		mg/L	10	10/24/2018 5:58:49 PM	41058
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-51
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 2:15:00 PM
Lab ID: 1810743-002 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 6:12:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 6:12:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 6:12:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 6:12:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 6:12:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-51
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 2:15:00 PM
Lab ID: 1810743-002 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
sec-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
tert-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 6:12:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 6:12:00 PM	R54984
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	10/18/2018 6:12:00 PM	R54984
Surr: 4-Bromofluorobenzene	97.8	70-130		%Rec	1	10/18/2018 6:12:00 PM	R54984
Surr: Dibromofluoromethane	103	70-130		%Rec	1	10/18/2018 6:12:00 PM	R54984
Surr: Toluene-d8	95.9	70-130		%Rec	1	10/18/2018 6:12:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 3:40:00 PM
Lab ID: 1810743-003 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	820	6.6		mg/L	1	10/24/2018	R55135
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	ND	0.50		mg/L	5	10/12/2018 6:52:20 PM	R54864
Chloride	99	10		mg/L	20	10/12/2018 7:05:12 PM	R54864
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	10/12/2018 6:52:20 PM	R54864
Bromide	0.51	0.50		mg/L	5	10/12/2018 6:52:20 PM	R54864
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	10/12/2018 6:52:20 PM	R54864
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	10/12/2018 6:52:20 PM	R54864
Sulfate	640	10	*	mg/L	20	10/12/2018 7:05:12 PM	R54864
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	2900	5.0		µmhos/c	1	10/18/2018 6:14:44 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	948.4	20.00		mg/L Ca	1	10/18/2018 6:14:44 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 6:14:44 PM	R55027
Total Alkalinity (as CaCO3)	948.4	20.00		mg/L Ca	1	10/18/2018 6:14:44 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2190	100	*D	mg/L	1	10/17/2018 6:17:00 PM	41026
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.53		H	pH units	1	10/18/2018 6:14:44 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	230	10		mg/L	10	10/24/2018 6:00:43 PM	41058
Iron	18	1.0	*	mg/L	50	10/24/2018 6:02:20 PM	41058
Magnesium	57	1.0		mg/L	1	10/18/2018 12:14:21 AM	41058
Manganese	0.80	0.0020	*	mg/L	1	10/18/2018 12:14:21 AM	41058
Potassium	1.1	1.0		mg/L	1	10/18/2018 12:14:21 AM	41058
Sodium	500	10		mg/L	10	10/24/2018 6:00:43 PM	41058
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Acenaphthylene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Anthracene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Benz(a)anthracene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Benzo(a)pyrene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Benzo(b)fluoranthene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Benzo(g,h,i)perylene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Benzo(k)fluoranthene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Chrysene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 3:40:00 PM
Lab ID: 1810743-003 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Dibenz(a,h)anthracene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Fluoranthene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Fluorene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
1-Methylnaphthalene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
2-Methylnaphthalene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Naphthalene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Phenanthrene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Pyrene	ND	10		µg/L	1	10/18/2018 9:52:14 PM	40995
Surr: Nitrobenzene-d5	43.7	33.2-94		%Rec	1	10/18/2018 9:52:14 PM	40995
Surr: 2-Fluorobiphenyl	49.3	34-90.9		%Rec	1	10/18/2018 9:52:14 PM	40995
Surr: 4-Terphenyl-d14	75.8	15-149		%Rec	1	10/18/2018 9:52:14 PM	40995
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 6:36:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 6:36:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 6:36:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 3:40:00 PM
Lab ID: 1810743-003 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 6:36:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 6:36:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
sec-Butylbenzene	1.5	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
tert-Butylbenzene	3.6	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 6:36:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 6:36:00 PM	R54984

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
Project: GBR Annual Sampling **Collection Date:** 10/11/2018 3:40:00 PM
Lab ID: 1810743-003 **Matrix:** AQUEOUS **Received Date:** 10/12/2018 8:07:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Surr: 1,2-Dichloroethane-d4	99.4	70-130		%Rec	1	10/18/2018 6:36:00 PM	R54984
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	1	10/18/2018 6:36:00 PM	R54984
Surr: Dibromofluoromethane	102	70-130		%Rec	1	10/18/2018 6:36:00 PM	R54984
Surr: Toluene-d8	95.9	70-130		%Rec	1	10/18/2018 6:36:00 PM	R54984

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID	**MB-41058**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**PBW**	Batch ID:	**41058**	RunNo:	**54983**				
Prep Date:	**10/17/2018**	Analysis Date:	**10/17/2018**	SeqNo:	**1827394**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID	**LLLCS-41058**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41058**	RunNo:	**54983**				
Prep Date:	**10/17/2018**	Analysis Date:	**10/17/2018**	SeqNo:	**1827395**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	104	50	150			
Iron	0.025	0.020	0.02000	0	127	50	150			
Magnesium	ND	1.0	0.5000	0	99.2	50	150			
Manganese	0.0022	0.0020	0.002000	0	108	50	150			
Potassium	ND	1.0	0.5000	0	100	50	150			
Sodium	ND	1.0	0.5000	0	79.4	50	150			

Sample ID	**LCS-41058**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**LCSW**	Batch ID:	**41058**	RunNo:	**54983**				
Prep Date:	**10/17/2018**	Analysis Date:	**10/17/2018**	SeqNo:	**1827396**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	98.1	85	115			
Iron	0.50	0.020	0.5000	0	100	85	115			
Magnesium	48	1.0	50.00	0	96.7	85	115			
Manganese	0.50	0.0020	0.5000	0	101	85	115			
Potassium	48	1.0	50.00	0	95.2	85	115			
Sodium	48	1.0	50.00	0	96.1	85	115			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**
30-Oct-18

Client: Western Refining Southwest, Inc.
Project: GBR Annual Sampling

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R54864**	RunNo: **54864**
Prep Date:	Analysis Date: **10/12/2018**	SeqNo: **1823166** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R54864**	RunNo: **54864**
Prep Date:	Analysis Date: **10/12/2018**	SeqNo: **1823167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.4	90	110			
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	97.4	90	110			
Bromide	2.4	0.10	2.500	0	96.7	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	97.3	90	110			
Sulfate	9.5	0.50	10.00	0	94.7	90	110			

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1831988** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1831989** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	95.4	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827896** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.8	70	130			
Toluene	19	1.0	20.00	0	96.6	70	130			
Chlorobenzene	20	1.0	20.00	0	98.4	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	89.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.0	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.5	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.6	70	130			
Surr: Toluene-d8	9.5		10.00		95.4	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

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

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.5		10.00		94.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID **lcs-40995**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **40995**	RunNo: **54987**
Prep Date: **10/15/2018**	Analysis Date: **10/18/2018**	SeqNo: **1827975** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	72	10	100.0	0	71.9	55.1	104			
Pyrene	75	10	100.0	0	75.3	64.9	105			
Surr: 2-Fluorophenol	110		200.0		56.2	15	74.1			
Surr: Phenol-d5	110		200.0		57.0	15	59.8			
Surr: 2,4,6-Tribromophenol	140		200.0		69.2	22.1	112			
Surr: Nitrobenzene-d5	68		100.0		68.4	33.2	94			
Surr: 2-Fluorobiphenyl	67		100.0		67.5	34	90.9			
Surr: 4-Terphenyl-d14	78		100.0		77.6	15	149			

Sample ID **mb-40995**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **40995**	RunNo: **54987**
Prep Date: **10/15/2018**	Analysis Date: **10/18/2018**	SeqNo: **1827977** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	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								
Chrysene	ND	10								
Dibenz(a,h)anthracene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
Naphthalene	ND	10								
Phenanthrene	ND	10								
Pyrene	ND	10								
Surr: 2-Fluorophenol	130		200.0		63.4	15	74.1			
Surr: Phenol-d5	110		200.0		54.7	15	59.8			
Surr: 2,4,6-Tribromophenol	130		200.0		66.6	22.1	112			
Surr: Nitrobenzene-d5	70		100.0		70.1	33.2	94			
Surr: 2-Fluorobiphenyl	65		100.0		65.4	34	90.9			
Surr: 4-Terphenyl-d14	83		100.0		83.4	15	149			

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID **lcsd-40995**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**	
Client ID: **LCSS02**	Batch ID: **40995**	RunNo: **55106**	
Prep Date: **10/15/2018**	Analysis Date: **10/23/2018**	SeqNo: **1831736**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	61	10	100.0	0	61.3	55.1	104	16.0	34.9	
Pyrene	74	10	100.0	0	74.3	64.9	105	1.36	30.7	
Surr: 2-Fluorophenol	96		200.0		48.0	15	74.1	0	0	
Surr: Phenol-d5	86		200.0		42.8	15	59.8	0	0	
Surr: 2,4,6-Tribromophenol	120		200.0		60.0	22.1	112	0	0	
Surr: Nitrobenzene-d5	55		100.0		55.4	33.2	94	0	0	
Surr: 2-Fluorobiphenyl	56		100.0		55.6	34	90.9	0	0	
Surr: 4-Terphenyl-d14	78		100.0		78.0	15	149	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID	**lcs-1 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829292**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	102	80	120			

Sample ID	**lcs-2 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829318**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	106	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID	**mb-1 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**				
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829250**	Units:	**mg/L CaCO3**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID	**lcs-1 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829251**	Units:	**mg/L CaCO3**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.16	20.00	80.00	0	96.4	90	110			

Sample ID	**mb-2 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**				
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829275**	Units:	**mg/L CaCO3**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID	**lcs-2 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829276**	Units:	**mg/L CaCO3**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.48	20.00	80.00	0	96.8	90	110			

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810743**

30-Oct-18

Client: Western Refining Southwest, Inc.

Project: GBR Annual Sampling

Sample ID	**MB-41026**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**41026**	RunNo:	**54952**					
Prep Date:	**10/16/2018**	Analysis Date:	**10/17/2018**	SeqNo:	**1826150**	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-41026**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**41026**	RunNo:	**54952**					
Prep Date:	**10/16/2018**	Analysis Date:	**10/17/2018**	SeqNo:	**1826151**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

Qualifiers:

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

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: **1810743** RcptNo: 1

Received By: **Victoria Zellar** 10/12/2018 8:07:00 AM Victoria Zellar

Completed By: **Erin Melendrez** 10/12/2018 9:07:21 AM

Reviewed By: VV2 10/12/18

Labeled By: IO 10/12/2018

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
8. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐ 0.4mL HNO3
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 3 (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? YES
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: IO 10/12/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

Poured off of 500mL unpres plastic in to 250mL plastic For Metals analysis: Added approx 0.4mL HNO3 to samples for acceptable pH level. Held for 24 hours prior analysis. IO 10/12/2018

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			
2	2.7	Good	Yes			

Chain-of-Custody Record

Client: Western Refining
Alan Hains

Mailing Address:

Phone #: 970-385-1096

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
GBR Annual Sampling

Project #:

Project Manager:
Devin Horzmann

Sampler: Josh Adams

On Ice: ☑ Yes ☐ No VVZ 10/12/18

Sample Temperature: 2 coolers - 3.5-(.5)0.6=3.3 3.8-(.5)0.6=3.2

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1810743	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attached				Air Bubbles (Y or N)
10-11-18	1235	GW	BHS-8	various	various	-001												X				
↓	1415	↓	GBR-51	↓	↓	-002												X				
↓	1540	↓	GRW-3	↓	↓	-003												X				

Date	Time	Relinquished by:	Received by:	Date	Time
10-11-18	1623			10/11/18	1623
10/11/18	1814		Received by: VVZ 10/12/18 8:07	10/12/18	8:07

Remarks: cc: dhorzmann@itenv.com

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

GIANT BLOOMFIELD REFINERY
WESTERN REFINING
ATTACHMENT TO COC

SAMPLING CONDUCTED ON _____ **BY** _____

Sample ID	ANNUALLY (DEC)
GRW-3	VOC GWC PAH
GRW-6	VOC GWC PAH
GBR-17	VOC GWC PAH
GBR-24D	VOC GWC PAH
GBR-30	VOC GWC PAH
GBR-31	VOC GWC PAH
GBR-32	VOC GWC METALS
GBR-48	VOC GWC METALS
GBR-49	VOC GWC METALS
GBR-50	VOC GWC METALS
GBR-51	VOC GWC
GBR-52	VOC GWC
SHS-8	VOC GWC

Analysis	method	Bottle
VOC	method 8260	3 - HCL VOA

PAH	method 8270	1 - Liter Amber (non preserved)

GWC		
pH	SM 4500-H+B	1 - 500ml (non preserved)
EC	SM 2510B	
TDS	SM 2540C MOD	
alkaliaity	SM 2320B	
hardness	SM 2340B	
ANIONS	EPA Method 300.0	
	nitrate/nitrite	1 - 250ml H2SO4
	bromide	1 - 500ml HNO3
	chloride	
	sulfate	
	phosporus	
	fluoride	
CATIONS / METALS	EPA Method 200.7	
	calcium	
	iron	
	magnesium	
	manganese	
	potassium	
	sodium	
Metals	EPA Method 200.7	1 - 500ml HNO3
	barium	
	beryllium	
	cadmium	
	chromium	
	silver	
	lead	
	nickel	
	EPA 200.8	
	copper	
	zinc	
	antimony	
	arsenic	
	selenium	
	thallium	
	Epa Method 245.1	
	mercury	

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

November 12, 2018

Devin Hencmann

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

RE: Giant Bloomfield Refining OrderNo.: 1810828

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 7 sample(s) on 10/16/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-30
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:40:00 PM
Lab ID: 1810828-001 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1400	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.62	0.10		mg/L	1	10/16/2018 1:12:30 PM	R54924
Chloride	250	10	*	mg/L	20	10/16/2018 1:24:54 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 1:12:30 PM	R54924
Bromide	0.77	0.10		mg/L	1	10/16/2018 1:12:30 PM	R54924
Nitrogen, Nitrate (As N)	1.8	0.10		mg/L	1	10/16/2018 1:12:30 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 1:24:54 PM	R54924
Sulfate	1500	25	*	mg/L	50	10/23/2018 10:09:39 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3400	5.0		µmhos/c	1	10/18/2018 8:45:49 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	256.9	20.00		mg/L Ca	1	10/18/2018 8:45:49 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 8:45:49 PM	R55027
Total Alkalinity (as CaCO3)	256.9	20.00		mg/L Ca	1	10/18/2018 8:45:49 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3000	100	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.59		H	pH units	1	10/18/2018 8:45:49 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	480	10		mg/L	10	10/29/2018 3:47:25 PM	41098
Iron	28	1.0	*	mg/L	50	10/29/2018 3:49:24 PM	41098
Magnesium	43	1.0		mg/L	1	10/29/2018 3:45:17 PM	41098
Manganese	0.76	0.0020	*	mg/L	1	10/29/2018 3:45:17 PM	41098
Potassium	5.1	1.0		mg/L	1	10/29/2018 3:45:17 PM	41098
Sodium	420	10		mg/L	10	10/29/2018 3:47:25 PM	41098
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Naphthalene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
1-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
2-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Acenaphthylene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Acenaphthene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Fluorene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Phenanthrene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Anthracene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-30
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:40:00 PM
Lab ID: 1810828-001 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Pyrene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Benz(a)anthracene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Chrysene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Benzo(b)fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Benzo(k)fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Benzo(a)pyrene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	10/24/2018 4:29:42 PM	41072
Surr: N-hexadecane	85.2	35.2-113		%Rec	1	10/24/2018 4:29:42 PM	41072
Surr: Benzo(e)pyrene	104	48.3-123		%Rec	1	10/24/2018 4:29:42 PM	41072
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 2:28:59 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 2:28:59 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 2:28:59 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-30
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:40:00 PM
Lab ID: 1810828-001 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 2:28:59 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 2:28:59 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 2:28:59 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 2:28:59 AM	D55077
Surr: 1,2-Dichloroethane-d4	92.2	70-130		%Rec	1	10/23/2018 2:28:59 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GBR-30
Project: Giant Bloomfield Refining
Collection Date: 10/15/2018 1:40:00 PM
Lab ID: 1810828-001 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	10/23/2018 2:28:59 AM	D55077
Surr: Dibromofluoromethane	91.7	70-130		%Rec	1	10/23/2018 2:28:59 AM	D55077
Surr: Toluene-d8	94.8	70-130		%Rec	1	10/23/2018 2:28:59 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 3:05:00 PM
Lab ID: 1810828-002 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1300	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.50	0.10		mg/L	1	10/16/2018 1:37:18 PM	R54924
Chloride	220	10		mg/L	20	10/16/2018 1:49:42 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 1:37:18 PM	R54924
Bromide	1.1	0.10		mg/L	1	10/16/2018 1:37:18 PM	R54924
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	10/16/2018 1:37:18 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	10/16/2018 1:37:18 PM	R54924
Sulfate	1400	25	*	mg/L	50	10/23/2018 10:22:31 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3300	5.0		µmhos/c	1	10/18/2018 8:59:15 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	325.6	20.00		mg/L Ca	1	10/18/2018 8:59:15 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 8:59:15 PM	R55027
Total Alkalinity (as CaCO3)	325.6	20.00		mg/L Ca	1	10/18/2018 8:59:15 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2660	100	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.57		H	pH units	1	10/18/2018 8:59:15 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	440	10		mg/L	10	10/29/2018 3:53:29 PM	41098
Iron	13	0.40	*	mg/L	20	11/1/2018 1:04:04 PM	41098
Magnesium	42	1.0		mg/L	1	10/29/2018 3:51:27 PM	41098
Manganese	3.1	0.020	*	mg/L	10	10/29/2018 3:53:29 PM	41098
Potassium	2.9	1.0		mg/L	1	10/29/2018 3:51:27 PM	41098
Sodium	390	10		mg/L	10	10/29/2018 3:53:29 PM	41098
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Naphthalene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
1-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
2-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Acenaphthylene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Acenaphthene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Fluorene	0.96	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Phenanthrene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Anthracene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 3:05:00 PM
Lab ID: 1810828-002 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Pyrene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Benz(a)anthracene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Chrysene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Benzo(b)fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Benzo(k)fluoranthene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Benzo(a)pyrene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	10/24/2018 4:53:53 PM	41072
Surr: N-hexadecane	83.2	35.2-113		%Rec	1	10/24/2018 4:53:53 PM	41072
Surr: Benzo(e)pyrene	94.1	48.3-123		%Rec	1	10/24/2018 4:53:53 PM	41072
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 2:57:37 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 2:57:37 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 2:57:37 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 3:05:00 PM
Lab ID: 1810828-002 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 2:57:37 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 2:57:37 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 2:57:37 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 2:57:37 AM	D55077
Surr: 1,2-Dichloroethane-d4	90.9	70-130		%Rec	1	10/23/2018 2:57:37 AM	D55077

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GBR-31
Project: Giant Bloomfield Refining
Collection Date: 10/15/2018 3:05:00 PM
Lab ID: 1810828-002 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Surr: 4-Bromofluorobenzene	99.4	70-130		%Rec	1	10/23/2018 2:57:37 AM	D55077
Surr: Dibromofluoromethane	92.4	70-130		%Rec	1	10/23/2018 2:57:37 AM	D55077
Surr: Toluene-d8	95.4	70-130		%Rec	1	10/23/2018 2:57:37 AM	D55077

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-24D
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 2:15:00 PM
Lab ID: 1810828-003 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1300	6.6		mg/L	1	10/25/2018	R55178
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.92	0.10		mg/L	1	10/16/2018 2:02:06 PM	R54924
Chloride	130	10		mg/L	20	10/16/2018 2:14:30 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 2:02:06 PM	R54924
Bromide	0.60	0.10		mg/L	1	10/16/2018 2:02:06 PM	R54924
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	10/16/2018 2:02:06 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 2:14:30 PM	R54924
Sulfate	2300	50	*	mg/L	100	10/23/2018 10:35:23 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	4300	5.0		µmhos/c	1	10/18/2018 9:14:46 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	224.2	20.00		mg/L Ca	1	10/18/2018 9:14:46 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 9:14:46 PM	R55027
Total Alkalinity (as CaCO3)	224.2	20.00		mg/L Ca	1	10/18/2018 9:14:46 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3780	100	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.68		H	pH units	1	10/18/2018 9:14:46 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	460	10		mg/L	10	10/25/2018 7:52:41 PM	41098
Iron	9.1	0.20	*	mg/L	10	11/1/2018 1:06:05 PM	41098
Magnesium	41	1.0		mg/L	1	10/25/2018 7:50:37 PM	41098
Manganese	1.8	0.020	*	mg/L	10	10/25/2018 7:52:41 PM	41098
Potassium	7.5	1.0		mg/L	1	10/25/2018 7:50:37 PM	41098
Sodium	660	10		mg/L	10	10/25/2018 7:52:41 PM	41098
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Naphthalene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
1-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
2-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Acenaphthylene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Acenaphthene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Fluorene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Phenanthrene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Anthracene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-24D
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 2:15:00 PM
Lab ID: 1810828-003 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Pyrene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Benz(a)anthracene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Chrysene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Benzo(b)fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Benzo(k)fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Benzo(a)pyrene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	10/24/2018 5:18:06 PM	41072
Surr: N-hexadecane	53.8	35.2-113		%Rec	1	10/24/2018 5:18:06 PM	41072
Surr: Benzo(e)pyrene	80.1	48.3-123		%Rec	1	10/24/2018 5:18:06 PM	41072
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2-Dichloroethane (EDC)	1.2	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 3:26:14 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 3:26:14 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 3:26:14 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-24D
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 2:15:00 PM
Lab ID: 1810828-003 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 3:26:14 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 3:26:14 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 3:26:14 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 3:26:14 AM	D55077
Surr: 1,2-Dichloroethane-d4	94.0	70-130		%Rec	1	10/23/2018 3:26:14 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-24D
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 2:15:00 PM
Lab ID: 1810828-003 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	10/23/2018 3:26:14 AM	D55077
Surr: Dibromofluoromethane	91.6	70-130		%Rec	1	10/23/2018 3:26:14 AM	D55077
Surr: Toluene-d8	97.4	70-130		%Rec	1	10/23/2018 3:26:14 AM	D55077

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

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
PQL	Practical Quanitative Limit
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, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-49
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:00:00 PM
Lab ID: 1810828-004 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: METALS						Analyst: **ELS**	
Antimony	ND	0.0010		mg/L	1	10/31/2018 10:25:14 AM	41210
Arsenic	0.012	0.0010	*	mg/L	1	10/29/2018 7:47:09 PM	41210
Copper	0.032	0.0010		mg/L	1	10/29/2018 7:47:09 PM	41210
Lead	0.015	0.00050		mg/L	1	10/29/2018 7:47:09 PM	41210
Selenium	0.0048	0.0010		mg/L	1	10/29/2018 7:47:09 PM	41210
Thallium	ND	0.00050		mg/L	1	10/29/2018 7:47:09 PM	41210
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1200	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.52	0.10		mg/L	1	10/16/2018 2:26:54 PM	R54924
Chloride	180	10		mg/L	20	10/16/2018 2:39:18 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 2:26:54 PM	R54924
Bromide	0.47	0.10		mg/L	1	10/16/2018 2:26:54 PM	R54924
Nitrogen, Nitrate (As N)	0.84	0.10		mg/L	1	10/16/2018 2:26:54 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 2:39:18 PM	R54924
Sulfate	1800	25	*	mg/L	50	10/23/2018 10:48:15 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3600	5.0		µmhos/c	1	10/18/2018 9:31:43 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	210.6	20.00		mg/L Ca	1	10/18/2018 9:31:43 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 9:31:43 PM	R55027
Total Alkalinity (as CaCO3)	210.6	20.00		mg/L Ca	1	10/18/2018 9:31:43 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3010	200	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.24		H	pH units	1	10/18/2018 9:31:43 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Barium	0.22	0.0020		mg/L	1	10/29/2018 7:07:25 PM	41210
Beryllium	ND	0.0020		mg/L	1	10/29/2018 7:07:25 PM	41210
Cadmium	ND	0.0020		mg/L	1	10/29/2018 7:07:25 PM	41210
Calcium	420	5.0		mg/L	5	10/30/2018 7:28:36 PM	41210
Chromium	1.2	0.030	*	mg/L	5	10/30/2018 7:28:36 PM	41210
Iron	23	1.0	*	mg/L	50	10/30/2018 7:30:46 PM	41210
Magnesium	39	1.0		mg/L	1	10/30/2018 7:26:34 PM	41210
Manganese	0.98	0.0020	*	mg/L	1	10/29/2018 7:07:25 PM	41210
Nickel	0.39	0.010	*	mg/L	1	10/29/2018 7:07:25 PM	41210

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-49
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:00:00 PM
Lab ID: 1810828-004 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Potassium	4.9	1.0		mg/L	1	10/30/2018 7:26:34 PM	41210
Silver	0.0072	0.0050		mg/L	1	10/29/2018 7:07:25 PM	41210
Sodium	440	5.0		mg/L	5	10/30/2018 7:28:36 PM	41210
Zinc	0.14	0.010		mg/L	1	11/7/2018 4:29:21 PM	41346
EPA METHOD 245.1: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	10/31/2018 3:58:54 PM	41267
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 4:51:47 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 4:51:47 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 4:51:47 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-49
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 1:00:00 PM
Lab ID: 1810828-004 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 4:51:47 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 4:51:47 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 4:51:47 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 4:51:47 AM	D55077
Surr: 1,2-Dichloroethane-d4	92.4	70-130		%Rec	1	10/23/2018 4:51:47 AM	D55077
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	10/23/2018 4:51:47 AM	D55077
Surr: Dibromofluoromethane	92.0	70-130		%Rec	1	10/23/2018 4:51:47 AM	D55077
Surr: Toluene-d8	97.7	70-130		%Rec	1	10/23/2018 4:51:47 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 12:25:00 PM
Lab ID: 1810828-005 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: METALS						Analyst: **ELS**	
Antimony	ND	0.0010		mg/L	1	10/31/2018 10:27:35 AM	41210
Arsenic	0.0025	0.0010		mg/L	1	10/29/2018 7:49:30 PM	41210
Copper	0.0047	0.0010		mg/L	1	10/29/2018 7:49:30 PM	41210
Lead	0.00096	0.00050		mg/L	1	10/29/2018 7:49:30 PM	41210
Selenium	0.0010	0.0010		mg/L	1	10/29/2018 7:49:30 PM	41210
Thallium	ND	0.00050		mg/L	1	10/29/2018 7:49:30 PM	41210
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1300	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.39	0.10		mg/L	1	10/16/2018 3:16:31 PM	R54924
Chloride	200	10		mg/L	20	10/16/2018 3:28:56 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 3:16:31 PM	R54924
Bromide	0.47	0.10		mg/L	1	10/16/2018 3:16:31 PM	R54924
Nitrogen, Nitrate (As N)	0.65	0.10		mg/L	1	10/16/2018 3:16:31 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 3:28:56 PM	R54924
Sulfate	1700	25	*	mg/L	50	10/23/2018 11:26:48 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3700	5.0		µmhos/c	1	10/18/2018 9:59:03 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	275.4	20.00		mg/L Ca	1	10/18/2018 9:59:03 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 9:59:03 PM	R55027
Total Alkalinity (as CaCO3)	275.4	20.00		mg/L Ca	1	10/18/2018 9:59:03 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3110	40.0	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.71		H	pH units	1	10/18/2018 9:59:03 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Barium	0.021	0.0020		mg/L	1	10/29/2018 7:18:11 PM	41210
Beryllium	ND	0.0020		mg/L	1	10/29/2018 7:18:11 PM	41210
Cadmium	ND	0.0020		mg/L	1	10/29/2018 7:18:11 PM	41210
Calcium	430	5.0		mg/L	5	11/1/2018 1:08:12 PM	41210
Chromium	0.074	0.0060		mg/L	1	10/29/2018 7:18:11 PM	41210
Iron	2.7	0.10	*	mg/L	5	11/1/2018 1:08:12 PM	41210
Magnesium	42	1.0		mg/L	1	10/30/2018 7:33:00 PM	41210
Manganese	1.9	0.010	*	mg/L	5	11/1/2018 1:08:12 PM	41210
Nickel	0.086	0.010		mg/L	1	10/29/2018 7:18:11 PM	41210

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 12:25:00 PM
Lab ID: 1810828-005 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Potassium	2.0	1.0		mg/L	1	10/30/2018 7:33:00 PM	41210
Silver	0.011	0.0050		mg/L	1	10/29/2018 7:18:11 PM	41210
Sodium	490	5.0		mg/L	5	11/8/2018 3:20:41 PM	41346
Zinc	0.012	0.010		mg/L	1	11/7/2018 4:37:48 PM	41346
EPA METHOD 245.1: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	10/31/2018 4:05:34 PM	41267
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 5:20:20 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 5:20:20 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 5:20:20 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 12:25:00 PM
Lab ID: 1810828-005 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 5:20:20 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 5:20:20 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 5:20:20 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 5:20:20 AM	D55077
Surr: 1,2-Dichloroethane-d4	91.2	70-130		%Rec	1	10/23/2018 5:20:20 AM	D55077
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	10/23/2018 5:20:20 AM	D55077
Surr: Dibromofluoromethane	92.9	70-130		%Rec	1	10/23/2018 5:20:20 AM	D55077
Surr: Toluene-d8	96.9	70-130		%Rec	1	10/23/2018 5:20:20 AM	D55077

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:50:00 AM
Lab ID: 1810828-006 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: METALS						Analyst: **ELS**	
Antimony	ND	0.0010		mg/L	1	10/31/2018 10:34:37 AM	41210
Arsenic	0.0054	0.0010		mg/L	1	10/29/2018 7:56:32 PM	41210
Copper	0.018	0.0010		mg/L	1	10/29/2018 7:56:32 PM	41210
Lead	0.011	0.00050		mg/L	1	10/29/2018 7:56:32 PM	41210
Selenium	0.0088	0.0010		mg/L	1	10/29/2018 7:56:32 PM	41210
Thallium	ND	0.00050		mg/L	1	10/29/2018 7:56:32 PM	41210
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1500	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.34	0.10		mg/L	1	10/16/2018 3:41:20 PM	R54924
Chloride	300	10	*	mg/L	20	10/16/2018 3:53:45 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 3:41:20 PM	R54924
Bromide	0.79	0.10		mg/L	1	10/16/2018 3:41:20 PM	R54924
Nitrogen, Nitrate (As N)	2.7	2.0		mg/L	20	10/16/2018 3:53:45 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 3:53:45 PM	R54924
Sulfate	1800	50	*	mg/L	100	10/23/2018 11:39:41 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	4100	5.0		µmhos/c	1	10/18/2018 10:12:55 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	286.4	20.00		mg/L Ca	1	10/18/2018 10:12:55 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 10:12:55 PM	R55027
Total Alkalinity (as CaCO3)	286.4	20.00		mg/L Ca	1	10/18/2018 10:12:55 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3580	100	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.57		H	pH units	1	10/18/2018 10:12:55 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Barium	0.13	0.0020		mg/L	1	10/29/2018 7:22:34 PM	41210
Beryllium	ND	0.0020		mg/L	1	10/29/2018 7:22:34 PM	41210
Cadmium	ND	0.0020		mg/L	1	10/29/2018 7:22:34 PM	41210
Calcium	500	20		mg/L	20	10/30/2018 7:37:03 PM	41210
Chromium	0.036	0.0060		mg/L	1	10/29/2018 7:22:34 PM	41210
Iron	18	0.40	*	mg/L	20	10/30/2018 7:37:03 PM	41210
Magnesium	50	1.0		mg/L	1	10/30/2018 7:35:02 PM	41210
Manganese	0.49	0.0020	*	mg/L	1	10/29/2018 7:22:34 PM	41210
Nickel	0.067	0.010		mg/L	1	10/29/2018 7:22:34 PM	41210

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:50:00 AM
Lab ID: 1810828-006 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Potassium	5.7	1.0		mg/L	1	10/30/2018 7:35:02 PM	41210
Silver	0.0094	0.0050		mg/L	1	10/29/2018 7:22:34 PM	41210
Sodium	550	20		mg/L	20	10/30/2018 7:37:03 PM	41210
Zinc	0.040	0.010		mg/L	1	11/7/2018 4:39:51 PM	41346
EPA METHOD 245.1: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	10/31/2018 4:07:48 PM	41267
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 5:48:54 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 5:48:54 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 5:48:54 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:50:00 AM
Lab ID: 1810828-006 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 5:48:54 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 5:48:54 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Tetrachloroethene (PCE)	1.2	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 5:48:54 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 5:48:54 AM	D55077
Surr: 1,2-Dichloroethane-d4	87.5	70-130		%Rec	1	10/23/2018 5:48:54 AM	D55077
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	10/23/2018 5:48:54 AM	D55077
Surr: Dibromofluoromethane	89.9	70-130		%Rec	1	10/23/2018 5:48:54 AM	D55077
Surr: Toluene-d8	96.2	70-130		%Rec	1	10/23/2018 5:48:54 AM	D55077

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-50
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:20:00 AM
Lab ID: 1810828-007 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: METALS						Analyst: **ELS**	
Antimony	ND	0.0010		mg/L	1	10/31/2018 10:36:58 AM	41210
Arsenic	0.0032	0.0010		mg/L	1	10/29/2018 7:58:53 PM	41210
Copper	0.0036	0.0010		mg/L	1	10/31/2018 10:36:58 AM	41210
Lead	0.0021	0.00050		mg/L	1	10/29/2018 7:58:53 PM	41210
Selenium	0.0066	0.0010		mg/L	1	10/29/2018 7:58:53 PM	41210
Thallium	ND	0.00050		mg/L	1	10/29/2018 7:58:53 PM	41210
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1300	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.60	0.10		mg/L	1	10/16/2018 4:06:09 PM	R54924
Chloride	59	10		mg/L	20	10/16/2018 4:18:33 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 4:06:09 PM	R54924
Bromide	0.28	0.10		mg/L	1	10/16/2018 4:06:09 PM	R54924
Nitrogen, Nitrate (As N)	6.9	2.0		mg/L	20	10/16/2018 4:18:33 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	10/16/2018 4:18:33 PM	R54924
Sulfate	1700	25	*	mg/L	50	10/23/2018 11:52:32 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3000	5.0		µmhos/c	1	10/18/2018 10:27:18 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	187.6	20.00		mg/L Ca	1	10/18/2018 10:27:18 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 10:27:18 PM	R55027
Total Alkalinity (as CaCO3)	187.6	20.00		mg/L Ca	1	10/18/2018 10:27:18 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2770	40.0	*D	mg/L	1	10/18/2018 4:49:00 PM	41051
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.58		H	pH units	1	10/18/2018 10:27:18 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Barium	0.023	0.0020		mg/L	1	10/29/2018 7:26:46 PM	41210
Beryllium	ND	0.0020		mg/L	1	10/29/2018 7:26:46 PM	41210
Cadmium	ND	0.0020		mg/L	1	10/29/2018 7:26:46 PM	41210
Calcium	460	5.0		mg/L	5	11/1/2018 1:10:18 PM	41210
Chromium	0.044	0.0060		mg/L	1	10/29/2018 7:26:46 PM	41210
Iron	4.0	0.10	*	mg/L	5	11/1/2018 1:10:18 PM	41210
Magnesium	35	1.0		mg/L	1	10/30/2018 7:39:07 PM	41210
Manganese	0.13	0.0020	*	mg/L	1	10/29/2018 7:26:46 PM	41210
Nickel	0.035	0.010		mg/L	1	10/29/2018 7:26:46 PM	41210

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-50
Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:20:00 AM
Lab ID: 1810828-007 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Potassium	2.2	1.0		mg/L	1	10/30/2018 7:39:07 PM	41210
Silver	0.011	0.0050		mg/L	1	10/29/2018 7:26:46 PM	41210
Sodium	340	5.0		mg/L	5	11/8/2018 3:22:38 PM	41346
Zinc	0.015	0.010		mg/L	1	11/7/2018 4:41:56 PM	41346
EPA METHOD 245.1: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	10/31/2018 4:10:03 PM	41267
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Toluene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Ethylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Naphthalene	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
2-Methylnaphthalene	ND	4.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Acetone	ND	10		µg/L	1	10/23/2018 6:17:30 AM	D55077
Bromobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Bromodichloromethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Bromoform	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Bromomethane	ND	3.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
2-Butanone	ND	10		µg/L	1	10/23/2018 6:17:30 AM	D55077
Carbon disulfide	ND	10		µg/L	1	10/23/2018 6:17:30 AM	D55077
Carbon Tetrachloride	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Chlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Chloroethane	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Chloroform	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Chloromethane	ND	3.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
2-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
4-Chlorotoluene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
cis-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Dibromochloromethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Dibromomethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077

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Hall Environmental Analysis Laboratory, Inc.

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Project: Giant Bloomfield Refining **Collection Date:** 10/15/2018 11:20:00 AM
Lab ID: 1810828-007 **Matrix:** AQUEOUS **Received Date:** 10/16/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1-Dichloroethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1-Dichloroethene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,3-Dichloropropane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
2,2-Dichloropropane	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Hexachlorobutadiene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
2-Hexanone	ND	10		µg/L	1	10/23/2018 6:17:30 AM	D55077
Isopropylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
4-Isopropyltoluene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
4-Methyl-2-pentanone	ND	10		µg/L	1	10/23/2018 6:17:30 AM	D55077
Methylene Chloride	ND	3.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
n-Butylbenzene	ND	3.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
n-Propylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
sec-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Styrene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
tert-Butylbenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
trans-1,2-DCE	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Trichlorofluoromethane	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Vinyl chloride	ND	1.0		µg/L	1	10/23/2018 6:17:30 AM	D55077
Xylenes, Total	ND	1.5		µg/L	1	10/23/2018 6:17:30 AM	D55077
Surr: 1,2-Dichloroethane-d4	90.5	70-130		%Rec	1	10/23/2018 6:17:30 AM	D55077
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	10/23/2018 6:17:30 AM	D55077
Surr: Dibromofluoromethane	91.7	70-130		%Rec	1	10/23/2018 6:17:30 AM	D55077
Surr: Toluene-d8	98.0	70-130		%Rec	1	10/23/2018 6:17:30 AM	D55077

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**MB-41098**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832203**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**BatchQC**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832204**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	96.7	50	150			
Iron	0.023	0.020	0.02000	0	113	50	150			
Magnesium	ND	1.0	0.5000	0	95.2	50	150			
Manganese	ND	0.0020	0.002000	0	95.5	50	150			
Potassium	ND	1.0	0.5000	0	110	50	150			

Sample ID	**LCS-41098**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**LCSW**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832205**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	44	1.0	50.00	0	87.1	85	115			
Iron	0.50	0.020	0.5000	0	99.6	85	115			
Magnesium	45	1.0	50.00	0	89.4	85	115			
Manganese	0.49	0.0020	0.5000	0	97.4	85	115			
Potassium	44	1.0	50.00	0	88.4	85	115			

Sample ID	**MB-41098**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**41098**	RunNo:	**55178**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**	SeqNo:	**1834489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**BatchQC**	Batch ID:	**41098**	RunNo:	**55178**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**	SeqNo:	**1834490**	Units:	**mg/L**			

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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41098**		RunNo:	**55178**				
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**		SeqNo:	**1834490**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	94.8	50	150			

Sample ID	**LCS-41098**	SampType:	**LCS**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**LCSW**	Batch ID:	**41098**		RunNo:	**55178**				
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**		SeqNo:	**1834491**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	52	1.0	50.00	0	103	85	115			

Sample ID	**MB-41210**	SampType:	**MBLK**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**PBW**	Batch ID:	**41210**		RunNo:	**55244**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1837491**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID	**LLLCS-41210**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41210**		RunNo:	**55244**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1837492**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0020	0.0020	0.002000	0	100	50	150			
Beryllium	ND	0.0020	0.002000	0	97.0	50	150			
Cadmium	0.0023	0.0020	0.002000	0	115	50	150			
Calcium	ND	1.0	0.5000	0	101	50	150			
Chromium	ND	0.0060	0.006000	0	98.8	50	150			
Iron	0.020	0.020	0.02000	0	102	50	150			
Magnesium	ND	1.0	0.5000	0	102	50	150			
Manganese	0.0021	0.0020	0.002000	0	106	50	150			

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**LLLCS-41210**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41210**		RunNo:	**55244**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1837492**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	ND	0.010	0.005000	0	88.0	50	150			
Potassium	ND	1.0	0.5000	0	84.1	50	150			
Silver	0.0052	0.0050	0.005000	0	104	50	150			
Sodium	ND	1.0	0.5000	0	146	50	150			

Sample ID	**LCS-41210**	SampType:	**LCS**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**LCSW**	Batch ID:	**41210**		RunNo:	**55244**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1837493**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	98.9	85	115			
Beryllium	0.50	0.0020	0.5000	0	100	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.3	85	115			
Calcium	47	1.0	50.00	0	94.8	85	115			
Chromium	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.49	0.020	0.5000	0	98.3	85	115			
Magnesium	49	1.0	50.00	0	98.2	85	115			
Manganese	0.48	0.0020	0.5000	0	96.7	85	115			
Nickel	0.49	0.010	0.5000	0	97.4	85	115			
Potassium	47	1.0	50.00	0	94.9	85	115			
Silver	0.11	0.0050	0.1000	0	108	85	115			
Sodium	49	1.0	50.00	0	97.5	85	115			

Sample ID	**MB-41346**	SampType:	**MBLK**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**PBW**	Batch ID:	**41346**		RunNo:	**55469**				
Prep Date:	**11/5/2018**	Analysis Date:	**11/7/2018**		SeqNo:	**1847080**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								
Zinc	ND	0.010								

Sample ID	**LLLCS-41346**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41346**		RunNo:	**55469**				
Prep Date:	**11/5/2018**	Analysis Date:	**11/7/2018**		SeqNo:	**1847081**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	129	50	150			
Zinc	ND	0.010	0.005000	0	147	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**LCS-41346**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**
Client ID:	**LCSW**	Batch ID:	**41346**	RunNo:	**55469**
Prep Date:	**11/5/2018**	Analysis Date:	**11/7/2018**	SeqNo:	**1847082** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	49	1.0	50.00	0	98.8	85	115			
Zinc	0.51	0.010	0.5000	0	101	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**MB-41210**	SampType:	**MBLK**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**PBW**	Batch ID:	**41210**	RunNo:	**55267**					
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**	SeqNo:	**1838460**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Copper	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								
Thallium	ND	0.00050								

Sample ID	**MSLLLCS-41210**	SampType:	**LCSLL**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**BatchQC**	Batch ID:	**41210**	RunNo:	**55267**					
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**	SeqNo:	**1838462**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0011	0.0010	0.001000	0	107	50	150			
Copper	0.0011	0.0010	0.001000	0	111	50	150			
Lead	0.00050	0.00050	0.0005000	0	101	50	150			
Selenium	0.0010	0.0010	0.001000	0	105	50	150			
Thallium	ND	0.00050	0.0005000	0	91.5	50	150			

Sample ID	**MSLCS-41210**	SampType:	**LCS**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**LCSW**	Batch ID:	**41210**	RunNo:	**55267**					
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**	SeqNo:	**1838464**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	102	85	115			
Copper	0.026	0.0010	0.02500	0	104	85	115			
Lead	0.013	0.00050	0.01250	0	100	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			
Thallium	0.013	0.00050	0.01250	0	100	85	115			

Sample ID	**1810828-005CMSLL**	SampType:	**MSLL**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**GBR-32**	Batch ID:	**41210**	RunNo:	**55267**					
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**	SeqNo:	**1838478**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.029	0.0010	0.02500	0.002511	106	70	130			
Copper	0.028	0.0010	0.02500	0.004665	95.1	70	130			
Lead	0.013	0.00050	0.01250	0.0009640	99.0	70	130			
Selenium	0.026	0.0010	0.02500	0.001014	102	70	130			
Thallium	0.013	0.00050	0.01250	0	100	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**1810828-005CMSDL**	SampType:	**MSDLL**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**GBR-32**	Batch ID:	**41210**		RunNo:	**55267**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1838479**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.030	0.0010	0.02500	0.002511	109	70	130	2.23	20	
Copper	0.029	0.0010	0.02500	0.004665	97.4	70	130	1.96	20	
Lead	0.014	0.00050	0.01250	0.0009640	101	70	130	1.73	20	
Selenium	0.027	0.0010	0.02500	0.001014	103	70	130	1.03	20	
Thallium	0.013	0.00050	0.01250	0	102	70	130	1.74	20	

Sample ID	**1810828-007CMSLL**	SampType:	**MSLL**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**GBR-50**	Batch ID:	**41210**		RunNo:	**55267**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/29/2018**		SeqNo:	**1838484**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.030	0.0010	0.02500	0.003235	105	70	130			
Lead	0.014	0.00050	0.01250	0.002125	98.8	70	130			
Selenium	0.031	0.0010	0.02500	0.006615	99.5	70	130			
Thallium	0.012	0.00050	0.01250	0	99.1	70	130			

Sample ID	**MB-41210**	SampType:	**MBLK**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**PBW**	Batch ID:	**41210**		RunNo:	**55293**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/31/2018**		SeqNo:	**1839652**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								

Sample ID	**MSLLLCS-41210**	SampType:	**LCSLL**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41210**		RunNo:	**55293**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/31/2018**		SeqNo:	**1839653**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0011	0.0010	0.001000	0	115	50	150			

Sample ID	**MSLCS-41210**	SampType:	**LCS**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**LCSW**	Batch ID:	**41210**		RunNo:	**55293**				
Prep Date:	**10/26/2018**	Analysis Date:	**10/31/2018**		SeqNo:	**1839654**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	108	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **1810828-005CMSLL** SampType: **MSLL** TestCode: **EPA 200.8: Metals**

Client ID: **GBR-32** Batch ID: **41210** RunNo: **55293**

Prep Date: **10/26/2018** Analysis Date: **10/31/2018** SeqNo: **1839667** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	105	70	130			

Sample ID **1810828-005CMSDL** SampType: **MSDLL** TestCode: **EPA 200.8: Metals**

Client ID: **GBR-32** Batch ID: **41210** RunNo: **55293**

Prep Date: **10/26/2018** Analysis Date: **10/31/2018** SeqNo: **1839668** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	107	70	130	1.84	20	

Sample ID **1810828-007CMSLL** SampType: **MSLL** TestCode: **EPA 200.8: Metals**

Client ID: **GBR-50** Batch ID: **41210** RunNo: **55293**

Prep Date: **10/26/2018** Analysis Date: **10/31/2018** SeqNo: **1839671** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.6	70	130			
Copper	0.036	0.0010	0.02500	0.003619	128	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**MB-41267**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**41267**	RunNo:	**55306**					
Prep Date:	**10/30/2018**	Analysis Date:	**10/31/2018**	SeqNo:	**1839934**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-41267**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**41267**	RunNo:	**55306**					
Prep Date:	**10/30/2018**	Analysis Date:	**10/31/2018**	SeqNo:	**1839935**	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	98.8	80	120			

Sample ID	**1810828-004CMS**	SampType:	**MS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**GBR-49**	Batch ID:	**41267**	RunNo:	**55306**					
Prep Date:	**10/30/2018**	Analysis Date:	**10/31/2018**	SeqNo:	**1839937**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	.00007223	97.6	75	125			

Sample ID	**1810828-004CMSD**	SampType:	**MSD**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**GBR-49**	Batch ID:	**41267**	RunNo:	**55306**					
Prep Date:	**10/30/2018**	Analysis Date:	**10/31/2018**	SeqNo:	**1839938**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	.00007223	96.9	75	125	0.709	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R54924**	RunNo: **54924**
Prep Date:	Analysis Date: **10/16/2018**	SeqNo: **1825722** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R54924**	RunNo: **54924**
Prep Date:	Analysis Date: **10/16/2018**	SeqNo: **1825723** 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			
Chloride	4.8	0.50	5.000	0	95.9	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	98.5	90	110			
Bromide	2.5	0.10	2.500	0	98.3	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	102	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	98.3	90	110			

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1832031** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1832032** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	95.2	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **1810828-003ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **GBR-24D**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1831050** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	92.7	60.5	137			
Toluene	19	1.0	20.00	0	93.7	70	130			
Chlorobenzene	19	1.0	20.00	0	94.4	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	97.8	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	82.5	70	130			
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.7	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.6	70	130			
Surr: Toluene-d8	9.5		10.00		95.2	70	130			

Sample ID **1810828-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **GBR-24D**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1831051** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	85.8	60.5	137	7.63	20	
Toluene	18	1.0	20.00	0	88.8	70	130	5.36	20	
Chlorobenzene	19	1.0	20.00	0	93.1	70	130	1.36	20	
1,1-Dichloroethene	18	1.0	20.00	0	87.8	70	130	10.7	20	
Trichloroethene (TCE)	16	1.0	20.00	0	78.6	70	130	4.79	20	
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.4	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130	0	0	
Surr: Dibromofluoromethane	9.3		10.00		93.2	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		98.7	70	130	0	0	

Sample ID **rb3**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/22/2018**	SeqNo: **1831057** 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								

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**
12-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refining

Sample ID **rb3**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/22/2018**	SeqNo: **1831057** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
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								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **rb3**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/22/2018**	SeqNo: **1831057** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	9.3		10.00		93.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.2	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **D55077**	RunNo: **55077**
Prep Date:	Analysis Date: **10/22/2018**	SeqNo: **1831188** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.7	70	130			
Toluene	19	1.0	20.00	0	96.7	70	130			
Chlorobenzene	19	1.0	20.00	0	96.5	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.8	70	130			
Surr: Toluene-d8	9.6		10.00		95.6	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **lcs-41072**	SampType: **LCS**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **LCSW**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833493** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	9.5	0.50	20.00	0	47.4	28.6	113			
1-Methylnaphthalene	10	0.50	20.00	0	51.3	27	113			
2-Methylnaphthalene	9.7	0.50	20.00	0	48.3	26.3	112			
Acenaphthylene	12	0.50	20.00	0	62.2	36.2	114			
Acenaphthene	13	0.50	20.00	0	63.9	35.6	116			
Fluorene	13	0.50	20.00	0	66.8	38.4	116			
Phenanthrene	15	0.50	20.00	0	76.8	42.3	118			
Anthracene	16	0.50	20.00	0	78.6	42.2	117			
Fluoranthene	16	0.50	20.00	0	78.2	42.5	118			
Pyrene	16	0.50	20.00	0	81.0	40.8	121			
Benz(a)anthracene	15	0.50	20.00	0	72.9	43	118			
Chrysene	14	0.50	20.00	0	70.1	39.4	119			
Benzo(b)fluoranthene	15	0.50	20.00	0	74.1	47.8	115			
Benzo(k)fluoranthene	14	0.50	20.00	0	71.1	40.5	120			
Benzo(a)pyrene	15	0.50	20.00	0	72.7	41.5	115			
Dibenz(a,h)anthracene	15	0.50	20.00	0	74.7	48.6	115			
Benzo(g,h,i)perylene	16	0.50	20.00	0	80.0	42	119			
Indeno(1,2,3-cd)pyrene	15	0.50	20.00	0	75.4	42.9	118			
Surr: N-hexadecane	48		87.60		54.6	35.2	113			
Surr: Benzo(e)pyrene	14		20.00		70.0	48.3	123			

Sample ID **lcsd-41072**	SampType: **LCSD**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **LCSS02**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833495** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	15	0.50	20.00	0	73.3	28.6	113	42.9	40.7	R
1-Methylnaphthalene	15	0.50	20.00	0	73.0	27	113	34.9	38.4	
2-Methylnaphthalene	14	0.50	20.00	0	72.3	26.3	112	39.8	25.5	R
Acenaphthylene	18	0.50	20.00	0	89.7	36.2	114	36.2	34.1	R
Acenaphthene	17	0.50	20.00	0	85.2	35.6	116	28.6	32.1	
Fluorene	17	0.50	20.00	0	87.3	38.4	116	26.6	28	
Phenanthrene	21	0.50	20.00	0	103	42.3	118	29.4	37.4	
Anthracene	22	0.50	20.00	0	108	42.2	117	31.3	36.2	
Fluoranthene	21	0.50	20.00	0	106	42.5	118	30.6	26.6	R
Pyrene	20	0.50	20.00	0	102	40.8	121	23.1	26.8	
Benz(a)anthracene	20	0.50	20.00	0	101	43	118	32.7	25.1	R
Chrysene	19	0.50	20.00	0	94.0	39.4	119	29.1	23.3	R
Benzo(b)fluoranthene	20	0.50	20.00	0	102	47.8	115	31.9	22.5	R

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID **lcsd-41072**	SampType: **LCSD**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **LCSS02**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833495** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	20	0.50	20.00	0	99.5	40.5	120	33.3	30.9	R
Benzo(a)pyrene	20	0.50	20.00	0	101	41.5	115	32.3	23.2	R
Dibenz(a,h)anthracene	21	0.50	20.00	0	106	48.6	115	34.9	26.5	R
Benzo(g,h,i)perylene	21	0.50	20.00	0	105	42	119	27.0	30.7	
Indeno(1,2,3-cd)pyrene	21	0.50	20.00	0	104	42.9	118	32.2	25.4	R
Surr: N-hexadecane	53		87.60		60.8	35.2	113	0	0	
Surr: Benzo(e)pyrene	18		20.00		92.1	48.3	123	0	0	

Sample ID **mb-41072**	SampType: **MBLK**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **PBW**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833497** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.50								
1-Methylnaphthalene	ND	0.50								
2-Methylnaphthalene	ND	0.50								
Acenaphthylene	ND	0.50								
Acenaphthene	ND	0.50								
Fluorene	ND	0.50								
Phenanthrene	ND	0.50								
Anthracene	ND	0.50								
Fluoranthene	ND	0.50								
Pyrene	ND	0.50								
Benz(a)anthracene	ND	0.50								
Chrysene	ND	0.50								
Benzo(b)fluoranthene	ND	0.50								
Benzo(k)fluoranthene	ND	0.50								
Benzo(a)pyrene	ND	0.50								
Dibenz(a,h)anthracene	ND	0.50								
Benzo(g,h,i)perylene	ND	0.50								
Indeno(1,2,3-cd)pyrene	ND	0.50								
Surr: N-hexadecane	46		87.60		52.9	35.2	113			
Surr: Benzo(e)pyrene	14		20.00		71.2	48.3	123			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**
12-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refining

Sample ID	**lcs-1 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829292**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	102	80	120			

Sample ID	**1810828-003c dup**	SampType:	**dup**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**GBR-24D**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829311**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	4300	5.0						0.581	20	

Sample ID	**lcs-2 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829318**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	106	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**1810828-003c dup**	SampType:	**dup**		TestCode:	**SM4500-H+B / 9040C: pH**				
Client ID:	**GBR-24D**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829349**	Units:	**pH units**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.64									H

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**mb-1 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829250**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	ND	20.00									

Sample ID	**lcs-1 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829251**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	77.16	20.00	80.00	0	96.4	90	110				

Sample ID	**mb-2 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829275**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	ND	20.00									

Sample ID	**lcs-2 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829276**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	77.48	20.00	80.00	0	96.8	90	110				

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810828**

12-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refining

Sample ID	**MB-41051**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**41051**	RunNo:	**54991**					
Prep Date:	**10/17/2018**	Analysis Date:	**10/18/2018**	SeqNo:	**1827708**	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-41051**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**41051**	RunNo:	**54991**					
Prep Date:	**10/17/2018**	Analysis Date:	**10/18/2018**	SeqNo:	**1827709**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	101	80	120			

Qualifiers:

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

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: 1810828 RcptNo: 1

Received By: Anne Thorne 10/16/2018 7:00:00 AM

Completed By: Erin Melendrez 10/16/2018 8:35:04 AM

Reviewed By: JAB 10/16/18

LB; IO 10/16/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

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

# of preserved bottles checked for pH: 14

(<2 or >12 unless noted)

Adjusted? NO

Checked by: IO 10/16/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			
2	1.1	Good	Yes			

Chain-of-Custody Record

Client: Western Refinery
Allen Haines
Mailing Address:

Phone #: 970-385-1096
email or Fax#: dhencmann@ltenv.com
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
■ Standard ☐ Rush
Project Name: Giant Bloomfield Refinery
Project #:
Project Manager: Devin Hencmann
Sampler: E. Carroll & M. MrdJenovich
On Ice: ☒ Yes ☐ No
Sample Temperature: #1 Cooler 2.7+0.4=3.1 #2 Cooler 2.1+0.4=2.5

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1810828	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See Attached				Air Bubbles (Y or N)
~~10/15/18~~																						
10/15/18	1340	GW	GBR-30	various	various	-001												X				
	15:05		GBR-31			-002												X				
	1415		GBR-24D			-003												X				
	1300		GBR-49			-004												X				
	1225		GBR-32			-005												X				
	1150		GBR-48			-006												X				
↓	1120	↓	GBR-50	↓	↓	-007												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/15/18	1600			10/15/18	1600
Date:	Time:	Relinquished by:	Received by:	Date	Time
10/15/18	1811			10/16/18	0700

Remarks:

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

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

November 02, 2018

Devin Hencmann

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

RE: Giant Bloomfield Refinery OrderNo.: 1810834

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/13/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-52
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 2:00:00 PM
Lab ID: 1810834-001 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1200	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.71	0.10		mg/L	1	10/16/2018 9:53:35 PM	R54924
Chloride	54	10		mg/L	20	10/16/2018 10:06:00 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	10/16/2018 9:53:35 PM	R54924
Bromide	0.28	0.10	H	mg/L	1	10/16/2018 9:53:35 PM	R54924
Nitrogen, Nitrate (As N)	6.9	2.0	H	mg/L	20	10/16/2018 10:06:00 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10	H	mg/L	20	10/16/2018 10:06:00 PM	R54924
Sulfate	1500	25	*	mg/L	50	10/23/2018 9:18:15 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	2800	5.0		µmhos/c	1	10/18/2018 8:05:13 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	210.2	20.00		mg/L Ca	1	10/18/2018 8:05:13 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 8:05:13 PM	R55027
Total Alkalinity (as CaCO3)	210.2	20.00		mg/L Ca	1	10/18/2018 8:05:13 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2580	20.0	*	mg/L	1	10/19/2018 5:32:00 PM	41078
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.53		H	pH units	1	10/18/2018 8:05:13 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	440	10		mg/L	10	10/29/2018 3:20:53 PM	41098
Iron	0.12	0.020		mg/L	1	10/29/2018 3:18:40 PM	41098
Magnesium	32	1.0		mg/L	1	10/29/2018 3:18:40 PM	41098
Manganese	0.0028	0.0020		mg/L	1	10/29/2018 3:18:40 PM	41098
Potassium	ND	1.0		mg/L	1	10/29/2018 3:18:40 PM	41098
Sodium	310	10		mg/L	10	10/29/2018 3:20:53 PM	41098
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-52
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 2:00:00 PM
Lab ID: 1810834-001 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 7:48:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 7:48:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 7:48:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 7:48:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 7:48:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-52
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 2:00:00 PM
Lab ID: 1810834-001 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
sec-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
tert-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 7:48:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 7:48:00 PM	R54984
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	10/18/2018 7:48:00 PM	R54984
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	10/18/2018 7:48:00 PM	R54984
Surr: Dibromofluoromethane	102	70-130		%Rec	1	10/18/2018 7:48:00 PM	R54984
Surr: Toluene-d8	98.5	70-130		%Rec	1	10/18/2018 7:48:00 PM	R54984

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 3:00:00 PM
Lab ID: 1810834-002 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1300	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	0.64	0.10		mg/L	1	10/16/2018 10:43:13 PM	R54924
Chloride	49	10		mg/L	20	10/16/2018 10:55:38 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.10	H	mg/L	1	10/16/2018 10:43:13 PM	R54924
Bromide	0.15	0.10		mg/L	1	10/16/2018 10:43:13 PM	R54924
Nitrogen, Nitrate (As N)	5.4	2.0	H	mg/L	20	10/16/2018 10:55:38 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	10	H	mg/L	20	10/16/2018 10:55:38 PM	R54924
Sulfate	1200	25	*	mg/L	50	10/23/2018 9:31:05 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	2400	5.0		µmhos/c	1	10/18/2018 8:17:10 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	214.7	20.00		mg/L Ca	1	10/18/2018 8:17:10 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 8:17:10 PM	R55027
Total Alkalinity (as CaCO3)	214.7	20.00		mg/L Ca	1	10/18/2018 8:17:10 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2180	20.0	*	mg/L	1	10/19/2018 5:32:00 PM	41078
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.63		H	pH units	1	10/18/2018 8:17:10 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	440	10		mg/L	10	10/29/2018 3:25:22 PM	41098
Iron	100	4.0	*	mg/L	200	10/30/2018 6:48:01 PM	41098
Magnesium	47	1.0		mg/L	1	10/29/2018 3:23:13 PM	41098
Manganese	3.0	0.020	*	mg/L	10	10/29/2018 3:25:22 PM	41098
Potassium	6.9	1.0		mg/L	1	10/29/2018 3:23:13 PM	41098
Sodium	260	10		mg/L	10	10/29/2018 3:25:22 PM	41098
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Naphthalene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
1-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
2-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Acenaphthylene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Acenaphthene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Fluorene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Phenanthrene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Anthracene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 3:00:00 PM
Lab ID: 1810834-002 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Pyrene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Benz(a)anthracene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Chrysene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Benzo(b)fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Benzo(k)fluoranthene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Benzo(a)pyrene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	10/24/2018 5:42:18 PM	41072
Surr: N-hexadecane	66.2	35.2-113		%Rec	1	10/24/2018 5:42:18 PM	41072
Surr: Benzo(e)pyrene	87.3	48.3-123		%Rec	1	10/24/2018 5:42:18 PM	41072
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 8:12:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 8:12:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 8:12:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 3:00:00 PM
Lab ID: 1810834-002 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 8:12:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 8:12:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
sec-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
tert-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 8:12:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 8:12:00 PM	R54984
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/18/2018 8:12:00 PM	R54984

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 3:00:00 PM
Lab ID: 1810834-002 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Surr: 4-Bromofluorobenzene	99.2	70-130		%Rec	1	10/18/2018 8:12:00 PM	R54984
Surr: Dibromofluoromethane	104	70-130		%Rec	1	10/18/2018 8:12:00 PM	R54984
Surr: Toluene-d8	98.3	70-130		%Rec	1	10/18/2018 8:12:00 PM	R54984

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 12:45:00 PM
Lab ID: 1810834-003 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM2340B: HARDNESS						Analyst: **pmf**	
Hardness (As CaCO3)	1200	6.6		mg/L	1	10/29/2018	R55244
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	1.1	0.50		mg/L	5	10/16/2018 11:08:02 PM	R54924
Chloride	100	10		mg/L	20	10/16/2018 11:20:27 PM	R54924
Nitrogen, Nitrite (As N)	ND	0.50	H	mg/L	5	10/16/2018 11:08:02 PM	R54924
Bromide	ND	0.50		mg/L	5	10/16/2018 11:08:02 PM	R54924
Nitrogen, Nitrate (As N)	ND	0.50	H	mg/L	5	10/16/2018 11:08:02 PM	R54924
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	10/16/2018 11:08:02 PM	R54924
Sulfate	1300	25	*	mg/L	50	10/23/2018 9:43:56 PM	A55111
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MRA**	
Conductivity	3000	5.0		µmhos/c	1	10/18/2018 8:29:12 PM	R55027
SM2320B: ALKALINITY						Analyst: **MRA**	
Bicarbonate (As CaCO3)	363.5	20.00		mg/L Ca	1	10/18/2018 8:29:12 PM	R55027
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	10/18/2018 8:29:12 PM	R55027
Total Alkalinity (as CaCO3)	363.5	20.00		mg/L Ca	1	10/18/2018 8:29:12 PM	R55027
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2390	200	*D	mg/L	1	10/19/2018 5:32:00 PM	41078
SM4500-H+B / 9040C: PH						Analyst: **MRA**	
pH	7.55		H	pH units	1	10/18/2018 8:29:12 PM	R55027
EPA METHOD 200.7: METALS						Analyst: **pmf**	
Calcium	430	10		mg/L	10	10/29/2018 3:31:18 PM	41098
Iron	890	40	*	mg/L	2E	10/30/2018 6:50:11 PM	41098
Magnesium	41	1.0		mg/L	1	10/29/2018 3:29:24 PM	41098
Manganese	45	0.10	*	mg/L	50	10/29/2018 3:43:25 PM	41098
Potassium	2.2	1.0		mg/L	1	10/29/2018 3:29:24 PM	41098
Sodium	390	10		mg/L	10	10/29/2018 3:31:18 PM	41098
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Naphthalene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
1-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
2-Methylnaphthalene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Acenaphthylene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Acenaphthene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Fluorene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Phenanthrene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Anthracene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Fluoranthene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 12:45:00 PM
Lab ID: 1810834-003 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: PAHS						Analyst: **DAM**	
Pyrene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Benz(a)anthracene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Chrysene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Benzo(b)fluoranthene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Benzo(k)fluoranthene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Benzo(a)pyrene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	10/24/2018 6:06:28 PM	41072
Surr: N-hexadecane	66.1	35.2-113		%Rec	1	10/24/2018 6:06:28 PM	41072
Surr: Benzo(e)pyrene	89.7	48.3-123		%Rec	1	10/24/2018 6:06:28 PM	41072
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Toluene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Ethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Naphthalene	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
2-Methylnaphthalene	ND	4.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Acetone	ND	10		µg/L	1	10/18/2018 8:35:00 PM	R54984
Bromobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Bromodichloromethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Bromoform	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Bromomethane	ND	3.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
2-Butanone	ND	10		µg/L	1	10/18/2018 8:35:00 PM	R54984
Carbon disulfide	ND	10		µg/L	1	10/18/2018 8:35:00 PM	R54984
Carbon Tetrachloride	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Chlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Chloroethane	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Chloroform	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Chloromethane	ND	3.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
2-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
4-Chlorotoluene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
cis-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984

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Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 12:45:00 PM
Lab ID: 1810834-003 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Dibromochloromethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Dibromomethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1-Dichloroethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1-Dichloroethene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,3-Dichloropropane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
2,2-Dichloropropane	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Hexachlorobutadiene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
2-Hexanone	ND	10		µg/L	1	10/18/2018 8:35:00 PM	R54984
Isopropylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
4-Isopropyltoluene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
4-Methyl-2-pentanone	ND	10		µg/L	1	10/18/2018 8:35:00 PM	R54984
Methylene Chloride	ND	3.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
n-Butylbenzene	ND	3.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
n-Propylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
sec-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Styrene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
tert-Butylbenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
trans-1,2-DCE	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Trichlorofluoromethane	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Vinyl chloride	ND	1.0		µg/L	1	10/18/2018 8:35:00 PM	R54984
Xylenes, Total	ND	1.5		µg/L	1	10/18/2018 8:35:00 PM	R54984
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	10/18/2018 8:35:00 PM	R54984

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
Project: Giant Bloomfield Refinery **Collection Date:** 10/12/2018 12:45:00 PM
Lab ID: 1810834-003 **Matrix:** AQUEOUS **Received Date:** 10/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	10/18/2018 8:35:00 PM	R54984
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/18/2018 8:35:00 PM	R54984
Surr: Toluene-d8	98.0	70-130		%Rec	1	10/18/2018 8:35:00 PM	R54984

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID	**MB-41098**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832203**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**BatchQC**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832204**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	96.7	50	150			
Iron	0.023	0.020	0.02000	0	113	50	150			
Magnesium	ND	1.0	0.5000	0	95.2	50	150			
Manganese	ND	0.0020	0.002000	0	95.5	50	150			
Potassium	ND	1.0	0.5000	0	110	50	150			

Sample ID	**LCS-41098**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**LCSW**	Batch ID:	**41098**	RunNo:	**55103**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/23/2018**	SeqNo:	**1832205**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	44	1.0	50.00	0	87.1	85	115			
Iron	0.50	0.020	0.5000	0	99.6	85	115			
Magnesium	45	1.0	50.00	0	89.4	85	115			
Manganese	0.49	0.0020	0.5000	0	97.4	85	115			
Potassium	44	1.0	50.00	0	88.4	85	115			

Sample ID	**MB-41098**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**41098**	RunNo:	**55178**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**	SeqNo:	**1834489**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**BatchQC**	Batch ID:	**41098**	RunNo:	**55178**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**	SeqNo:	**1834490**	Units:	**mg/L**			

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID	**LLLCS-41098**	SampType:	**LCSLL**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41098**		RunNo:	**55178**				
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**		SeqNo:	**1834490**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	94.8	50	150			

Sample ID	**LCS-41098**	SampType:	**LCS**		TestCode:	**EPA Method 200.7: Metals**				
Client ID:	**LCSW**	Batch ID:	**41098**		RunNo:	**55178**				
Prep Date:	**10/19/2018**	Analysis Date:	**10/25/2018**		SeqNo:	**1834491**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	52	1.0	50.00	0	103	85	115			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R54924**	RunNo: **54924**
Prep Date:	Analysis Date: **10/16/2018**	SeqNo: **1825722** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R54924**	RunNo: **54924**
Prep Date:	Analysis Date: **10/16/2018**	SeqNo: **1825723** 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			
Chloride	4.8	0.50	5.000	0	95.9	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	98.5	90	110			
Bromide	2.5	0.10	2.500	0	98.3	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	102	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	98.3	90	110			

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1832031** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A55111**	RunNo: **55111**
Prep Date:	Analysis Date: **10/23/2018**	SeqNo: **1832032** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	95.2	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827896** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.8	70	130			
Toluene	19	1.0	20.00	0	96.6	70	130			
Chlorobenzene	20	1.0	20.00	0	98.4	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	89.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.0	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.5	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.6	70	130			
Surr: Toluene-d8	9.5		10.00		95.4	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**
02-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refinery

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**
02-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refinery

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R54984**	RunNo: **54984**
Prep Date:	Analysis Date: **10/18/2018**	SeqNo: **1827897** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.5		10.00		94.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID **lcs-41072**	SampType: **LCS**	TestCode: **EPA Method 8270C: PAHs**							
Client ID: **LCSW**	Batch ID: **41072**	RunNo: **55145**							
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833493**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	9.5	0.50	20.00	0	47.4	28.6	113			
1-Methylnaphthalene	10	0.50	20.00	0	51.3	27	113			
2-Methylnaphthalene	9.7	0.50	20.00	0	48.3	26.3	112			
Acenaphthylene	12	0.50	20.00	0	62.2	36.2	114			
Acenaphthene	13	0.50	20.00	0	63.9	35.6	116			
Fluorene	13	0.50	20.00	0	66.8	38.4	116			
Phenanthrene	15	0.50	20.00	0	76.8	42.3	118			
Anthracene	16	0.50	20.00	0	78.6	42.2	117			
Fluoranthene	16	0.50	20.00	0	78.2	42.5	118			
Pyrene	16	0.50	20.00	0	81.0	40.8	121			
Benz(a)anthracene	15	0.50	20.00	0	72.9	43	118			
Chrysene	14	0.50	20.00	0	70.1	39.4	119			
Benzo(b)fluoranthene	15	0.50	20.00	0	74.1	47.8	115			
Benzo(k)fluoranthene	14	0.50	20.00	0	71.1	40.5	120			
Benzo(a)pyrene	15	0.50	20.00	0	72.7	41.5	115			
Dibenz(a,h)anthracene	15	0.50	20.00	0	74.7	48.6	115			
Benzo(g,h,i)perylene	16	0.50	20.00	0	80.0	42	119			
Indeno(1,2,3-cd)pyrene	15	0.50	20.00	0	75.4	42.9	118			
Surr: N-hexadecane	48		87.60		54.6	35.2	113			
Surr: Benzo(e)pyrene	14		20.00		70.0	48.3	123			

Sample ID **lcs-41143**	SampType: **LCS**	TestCode: **EPA Method 8270C: PAHs**							
Client ID: **LCSW**	Batch ID: **41143**	RunNo: **55145**							
Prep Date: **10/23/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833494**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: N-hexadecane	49		87.60		56.3	35.2	113			
Surr: Benzo(e)pyrene	11		20.00		54.9	48.3	123			

Sample ID **lcsd-41072**	SampType: **LCSD**	TestCode: **EPA Method 8270C: PAHs**							
Client ID: **LCSS02**	Batch ID: **41072**	RunNo: **55145**							
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833495**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	15	0.50	20.00	0	73.3	28.6	113	42.9	40.7	R
1-Methylnaphthalene	15	0.50	20.00	0	73.0	27	113	34.9	38.4	
2-Methylnaphthalene	14	0.50	20.00	0	72.3	26.3	112	39.8	25.5	R
Acenaphthylene	18	0.50	20.00	0	89.7	36.2	114	36.2	34.1	R
Acenaphthene	17	0.50	20.00	0	85.2	35.6	116	28.6	32.1	
Fluorene	17	0.50	20.00	0	87.3	38.4	116	26.6	28	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID **lcsd-41072**	SampType: **LCSD**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **LCSS02**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833495** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenanthrene	21	0.50	20.00	0	103	42.3	118	29.4	37.4	
Anthracene	22	0.50	20.00	0	108	42.2	117	31.3	36.2	
Fluoranthene	21	0.50	20.00	0	106	42.5	118	30.6	26.6	R
Pyrene	20	0.50	20.00	0	102	40.8	121	23.1	26.8	
Benz(a)anthracene	20	0.50	20.00	0	101	43	118	32.7	25.1	R
Chrysene	19	0.50	20.00	0	94.0	39.4	119	29.1	23.3	R
Benzo(b)fluoranthene	20	0.50	20.00	0	102	47.8	115	31.9	22.5	R
Benzo(k)fluoranthene	20	0.50	20.00	0	99.5	40.5	120	33.3	30.9	R
Benzo(a)pyrene	20	0.50	20.00	0	101	41.5	115	32.3	23.2	R
Dibenz(a,h)anthracene	21	0.50	20.00	0	106	48.6	115	34.9	26.5	R
Benzo(g,h,i)perylene	21	0.50	20.00	0	105	42	119	27.0	30.7	
Indeno(1,2,3-cd)pyrene	21	0.50	20.00	0	104	42.9	118	32.2	25.4	R
Surr: N-hexadecane	53		87.60		60.8	35.2	113	0	0	
Surr: Benzo(e)pyrene	18		20.00		92.1	48.3	123	0	0	

Sample ID **lcsd-41143**	SampType: **LCSD**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **LCSS02**	Batch ID: **41143**	RunNo: **55145**
Prep Date: **10/23/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833496** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: N-hexadecane	140		175.2		79.0	35.2	113	0	0	
Surr: Benzo(e)pyrene	33		40.00		82.6	48.3	123	0	0	

Sample ID **mb-41072**	SampType: **MBLK**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **PBW**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833497** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.50								
1-Methylnaphthalene	ND	0.50								
2-Methylnaphthalene	ND	0.50								
Acenaphthylene	ND	0.50								
Acenaphthene	ND	0.50								
Fluorene	ND	0.50								
Phenanthrene	ND	0.50								
Anthracene	ND	0.50								
Fluoranthene	ND	0.50								
Pyrene	ND	0.50								
Benz(a)anthracene	ND	0.50								
Chrysene	ND	0.50								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID **mb-41072**	SampType: **MBLK**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **PBW**	Batch ID: **41072**	RunNo: **55145**
Prep Date: **10/18/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833497** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	ND	0.50								
Benzo(k)fluoranthene	ND	0.50								
Benzo(a)pyrene	ND	0.50								
Dibenz(a,h)anthracene	ND	0.50								
Benzo(g,h,i)perylene	ND	0.50								
Indeno(1,2,3-cd)pyrene	ND	0.50								
Surr: N-hexadecane	46		87.60		52.9	35.2	113			
Surr: Benzo(e)pyrene	14		20.00		71.2	48.3	123			

Sample ID **mb-41143**	SampType: **MBLK**	TestCode: **EPA Method 8270C: PAHs**
Client ID: **PBW**	Batch ID: **41143**	RunNo: **55145**
Prep Date: **10/23/2018**	Analysis Date: **10/24/2018**	SeqNo: **1833498** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: N-hexadecane	51		87.60		58.3	35.2	113			
Surr: Benzo(e)pyrene	11		20.00		56.1	48.3	123			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**

02-Nov-18

Client: Western Refining Southwest, Inc.

Project: Giant Bloomfield Refinery

Sample ID	**lcs-1 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829292**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	102	80	120			

Sample ID	**lcs-2 98.3uS eC**	SampType:	**lcs**		TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**				
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829318**	Units:	**µmhos/cm**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	98.30	0	106	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**
02-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refinery

Sample ID	**mb-1 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829250**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	ND	20.00									

Sample ID	**lcs-1 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829251**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	77.16	20.00	80.00	0	96.4	90	110				

Sample ID	**mb-2 alk**	SampType:	**mblk**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829275**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	ND	20.00									

Sample ID	**lcs-2 alk**	SampType:	**lcs**		TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R55027**		RunNo:	**55027**					
Prep Date:		Analysis Date:	**10/18/2018**		SeqNo:	**1829276**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Alkalinity (as CaCO3)	77.48	20.00	80.00	0	96.8	90	110				

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810834**
02-Nov-18

Client: Western Refining Southwest, Inc.
Project: Giant Bloomfield Refinery

Sample ID **MB-41078**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **41078**	RunNo: **55034**
Prep Date: **10/18/2018**	Analysis Date: **10/19/2018**	SeqNo: **1829460** 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-41078**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **41078**	RunNo: **55034**
Prep Date: **10/18/2018**	Analysis Date: **10/19/2018**	SeqNo: **1829461** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

Qualifiers:

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

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: **1810834** RcptNo: 1

Received By: **Victoria Zellar** **10/13/2018 10:20:00 AM** Victoria Zellar

Completed By: **Erin Melendrez** **10/16/2018 9:42:31 AM**

Reviewed By: JAB 10/16/18

Labeled By: IO 10/16/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☐	No ☑	
8. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	0.4mL HNO3 No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 3
(<2 or >12 unless noted)
Adjusted? YES
Checked by: IO 10/16/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

For wet chem analysis poured off approx 350mL. For metals analysis added approx 0.4mL HNO3 to samples for acceptable pH. Held for 24 hours prior Analysis. IO 10/16/2018

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.7	Good	Yes			

Chain-of-Custody Record

Client: Western Refining
Allan Haines
Mailing Address:

Phone #: 970-385-1096
email or Fax#: aharmann@henv.com

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

Accreditation
☐ NELAP ☐ Other

☒ EDD (Type) POE

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Giant Bloomfield Refinery

Project #:

Project Manager: Devin Hencomann

Sampler: Josh Adams
On Ice: ☒ Yes ☐ No
Sample Temperature: 5.9 + (0.2) = 5.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	see attached				Air Bubbles (Y or N)
~~10-12-18~~	~~12:45~~	~~GW~~	~~GRW-6~~	3-HCl VOA, 500ml, 1 liter	HCl	1810834																
10-12-18	14:00	GW	GBR-52	3-VOA, 1-500ml	HCl	-001												X				
↓	15:00	↓	GBR-17	3-VOA, 1-500ml 1-liter	HCl	-002												X				
↓	1245	↓	GRW-6	various	various	-003												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10-12-18	1533		Christen Walk	10/12/18	1533
10/12/18	1834	Christen Walk	Victoria Gillan	10/13/18	10:20

Remarks:
cc: ~~ethenc~~ aharmann@henv.com

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

10/12/18

GIANT BLOOMFIELD REFINERY
WESTERN REFINING
ATTACHMENT TO COC

SAMPLING CONDUCTED ON _____ **BY**_____

Sample ID	ANNUALLY (DEC)
~~GRW-3~~	VOC
	GWC
	PAH
~~GRW-6~~	VOC
	GWC
	PAH
~~GBR-17~~	VOC
	GWC
	PAH
GBR-24D	VOC
	GWC
	PAH
~~GBR-30~~	VOC
	GWC
	PAH
GBR-31	VOC
	GWC
	PAH
GBR-32	VOC
	GWC
	METALS
~~GBR-48~~	VOC
	GWC
	METALS
GBR-49	VOC
	GWC
	METALS
GBR-50	VOC
	GWC
	METALS
~~GBR-51~~	VOC
	GWC
~~GBR-52~~	VOC
	GWC
~~SHS-8~~	VOC
	GWC

Analysis	method	Bottle
VOC	method 8260	3 - HCL VOA

PAH	method 8270	1 - Liter Amber (non preserved)

GWC		
pH	SM 4500-H+B	1 - 500ml (non preserved)
EC	SM 2510B	
TDS	SM 2540C MOD	
alkalinity	SM 2320B	
hardness	SM 2340B	
ANIONS	EPA Method 300.0	
	nitrate/nitrite	1 - 250ml H2SO4
	bromide	1 - 500ml HNO3
	chloride	
	sulfate	
	phosporus	
	fluoride	
CATIONS / METALS	EPA Method 200.7	
	calcium	
	iron	
	magnesium	
	manganese	
	potassium	
	sodium	
Metals	EPA Method 200.7	1 - 500ml HNO3
	barium	
	beryllium	
	cadmium	
	chromium	
	silver	
	lead	
	nickel	
	EPA 200.8	
	copper	
	zinc	
	antimony	
	arsenic	
	selenium	
	thallium	
	Epa Method 245.1	
	mercury	

GRW-6
GBR-52
GBR-17