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Western Refining

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April 12, 2013

Glen Von Gonten
Environmental Engineer
New Mexico Energy, Minerals & Natural Resources Dept.
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: 2012 Annual Report – Bloomfield Crude Station.

Federal Express Tracking #: 7995 1040 3753

Dear Mr. Von Gonten;

Please find enclosed the 2012 Annual Report for the former Bloomfield Crude Station located in the NW ¼ of the NW ¼ of Section 22, Township 29 N, Range 11 W in Bloomfield, New Mexico.

If you should have any questions or require additional information, please do not hesitate to contact me at 505-632-4171 or at Randy.Schmaltz@wnr.com.

Sincerely,

James R. Schmaltz
Health, Safety, Environmental & Regulatory Director
Western Refining Southwest, Inc.

cc: Brandon Powell, NM OCD Aztec District Office
Allen Haines, Western Refining, El Paso
WNR File

2012 ANNUAL REPORT

BLOOMFIELD CRUDE STATION
BLOOMFIELD, NEW MEXICO

MARCH 2013

WESTERN REFINING SOUTHWEST, INC.
111 County Road 4990
Bloomfield, New Mexico 87413

2012 ANNUAL REPORT

BLOOMFIELD CRUDE STATION
BLOOMFIELD, NEW MEXICO

MARCH 2013

Prepared for:

WESTERN REFINING SOUTHWEST, INC.
111 COUNTY ROAD 4990
BLOOMFIELD, NEW MEXICO 87413

Prepared by:

LT ENVIRONMENTAL, INC.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
(970) 385-1096

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EXECUTIVE SUMMARY

LT Environmental, Inc. (LTE), on behalf of Western Refining Southwest, Inc. (Western), has prepared this report detailing work completed between April 2012 through March 2013 at the former Bloomfield Crude Station (Site) in Bloomfield, New Mexico.

The Site is located on the southwest corner of Blanco Boulevard and Fifth Street in the city of Bloomfield, New Mexico. The legal description of the Site is the northwest quarter of the northwest quarter of Section 22, Township 29 North, Range 11 West in San Juan County, New Mexico.

The scope of work includes mitigation of subsurface hydrocarbon impacts identified following removal of a 55,000 barrel crude oil storage tank in late 1995. Historical releases from this tank impacted soil and groundwater. During the time period covered by this report, Western utilized a bioventing system to reduce concentrations of hydrocarbons in the subsurface soil. LTE conducted regular operations and maintenance on the system hardware, and monitored subsurface airflow by measuring concentrations of oxygen and carbon dioxide gas.

Bioventing has effectively reduced the concentrations of hydrocarbons in the subsurface soil. Concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) in the groundwater have diminished except in monitoring well MW-7. Monitoring well MW-7 is located cross-gradient of the source areas and the BTEX concentrations detected are not likely related to Western's activities. BTEX concentrations in groundwater from other monitoring wells have been below NMWQCC standards since January of 2007.

Based on these results and following over 10 years of remediation efforts, Western is in the process of drafting an argument for Site closure, which is anticipated to be submitted in 2013. Western will continue annual sampling of groundwater wells for laboratory analysis until closure is granted.

1.0 INTRODUCTION

LT Environmental, Inc. (LTE), on behalf of Western Refining Southwest, Inc. (Western), has prepared this report detailing work completed from April 2012 through March 2013 to mitigate hydrocarbon-impacted groundwater at the former Bloomfield Crude Station (Site) in Bloomfield, New Mexico.

1.1 SITE DESCRIPTION

The Site is located on the southwest corner of West Blanco Boulevard and North Fifth Street in Bloomfield, New Mexico. It occupies approximately 5.5 acres within the northwest quarter of the northwest quarter of Section 22, Township 29 North, Range 11 West in San Juan County (Figure 1).

A 55,000 barrel crude oil storage tank (Tank 967-D) constructed in 1956 was previously located within an earthen berm at the Site (Figure 2). Tank 967-D and the earthen berm were removed between late 1995 and early 1996. Currently, the former tank location is unoccupied.

West of the Site is a City of Bloomfield electrical substation and two natural gas well sites owned and operated by Mañana Gas. West of the electrical substation and the Mañana well sites, on the corner of North Frontier Street and West Blanco Boulevard, is a vacant lot. There appears to be a well monument located on the lot and may indicate a previous well site that has been plugged and abandoned. Historical research of this area indicates that several oil wells, and possibly gas wells with associated unlined pits, were operational on this lot, such as the Bishop #1, Bishop #3, Hare #1 and Kittell #1 (Figure 2).

Site lithology consists of coarse to very coarse, well sorted and dry sand extending from the ground surface to depths between 4 feet to 11 feet below ground surface (bgs). The sand grades into clayey sands and sandy clays. These fine-grained layers consist of low plasticity clay that is medium dense or stiff and moist. Within the fine-grained clay layers are occasional coarse to very coarse well-graded saturated sand layers ranging from 2 inches to 8 inches thick. These sand layers are discontinuous, but appear to transport shallow groundwater beneath the Site. A sandy clay layer, which retards downward movement of perched water, occurs from 8 feet to 19 feet bgs. Depth to groundwater in the shallow saturated zone is approximately 15 feet bgs. The direction of groundwater flow varies from southwest to south-southeast. Recharge to this perched zone is most likely from direct infiltration of rainfall or from seasonal up-gradient irrigation. Natural groundwater quality, as measured in up-gradient and source area wells over time, consistently exhibits elevated total dissolved solids (TDS) and sulfate contents. Specific details on Site geography, hydrogeology, and geology are described in the report *Site Assessment for the Bloomfield Crude Station*, May 1995, previously submitted to the New Mexico Oil Conservation Division (NMOCD).

1.2 SITE HISTORY

When Tank 967-D and the earthern berm were removed in 1995 and 1996, approximately 12,924 cubic yards of hydrocarbon-impacted soil were excavated and disposed of at Western's Bisti landfarm. The excavation began on the east side of the tank pad and proceeded to the west.

Midway across the tank pad, phase-separated hydrocarbons (PSH) were observed on the groundwater along the southern edge of the excavation. This portion of the excavation was left open until 2001 to allow for recovery of PSH. Numerous subsurface investigations were conducted to define the limits of hydrocarbon migration and to design appropriate remedial systems. Historical accounts of soil boring and groundwater well installation activities are detailed in reports previously submitted to the NMOCD, including *Comprehensive Report for the Bloomfield Crude Station*, January 2000, and *Monitoring Well Installation, Groundwater Sampling and Bioventing Pilot Test*, July 2001.

Between 1994 and 2001, seven groundwater monitoring wells were installed, six of which are currently still in use (Figure 2). Monitoring well MW-1 was completed above the groundwater table and never produced sufficient volumes of water for sampling and was abandoned during excavation of the tank pad. Results from early sampling indicated that MW-2 was located in a PSH plume and monitoring wells MW-3, MW-4, MW-5, and MW-6 were outside of the plume. In addition, presence of dissolved phase hydrocarbons was confirmed in MW-2 and MW-7. It has been argued that MW-7, located cross-gradient of the Site, exhibits a different groundwater quality signature than other monitoring well data and may be related to a separate source area. Monitoring well MW-7 is not considered part of the contaminant plume at the Site.

Historic soil borings indicated that significant amounts of clean overburden would have to be removed to excavate additional hydrocarbon-impacted soil. Alternate remedial activities resulting from subsurface investigations have included manual removal of PSH from the water table, bioventing, air sparging, and groundwater monitoring. Details of these activities can be found in previous annual reports submitted by Western to the NMOCD.

1.2.1 Bioventing

Following a successful pilot test on June 20, 2001, bioventing was initiated at the Site on February 17, 2003. System installation included boring 3-inch diameter holes with a hand auger, collecting soil samples every 3 feet and screening the samples using NMOCD headspace techniques. Eight soil samples with the highest headspace readings were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), as well as total petroleum hydrocarbons (TPH).

One foot of 1-inch diameter polyvinyl chloride (PVC) 0.01-inch slotted well screen was set in each hole at approximately 12 feet bgs at 39 locations. The air was injected where field screening and laboratory analyses indicated elevated concentrations of hydrocarbons existed in the subsurface. Injection points have varied over time, in an effort to target problem areas. Twenty one points are currently used for monitoring subsurface gases, and eighteen points are used to inject air. Monitoring and injection point locations are depicted on Figure 3.

Injection air is supplied by a Gast™ oil-less rotary vane compressor that supplies approximately 90 standard cubic feet per minute air. The compressor is housed in a former office building at the Site and travels through 1 ½-inch PVC pipe to each injection point. The compressor operates from 0600 hours to 1800 hours Monday through Friday.

1.2.2 Groundwater Remediation

From 1999 through 2004, Giant Industries, Arizona (former owner of the Site) regularly monitored PSH concentrations and manually purged groundwater and PSH from MW-2, as necessary, using a disposable bailer. PSH was also removed from the portion of the excavation left open from 1996 through 2001. After 2004, PSH was no longer observed in MW-2, but elevated concentrations of BTEX were detected in groundwater samples from MW-2. To address the elevated BTEX concentrations, an air sparge system was installed adjacent to MW-2 on October 9, 2006. BTEX concentrations from groundwater samples in MW-2 dropped below New Mexico Water Quality Control Commission (NMWQCC) standards by January 2007. Quarterly sampling of MW-2 was initiated in 2007 to more closely monitor BTEX concentrations. The air sparge system was turned off in March 2008 after 5 consecutive clean quarters to ascertain whether BTEX concentrations in the groundwater would remain below NMWQCC standards or rebound. By February 2010, eight consecutive quarters of groundwater samples from MW-2 were below NMWQCC standards for BTEX and MW-2 was placed on the same annual sampling schedule as other monitoring wells at the Site.

1.3 SCOPE OF WORK

The scope of work for this project included biweekly operations and maintenance of the bioventing system. Oxygen and carbon dioxide gases were monitored in the subsurface airflow system to evaluate the effectiveness of the system in April 2012 and March 2013. Annual groundwater sampling was conducted to monitor groundwater quality at the Site. Western discontinued quarterly soil sampling in 2012 since concentrations of TPH have been reduced to below or near NMOCD standards. A summary of field activities, subsurface airflow data, analytical results groundwater sampling, and conclusions are presented in the subsequent sections of this report.

2.0 METHODOLOGY

During the period covered in this report, bioventing continued as described in the *Bioventing Plan*, dated July 2002. Oxygen and carbon dioxide were measured in subsurface air flow. All groundwater monitoring wells were sampled to monitor overall groundwater quality.

2.1 BIOVENTING

Operations and maintenance activities were conducted bi-monthly on the bioventing system to ensure that the system was functioning properly. A technician conducts a site visit and inspects the compressor and timer. The technician then walks the Site visually inspecting PVC piping and valves for damages or problems, and addressing general housekeeping needs as required.

Oxygen and carbon dioxide concentrations in subsurface air flow were measured in April 2012 and March 2013. Gases were measured through valves at each monitoring and injection point with a GEM 500 Gas Monitor. Each monitoring and injection point was evacuated until the gas reading stabilized, at which time gas concentrations were recorded.

2.2 GROUNDWATER SAMPLING

LTE personnel sampled groundwater from MW-2 through MW-7 on March 20, 2013. MW-7 was sampled at the request of NMOCD; although, as discussed in previous reports, Western does not believe groundwater impact at this location is related to their operations.

Prior to sampling, depth to groundwater and total depth of each monitoring well were measured with a Keck oil-water interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. The volume of water in the monitoring wells was calculated, and a minimum of three casing volumes of water was purged from each monitoring well using a disposable bailer. As groundwater was extracted, pH, electric conductivity, and temperature were monitored. The monitoring wells were purged until these properties stabilized, indicating that the purge water was representative of aquifer conditions.

Once each monitoring well was purged, groundwater samples were collected by filling three 40-mililiter glass vials to be analyzed for BTEX by USEPA Method 8021B. The pre-cleaned and pre-preserved vials were filled and capped with no air inside to prevent degradation of the sample. Additional groundwater was collected in plastic bottles with appropriate preservative for analysis of general chemistry, including major cations, anions, TDS, pH, specific conductance, recoverable metals, hardness, and alkalinity. All groundwater samples were labeled with the time and date of collection, as well as the origin of the sample. They were immediately sealed and packed on ice and shipped to Hall Environmental Analytical Laboratory under proper chain-of-custody procedures.

3.0 ANALYTICAL RESULTS

3.1 BIOVENTING

Table 1 presents the average yearly carbon dioxide and oxygen concentrations measured in subsurface air from the bioventing system. Monitoring was conducted at all injection and monitoring points since the bioventing system configuration has changed over time to target areas of highest hydrocarbon concentrations. The actual semi-annual measurements are provided in Appendix A. Oxygen and carbon dioxide measurements have been consistent since 2007; however, minor changes were observed during this monitoring period. The amount of oxygen detected in IP5 and IP10 increased and the amount of carbon dioxide detected decreased as compared to previous years' data. Oxygen decreased and carbon dioxide increased in IP8 and IP9. Except for IP9, the average oxygen measured in each of these locations remained greater than 10 percent (%). The average oxygen measured in IP9 was 8.8 %.

3.2 GROUNDWATER ANALYTICAL RESULTS

LTE measured depth to groundwater in MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7 on March 20, 2013. The depth to groundwater data were used to calculate groundwater elevations and prepare a potentiometric surface map for the Site (Figure 4). Depth to groundwater and calculated groundwater elevations are presented in Table 2. Groundwater elevations ranged from 5,466.01 feet above mean sea level (amsl) in MW-5 to 5,473.01 feet amsl in MW-3. Groundwater flow direction is to the south-southwest in the northern portion of the Site and to the south in the southern portion of the Site.

BTEX concentrations in groundwater samples collected on March 20, 2013 were below NMWQCC standards at all monitoring wells except MW-7. The groundwater sample from MW-7 contained a concentration of 44 micrograms per liter (µg/l) of benzene and 920 µg/l of total xylenes. Laboratory analytical results for BTEX concentrations in groundwater samples collected on March 20, 2013 are presented in Table 3 and on Figure 5. Complete laboratory reports are provided in Appendix B. Historical groundwater sampling results (1994-March 2013) are summarized in Appendix C.

Results of the general chemistry and metals analyses of groundwater samples are detailed in Table 4 and Table 5. Consistent with historic results, groundwater samples collected from MW-2, MW-3, MW-4, MW-5, and MW-6 exhibit TDS values, sulfate concentrations, and manganese concentrations exceeding NMWQCC standards. The TDS and manganese concentrations in MW-7 also exceeded the NMWQCC standards in 2013. The groundwater sample collected from MW-5 contained a concentration of 680 mg/l of chloride, which exceeds the NMWQCC standard for chloride. Laboratory analytical results indicate metals concentrations are below NMWQCC standards in monitoring wells MW-2, MW-3, MW-4, MW-6 and MW-7, except for iron. All monitoring wells contain iron concentrations exceeding NMWQCC standards for domestic water supplies (Table 5). The groundwater sample collected from MW-6 contained concentrations that exceeded the NMWQCC standard for barium, cadmium, chromium, iron, and lead.

4.0 CONCLUSIONS

During the past nine years of operations, TPH and BTEX concentrations in soil have decreased, indicating the bioventing is effectively reducing concentrations of hydrocarbons in the subsurface soil. Western discontinued soil sampling in 2012 since concentrations of petroleum hydrocarbons sourced from the Site have been reduced to below or near NMOCD standards. Additional evaluation of petroleum hydrocarbon impact to soil at the Site will be provided in the pending closure request.

Concentrations of oxygen and carbon dioxide recorded through March 2013 indicate active biologic activity at the Site since bioventing began. Soil at the Site has been remediated to the most practical extent possible via excavation and bioventing. Remaining TPH concentrations in the soil have decreased by 91% to 99% and are not migrating either from the Site or to groundwater. Further bioventing is not likely to yield any significant TPH mass reduction in the soil.

Western has successfully remediated groundwater impacted by former Tank 967-D. Evaluation of total BTEX concentrations in groundwater coincidentally with groundwater flow direction between 1994 and 2012 indicates the presence of a groundwater plume with two, separate source areas: Tank 967-D at the Site and a separate source to the west of the Site. Groundwater from MW-7 contains concentrations of benzene and total xylenes exceeding NMWQCC standards. These impacts are not likely related to Western's activities at the Site due to MW-7's proximity to former off-site oil and gas wells and its location west of and cross-gradient to the Site.

Groundwater general chemistry and metals results, including those reported from an upgradient monitoring well (MW-3), indicate that the groundwater is not suitable for domestic use due to concentrations of TDS, sulfate, manganese, and iron that exceed the NMWQCC standards. Historical analytical sampling records indicate these parameters have always been elevated and appear to be naturally occurring in the aquifer.

The lower concentrations of TDS and sulfate present in MW-7 compared to MW-2, MW-3, MW-4, MW-5, and MW-6 indicate a different general chemistry signature is present in the groundwater in MW-7; further evidence that the source for elevated BTEX concentrations in MW-7 are not from the Tank 967-D release at the Site. MW-6 continues to have detectable concentrations of cadmium, chromium, and lead. Elevated concentrations of chloride in MW-5 can be attributed to dissolution of naturally occurring chloride found in the 11-foot thick clay layer that is intercepted by the 15-foot screened interval. Elevated barium concentrations in MW-6 and MW-7 might be attributable to historical drilling operations unrelated to crude oil storage at the Site.

5.0 RECOMMENDATIONS

Western will pursue site closure during 2013. Western will continue bioventing and monitor groundwater annually until site closure is approved by the NMOCD.

FIGURES

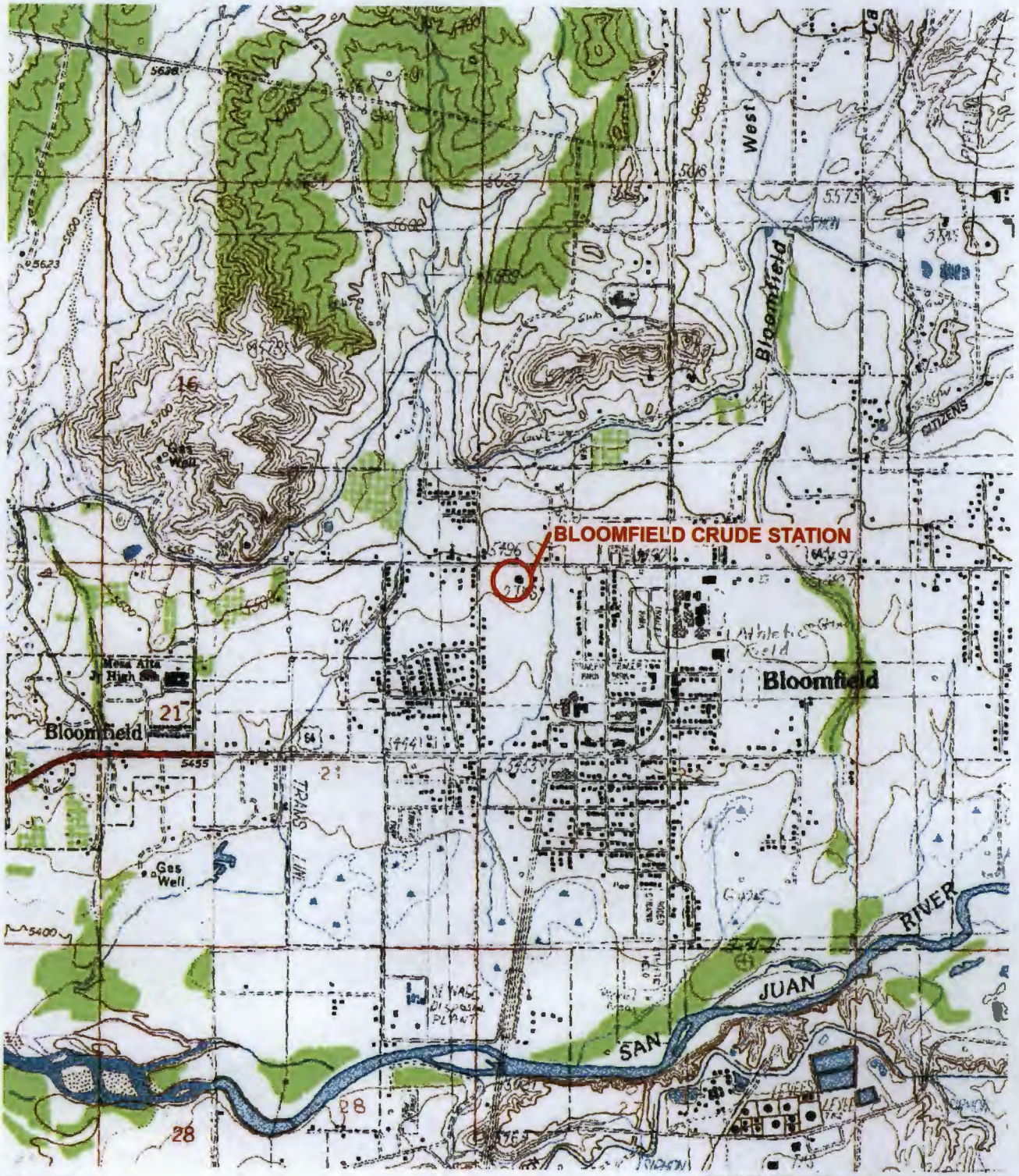

IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

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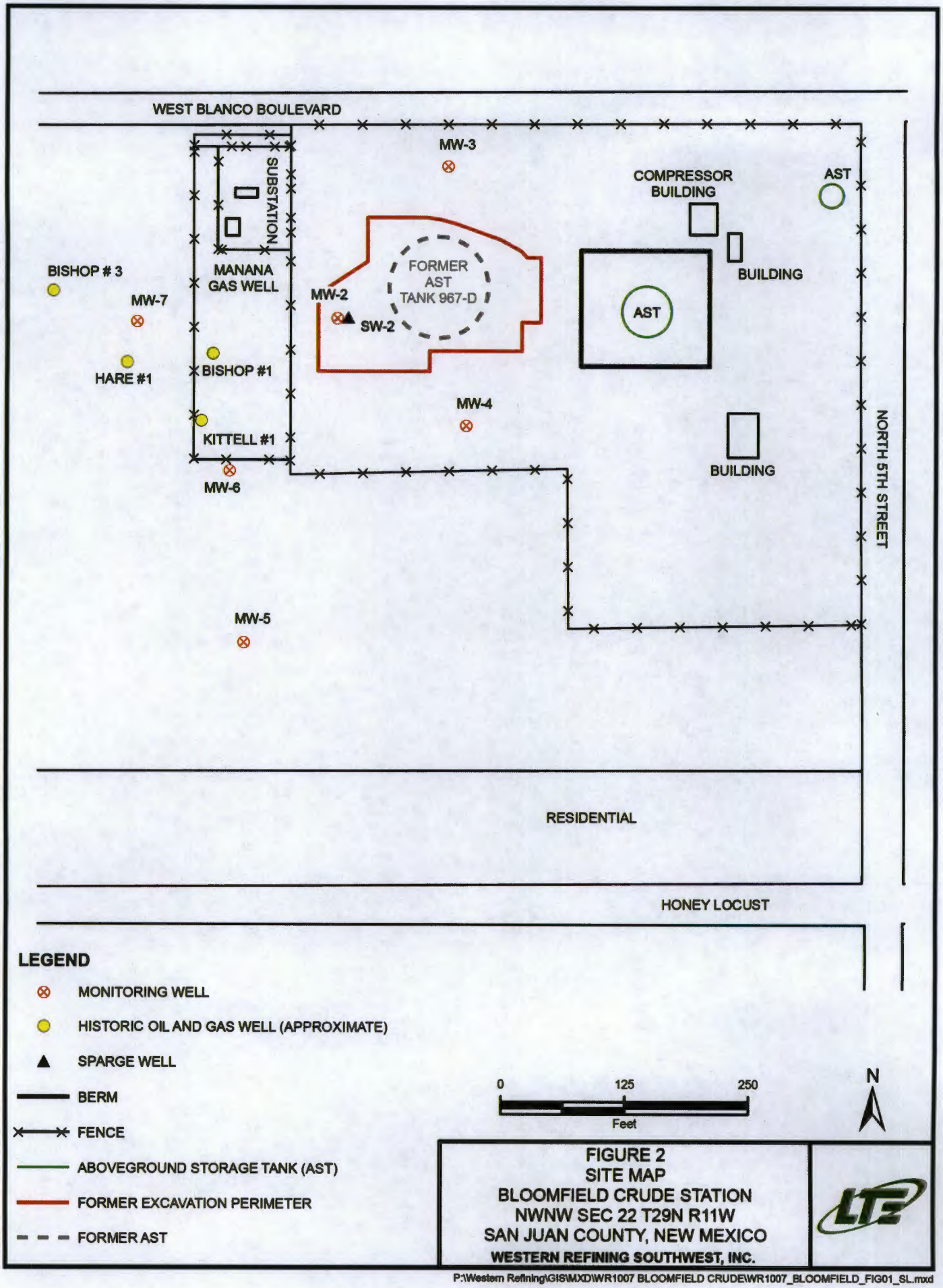

FIGURE 2
SITE MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG01_SL.mxd

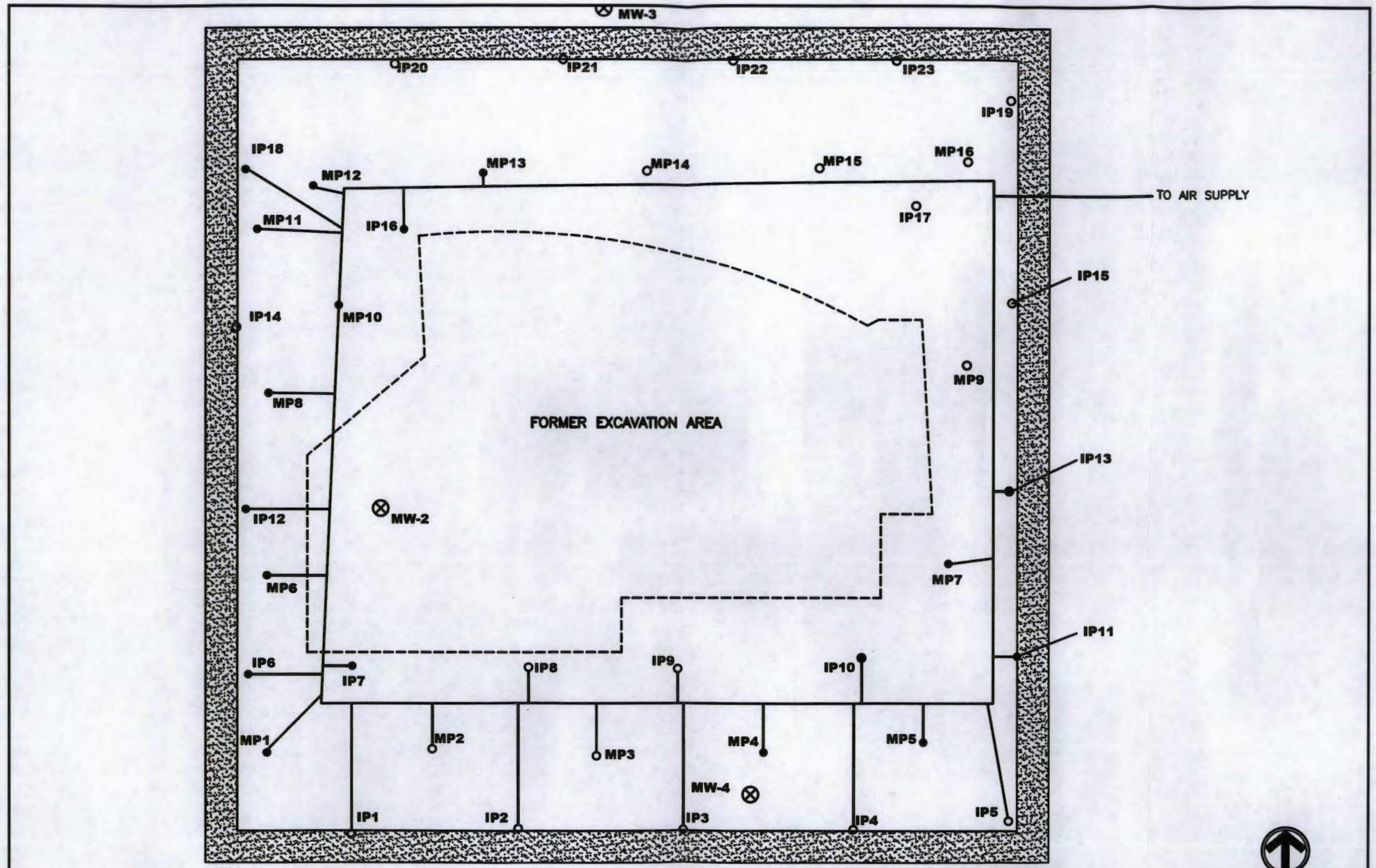

FIGURE 3
BIOVENT SYSTEM LAYOUT
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29 R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

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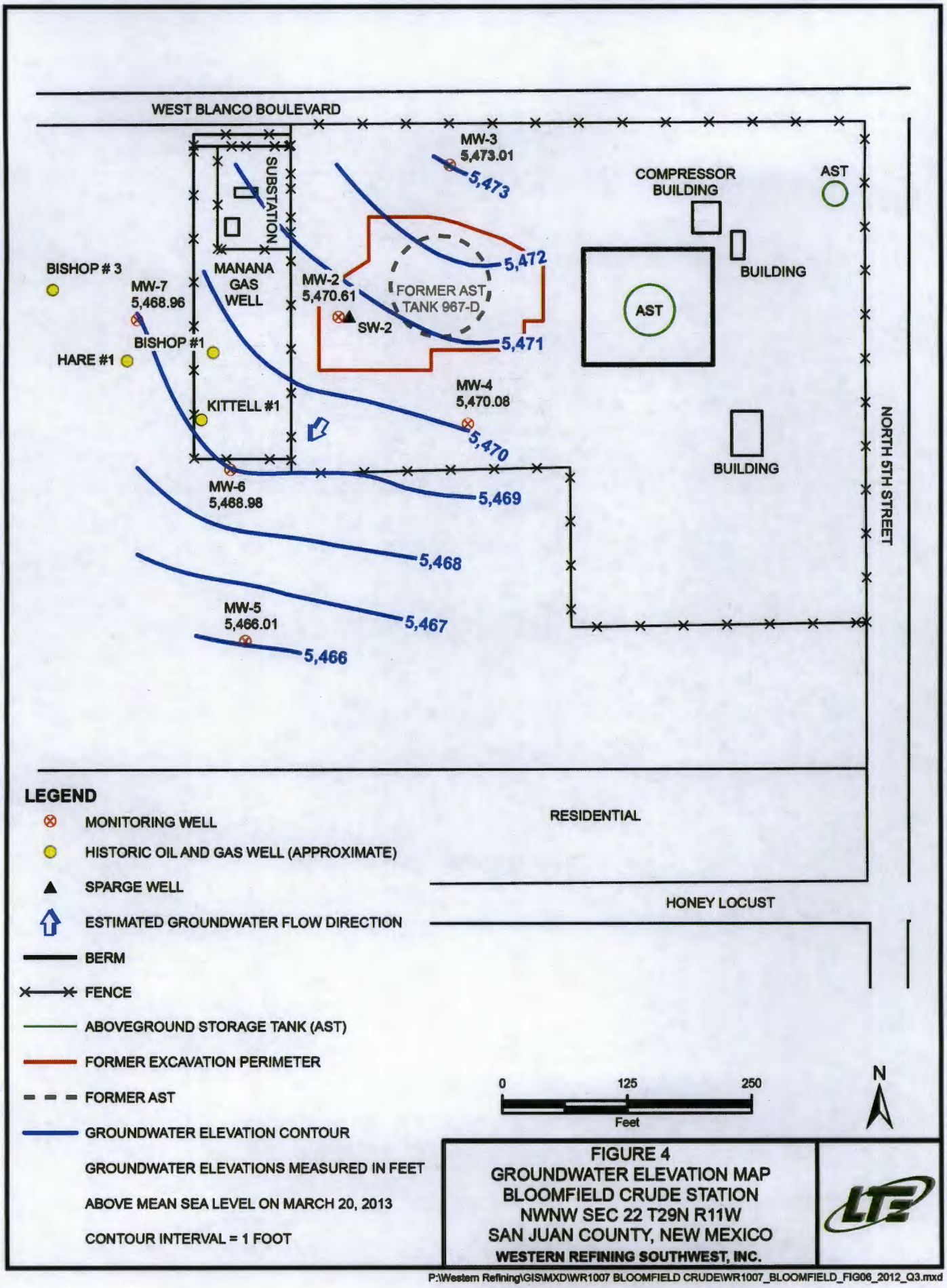

FIGURE 4
GROUNDWATER ELEVATION MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG06_2012_Q3.mxd

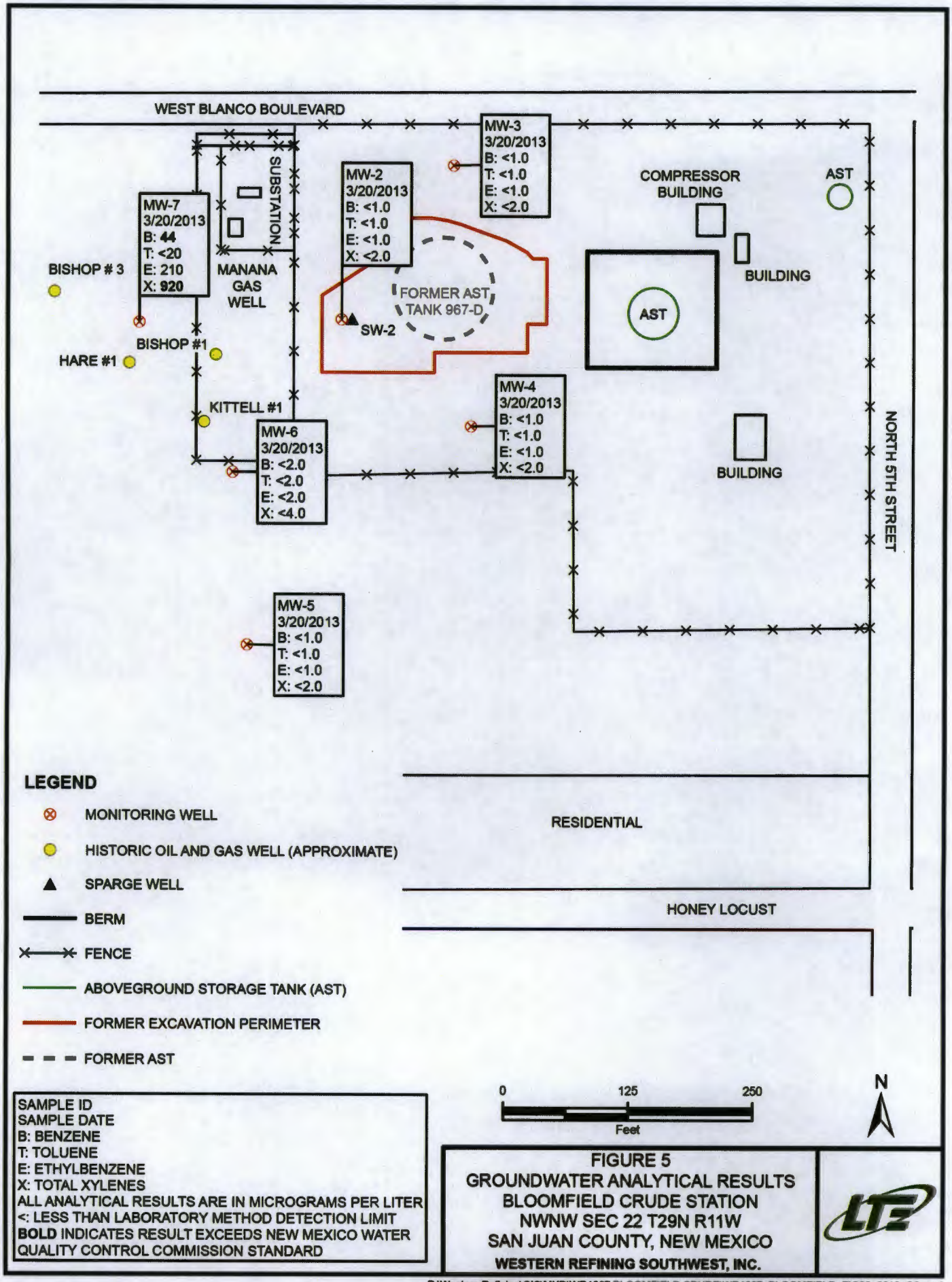

FIGURE 5
GROUNDWATER ANALYTICAL RESULTS
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG06_2012_Q3.mxd

TABLES

TABLE 1

AIR MONITORING RESULTS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Monitoring Point	Oxygen Percentage										
	Pre-test	2003 avg	2004 avg	2005 avg	2006 avg	2007 avg	2008 avg	2009 avg	2010 avg	2011 avg	2012 avg
IP1						17.1	19.1	18.9	19.5	17.5	17.6
IP2						20.5	12.4	20.7	20.7	19.7	20.5
IP3						20.2	20.2	18.0	20.5	16.0	17.5
IP4						20.5	20.3	20.5	20.2	18.0	20.5
IP5						19.2	20.3	19.9	19.3	14.3	18.8
IP6						15.1	19.6	15.3	12.4	20.2	21.3
IP7						18.0	20.0	20.6	20.9	20.2	21.3
IP8	20.2	3.3	4.8	0.0	0.0	20.5	10.8	20.7	20.9	20.2	15.9
IP9						18.1	20.2	20.0	17.0	13.5	8.8
IP10	17.2	3.2	12.4	4.8	7.2	14.5	14.6	13.8	5.1	3.7	19.1
IP11	20.9	9.5	8.6	13.5	19.6	20.4	20.4	18.2	21.0	20.0	21.2
IP12						18.4	18.8	20.8	20.8	19.9	21.5
IP13	20.9	8.6	19.0	18.3	17.9	19.5	18.9	18.5	14.1	16.8	19.8
IP14	19.9	5.8	4.5	3.4	15.6	18.5	14.4	14.3	13.4	16.5	18.4
IP15	20.9	0.1	19.9	20.3	20.0	20.3	20.2	20.4	20.3	19.4	20.7
IP16						20.5	14.3	21.2	21.0	20.3	21.5
IP17	20.9	0.4	19.2	19.0	19.4	17.6	20.4	20.0	19.8	18.5	20.1
IP18						17.6	19.2	21.2	21.0	20.2	21.4
IP19	20.9	9.3	16.2	18.1	19.4	19.1	19.7	20.2	19.0	17.2	18.6
IP20	20.5	5.9	7.2	13.5	17.8	19.0	19.7	19.4	19.9	19.3	19.9
IP21	20.9	8.3	18.1	19.7	18.7	20.0	20.2	20.1	19.9	19.0	20.5
IP22	20.9	0.1	17.5	18.3	19.2	20.0	20.3	19.7	19.2	18.1	20.0
IP23	20.9	0.7	19.3	18.7	19.4	20.2	20.7	19.9	19.8	18.4	20.4
MP1						17.9	19.5	20.7	20.9	20.2	21.1
MP2						20.4	20.2	15.9	17.8	15.6	14.7
MP3						17.0	18.2	18.1	19.0	17.4	16.2
MP4	19.0	1.9	6.2	2.0	0.0	20.5	13.4	17.9	11.1	19.8	21.2
MP5						20.5	18.7	20.4	21.0	19.8	21.1
MP6						15.7	19.9	20.8	20.9	20.2	21.4
MP7	18.6	6.6	7.9	14.2	18.5	20.5	14.1	20.7	21.1	20.0	21.0
MP8						18.1	20.1	20.7	20.7	20.1	21.5
MP9	20.5	13.1	18.9	19.3	18.9	19.6	20.1	19.6	18.5	19.6	20.1
MP10						16.8	20.5	21.4	20.7	20.0	20.8
MP11						17.2	16.0	21.4	20.8	20.0	21.3
MP12						19.7	15.7	21.4	20.9	20.2	21.5
MP13						17.3	19.0	17.6	19.8	20.0	21.5
MP14	19.2	14.2	8.3	14.1	15.9	19.1	18.8	19.8	17.4	15.7	17.9
MP15	20.9	18.4	14.9	14.2	18.4	19.2	20.5	20.0	16.4	14.8	17.6
MP16	20.9	20.1	19.0	19.5	19.3	19.3	19.7	20.2	18.3	17.2	18.6
Average	**20.2**	**13.9**	**13.4**	**13.9**	**15.8**	**19.1**	**18.4**	**19.5**	**18.7**	**18.1**	**19.5**

TABLE 1

AIR MONITORING RESULTS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Monitoring Point	Carbon Dioxide Percentage										
	Pre-test	2003 avg	2004 avg	2005 avg	2006 avg	2007 avg	2008 avg	2009 avg	2010 avg	2011 avg	2012 avg
IP1						2.8		1.8	1.1	2.0	2.5
IP2						0.0	1.9	0.0	0.2	0.4	0.1
IP3						0.0	0.4	1.5	0.7	3.9	3.5
IP4						0.0	0.1	0.0	0.2	1.2	0.4
IP5						1.1	0.1	0.9	1.7	2.9	1.7
IP6						5.4	0.2	3.2	6.3	0.1	0.0
IP7						2.5	0.1	0.0	0.1	0.1	0.0
IP8	0.8	13.4	10.6	3.5	14.4	0.0	1.5	0.0	0.1	0.1	3.2
IP9						0.2	0.1	0.7	4.7	4.5	8.6
IP10	1.8	6.5	11.0	4.9	14.1	6.5	5.7	3.8	14.5	16.4	6.3
IP11	0.0	1.0	11.9	4.5	1.3	0.0	0.2	0.1	0.1	0.1	0.0
IP12						1.4	0.2	0.0	0.1	0.1	0.0
IP13	0.2	1.7	1.4	2.1	2.2	0.5	1.4	1.1	2.8	2.7	0.8
IP14	1.0	6.8	10.1	13.7	4.8	2.0	4.0	5.4	5.5	2.7	2.8
IP15	0.8	1.2	0.3	0.5	0.6	0.1	0.1	0.5	0.6	0.6	0.5
IP16						0.0	0.4	0.0	0.1	0.1	0.0
IP17	1.0	1.1	1.3	2.1	1.0	0.2	0.3	0.8	1.2	1.7	1.2
IP18						2.9	0.2	0.0	0.1	0.1	0.0
IP19	0.4	1.2	3.5	2.4	0.9	1.4	1.0	1.5	1.9	1.9	2.6
IP20	0.6	6.4	8.4	5.8	1.8	1.0	0.9	1.4	1.3	0.8	1.0
IP21	1.4	1.2	2.2	4.1	0.9	0.2	0.4	0.8	1.4	1.5	0.7
IP22	0.4	0.9	1.9	2.3	1.1	0.4	0.2	1.0	1.5	2.2	1.6
IP23	0.6	0.7	0.8	2.0	0.9	0.2	0.2	0.3	1.1	1.9	0.4
MP1						2.1	0.3	0.0	0.1	0.1	0.1
MP2						0.2	0.1	0.0	0.5	2.0	3.6
MP3						0.5	1.6	2.2	1.6	1.9	3.4
MP4	1.2	12.1	14.5	6.3	14.9	0.0	1.7	3.0	8.2	0.1	0.0
MP5						0.0	0.2	0.0	0.1	0.1	0.1
MP6						4.6	0.2	0.0	0.1	0.1	0.0
MP7	1.4	5.6	8.3	4.2	0.7	0.0	0.3	0.0	0.1	0.1	0.0
MP8						2.2	0.2	0.0	0.1	0.1	0.0
MP9	1.0	1.9	1.0	1.5	1.3	0.3	0.3	1.1	1.8	1.4	1.6
MP10						3.2	0.0	0.0	0.1	0.1	0.1
MP11						3.3	0.5	0.0	0.1	0.1	0.0
MP12						0.3	0.6	0.0	0.1	0.1	0.0
MP13						2.1	0.2	0.5	1.0	0.1	0.0
MP14	1.0	3.3	8.0	5.3	3.5	1.1	1.2	1.8	3.0	3.7	3.0
MP15	0.6	1.8	3.7	3.4	1.5	1.5	0.2	0.5	3.3	4.2	3.5
MP16	0.1	1.0	1.4	1.4	1.2	1.2	1.0	0.4	2.4	2.9	2.7
Average	**0.8**	**3.8**	**5.6**	**3.5**	**3.7**	**1.3**	**0.7**	**0.9**	**1.8**	**1.7**	**1.4**

Notes:

2003 includes data from 2/03, 3/03, 10/03 and 1/ 04

2004 includes quarterly data from 4/04, 7/04, 10/04 and 1/05

2005 includes data from 4/05, 7/05, 10/05. The pump that injects air into the subsurface was being reparied during the 4th quarter monitoring event

2006 includes data from 4/06, 7/06, 10/06 and 1/07

2007 includes data from 4/07, 7/07, 10/07, and 1/08

2008 includes data from 4/08, 7/08, 10/08 and 1/09

2009 includes data from 4/09, 7/09, 10/09 and 1/10

2010 includes data from 4/10, 7/10, 10/10 and 1/11

2011 includes data from 4/11, 7/11, 10/11 and 1/12

2012 includes data from 4/5/2012 and 3/20/2013

TABLE 2

GROUNDWATER ELEVATION DATA
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Date	Casing Elevation (ft)	Depth to Water (ft BTOC)	Groundwater Elevation (ft)
MW-2	3/20/2013	5485.33	14.72	5470.61
MW-3	3/20/2013	5488.61	15.60	5473.01
MW-4	3/20/2013	5486.18	16.10	5470.08
MW-5	3/20/2013	5481.61	15.60	5466.01
MW-6	3/20/2013	5486.18	17.20	5468.98
MW-7	3/20/2013	5491.86	22.90	5468.96

Notes:
BTOC - Below Top of Casing
ft - feet
Water level elevation is given in feet above mean sea level

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)
MW-2	3/20/2013	<1.0	<1.0	<1.0	<2.0	0 - <5.0
MW-3	3/20/2013	<1.0	<1.0	<1.0	<2.0	0 - <5.0
MW-4	3/20/2013	<1.0	<1.0	<1.0	<2.0	0 - <5.0
MW-5	3/20/2013	<1.0	<1.0	<1.0	<2.0	0 - <5.0
MW-6	3/20/2013	<2.0	<2.0	<2.0	<4.0	0 - <10.0
MW-7	3/20/2013	**44**	<20	210	**920**	1,174 - < 1,194
NMWQCC STANDARD		**10**	**750**	**750**	**620**	**NE**

Notes:
Bold values indicate value exceeds NMWQCC standard
BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes
BTEX analyzed by EPA Method 8021b
NE - Not Established
NMWQCC - New Mexico Water Quality Control Commission
µg/L - micrograms per liter
< indicates result is less than the stated laboratory method detection limit

TABLE 4

GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTY
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Date	Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity (CaCO3) (mg/L)	Hardness (CaCO3) (mg/L)	Bicarbonate (HCO3) (mg/L)	Carbonate (CO3) (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Barium (mg/L)	Potassium (mg/L)
MW-2	3/20/2013	7.56	4,100	**3,190**	1,300	790	1,300	<5.0	45	**1,000**	740	270	<0.1	<0.1	30	**3.8**	0.083	2.9
MW-3	3/20/2013	7.66	4,000	**3,090**	540	960	540	<2.0	38	**1,900**	660	330	<0.1	8.9	36	**0.72**	0.11	4.6
MW-4	3/20/2013	7.40	5,000	**4,180**	510	1,400	510	<2.0	41	**2,500**	760	480	<0.1	0.16	58	**7.0**	0.35	12
MW-5	3/20/2013	7.10	6,100	**4,480**	820	1,600	820	<2.0	**680**	**1,900**	830	540	<2.0	<0.1	50	**9.5**	0.12	6.8
MW-6	3/20/2013	7.46	3,600	**2,630**	1,100	1,000	1,100	<2.0	120	**920**	580	290	<0.1	<0.10	72	**6.8**	**1.8**	25
MW-7	3/20/2013	7.58	1,600	**1,100**	670	580	670	<2.0	22	210	160	200	<0.1	<0.1	22	**1.5**	**4.9**	3.1
NMWQCC Standard		**6-9**	**NE**	**1,000**	**NE**	**NE**	**NE**	**NE**	**250**	**600**	**NE**	**NE**	**NE**	**10**	**NE**	**0.2**	**1.0**	**NE**

Notes:
Bold values indicate value exceeds NMWQCC standard
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
su - standard units
TDS - Total Dissolved Solids
µmhos/ cm - micromhos per centimeter
< indicates result is less than the stated laboratory method detection limit

TABLE 5

GROUNDWATER ANALYTICAL RESULTS - METALS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Date	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Iron (mg/L)	Lead (mg/L)	Mercury (mg/L)	Selenium (mg/L)	Silver (mg/L)
MW-2	3/20/2013	<0.020	<0.0020	<0.0060	**8.5**	0.0071	<0.00020	<0.050	<0.0050
MW-3	3/20/2013	<0.020	<0.0020	0.0076	**16**	0.0052	<0.00020	<0.050	<0.0050
MW-4	3/20/2013	<0.020	<0.0020	0.038	**68**	0.014	<0.00020	<0.050	<0.0050
MW-5	3/20/2013	<0.020	<0.0020	<0.0060	**12**	0.0057	<0.00020	<0.050	<0.0050
MW-6	3/20/2013	<0.20	**0.054**	**0.073**	**470**	**0.11**	<0.00020	<0.50	<0.050
MW-7	3/20/2013	<0.020	<0.0020	<0.0060	**62**	0.0090	<0.00020	<0.050	<0.0050
NMWQCC Standard		**0.1**	**0.01**	**0.05**	**1.0**	**0.05**	**0.002**	**0.05**	**0.05**

Notes:
Bold values indicate value exceeds NMWQCC
mg/L - milligrams per liter
NMWQCC - New Mexico Water Quality Control Commission
< indicates result is less than the stated laboratory method detection limit

APPENDIX A
GAS MONITORING DATA

GAS MONITORING DATA
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Monitoring Point	Oxygen Percentage		Carbon Dioxide Percentage	
	4/5/2012	3/20/2013	4/5/2012	3/20/2013
IP1	17.3	17.8	1.9	3.0
IP2	20.9	20.1	0.0	0.1
IP3	18.2	16.7	2.1	4.8
IP4	20.8	20.1	0.0	0.7
IP5	19.6	18.0	0.7	2.7
IP6	20.9	21.6	0.0	0.0
IP7	20.9	21.7	0.0	0.0
IP8	21.1	10.6	0.0	6.4
IP9	15.3	2.3	5.1	12.0
IP10	16.9	21.2	12.6	0.0
IP11	21.1	21.2	0.0	0.0
IP12	21.1	21.8	0.0	0.0
IP13	18.4	21.1	1.6	0.0
IP14	18.5	18.3	1.6	4.0
IP15	20.6	20.8	0.2	0.7
IP16	21.1	21.9	0.0	0.0
IP17	20.2	19.9	0.2	2.1
IP18	20.9	21.8	0.0	0.0
IP19	18.9	18.3	1.9	3.3
IP20	20.6	19.2	0.3	1.6
IP21	20.4	20.5	0.5	0.8
IP22	19.8	20.1	1.3	1.9
IP23	20.4	20.3	0.1	0.7
MP1	20.7	21.5	0.0	0.1
MP2	16.9	12.5	2.0	5.1
MP3	17.9	14.5	2.0	4.7
MP4	21.1	21.3	0.0	0.0
MP5	21.1	21.1	0.2	0.0
MP6	20.9	21.8	0.0	0.0
MP7	20.9	21.1	0.0	0.0
MP8	21.1	21.8	0.0	0.0
MP9	20.4	19.8	0.4	2.7
MP10	20.8	20.8	0.0	0.2
MP11	20.9	21.7	0.0	0.0
MP12	21.1	21.8	0.0	0.0
MP13	21.1	21.8	0.0	0.0
MP14	18.0	17.7	2.6	3.4
MP15	17.6	17.6	3.0	3.9
MP16	19.0	18.1	1.9	3.4
Average	**19.8**	**19.2**	**1.1**	**1.8**

APPENDIX B
GROUNDWATER SAMPLING LABORATORY REPORTS

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

April 03, 2013

Ashley Ager
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (970) 946-1093
FAX (505) 632-3911

RE: Bloomfield Crude Station OrderNo.: 1303833

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 6 sample(s) on 3/21/2013 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. 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. 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.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1303833**
Date Reported: **4/3/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-3
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 11:27:00 AM
Lab ID: 1303833-001 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	3/26/2013 1:03:02 PM
Toluene	ND	1.0		µg/L	1	3/26/2013 1:03:02 PM
Ethylbenzene	ND	1.0		µg/L	1	3/26/2013 1:03:02 PM
Xylenes, Total	ND	2.0		µg/L	1	3/26/2013 1:03:02 PM
Surr: 4-Bromofluorobenzene	85.2	69.4-129		%REC	1	3/26/2013 1:03:02 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	38	10		mg/L	20	3/21/2013 11:50:20 PM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	3/21/2013 11:37:55 PM
Nitrogen, Nitrate (As N)	8.9	0.10		mg/L	1	3/21/2013 11:37:55 PM
Sulfate	1900	25	*	mg/L	50	3/23/2013 12:43:55 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	960	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:07:02 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.020		mg/L	1	3/29/2013 1:04:27 PM
Barium	0.11	0.020		mg/L	1	3/29/2013 1:04:27 PM
Cadmium	ND	0.0020		mg/L	1	3/29/2013 1:04:27 PM
Calcium	330	5.0		mg/L	5	3/29/2013 1:07:11 PM
Chromium	0.0076	0.0060		mg/L	1	3/29/2013 1:04:27 PM
Iron	16	1.0		mg/L	20	3/29/2013 1:56:00 PM
Lead	0.0052	0.0050		mg/L	1	3/29/2013 1:04:27 PM
Magnesium	36	1.0		mg/L	1	3/29/2013 1:04:27 PM
Manganese	0.72	0.0020		mg/L	1	3/29/2013 1:04:27 PM
Potassium	4.6	1.0		mg/L	1	3/29/2013 1:04:27 PM
Selenium	ND	0.050		mg/L	1	3/29/2013 1:04:27 PM
Silver	ND	0.0050		mg/L	1	3/29/2013 1:04:27 PM
Sodium	660	20		mg/L	20	3/29/2013 1:56:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	4000	0.010		µmhos/cm	1	3/21/2013 6:02:18 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.66	1.68	H	pH units	1	3/21/2013 6:02:18 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	540	20		mg/L CaCO3	1	3/21/2013 6:02:18 PM
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/21/2013 6:02:18 PM
Total Alkalinity (as CaCO3)	540	20		mg/L CaCO3	1	3/21/2013 6:02:18 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3090	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-2
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 12:18:00 PM
Lab ID: 1303833-002 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	3/26/2013 2:33:10 PM
Toluene	ND	1.0		µg/L	1	3/26/2013 2:33:10 PM
Ethylbenzene	ND	1.0		µg/L	1	3/26/2013 2:33:10 PM
Xylenes, Total	ND	2.0		µg/L	1	3/26/2013 2:33:10 PM
Surr: 4-Bromofluorobenzene	103	69.4-129		%REC	1	3/26/2013 2:33:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	45	10		mg/L	20	3/22/2013 12:15:09 AM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	3/22/2013 12:02:44 AM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	3/22/2013 12:02:44 AM
Sulfate	1000	25	*	mg/L	50	3/23/2013 12:56:19 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	790	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:12:38 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.020		mg/L	1	3/29/2013 1:09:49 PM
Barium	0.083	0.020		mg/L	1	3/29/2013 1:09:49 PM
Cadmium	ND	0.0020		mg/L	1	3/29/2013 1:09:49 PM
Calcium	270	5.0		mg/L	5	3/29/2013 1:12:37 PM
Chromium	ND	0.0060		mg/L	1	3/29/2013 1:09:49 PM
Iron	8.5	0.50		mg/L	10	3/29/2013 1:58:51 PM
Lead	0.0071	0.0050		mg/L	1	3/29/2013 1:09:49 PM
Magnesium	30	1.0		mg/L	1	3/29/2013 1:09:49 PM
Manganese	3.8	0.010		mg/L	5	3/29/2013 1:12:37 PM
Potassium	2.9	1.0		mg/L	1	3/29/2013 1:09:49 PM
Selenium	ND	0.050		mg/L	1	3/29/2013 1:09:49 PM
Silver	ND	0.0050		mg/L	1	3/29/2013 1:09:49 PM
Sodium	740	10		mg/L	10	3/29/2013 1:58:51 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	4100	0.010		µmhos/cm	1	3/21/2013 6:22:12 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.56	1.68	H	pH units	1	3/21/2013 6:22:12 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	1300	50		mg/L CaCO3	2.5	3/22/2013 5:57:56 PM
Carbonate (As CaCO3)	ND	5.0		mg/L CaCO3	2.5	3/22/2013 5:57:56 PM
Total Alkalinity (as CaCO3)	1300	50		mg/L CaCO3	2.5	3/22/2013 5:57:56 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3190	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-4
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 1:07:00 PM
Lab ID: 1303833-003 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	3/26/2013 3:03:16 PM
Toluene	ND	1.0		µg/L	1	3/26/2013 3:03:16 PM
Ethylbenzene	ND	1.0		µg/L	1	3/26/2013 3:03:16 PM
Xylenes, Total	ND	2.0		µg/L	1	3/26/2013 3:03:16 PM
Surr: 4-Bromofluorobenzene	92.6	69.4-129		%REC	1	3/26/2013 3:03:16 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	41	10		mg/L	20	3/22/2013 12:39:59 AM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	3/22/2013 12:27:34 AM
Nitrogen, Nitrate (As N)	0.16	0.10		mg/L	1	3/22/2013 12:27:34 AM
Sulfate	2500	50	*	mg/L	100	3/23/2013 1:08:43 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	1400	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:14:28 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.020		mg/L	1	3/29/2013 1:15:29 PM
Barium	0.35	0.020		mg/L	1	3/29/2013 1:15:29 PM
Cadmium	ND	0.0020		mg/L	1	3/29/2013 1:15:29 PM
Calcium	480	5.0		mg/L	5	3/29/2013 1:18:14 PM
Chromium	0.038	0.0060		mg/L	1	3/29/2013 1:15:29 PM
Iron	68	5.0		mg/L	100	3/29/2013 2:16:10 PM
Lead	0.014	0.0050		mg/L	1	3/29/2013 1:15:29 PM
Magnesium	58	1.0		mg/L	1	3/29/2013 1:15:29 PM
Manganese	7.0	0.020		mg/L	10	3/29/2013 2:13:30 PM
Potassium	12	1.0		mg/L	1	3/29/2013 1:15:29 PM
Selenium	ND	0.050		mg/L	1	3/29/2013 1:15:29 PM
Silver	ND	0.0050		mg/L	1	3/29/2013 1:15:29 PM
Sodium	760	10		mg/L	10	3/29/2013 2:13:30 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	5000	0.010		µmhos/cm	1	3/21/2013 6:54:40 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.40	1.68	H	pH units	1	3/21/2013 6:54:40 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	510	20		mg/L CaCO3	1	3/21/2013 6:54:40 PM
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/21/2013 6:54:40 PM
Total Alkalinity (as CaCO3)	510	20		mg/L CaCO3	1	3/21/2013 6:54:40 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	4180	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-7
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 2:00:00 PM
Lab ID: 1303833-004 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	44	20		µg/L	20	3/26/2013 3:33:21 PM
Toluene	ND	20		µg/L	20	3/26/2013 3:33:21 PM
Ethylbenzene	210	20		µg/L	20	3/26/2013 3:33:21 PM
Xylenes, Total	920	40		µg/L	20	3/26/2013 3:33:21 PM
Surr: 4-Bromofluorobenzene	98.8	69.4-129		%REC	20	3/26/2013 3:33:21 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	22	10		mg/L	20	3/22/2013 1:04:49 AM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	3/22/2013 12:52:24 AM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	3/22/2013 12:52:24 AM
Sulfate	210	10		mg/L	20	3/22/2013 1:04:49 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	580	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:16:23 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.020		mg/L	1	3/29/2013 1:20:54 PM
Barium	4.9	0.10		mg/L	5	3/29/2013 1:23:37 PM
Cadmium	ND	0.0020		mg/L	1	3/29/2013 1:20:54 PM
Calcium	200	5.0		mg/L	5	3/29/2013 1:23:37 PM
Chromium	ND	0.0060		mg/L	1	3/29/2013 1:20:54 PM
Iron	62	5.0		mg/L	100	3/29/2013 2:27:27 PM
Lead	0.0090	0.0050		mg/L	1	3/29/2013 1:20:54 PM
Magnesium	22	1.0		mg/L	1	3/29/2013 1:20:54 PM
Manganese	1.5	0.010		mg/L	5	3/29/2013 1:23:37 PM
Potassium	3.1	1.0		mg/L	1	3/29/2013 1:20:54 PM
Selenium	ND	0.050		mg/L	1	3/29/2013 1:20:54 PM
Silver	ND	0.0050		mg/L	1	3/29/2013 1:20:54 PM
Sodium	160	5.0		mg/L	5	3/29/2013 1:23:37 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	1600	0.010		µmhos/cm	1	3/21/2013 7:15:36 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.58	1.68	H	pH units	1	3/21/2013 7:15:36 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	670	20		mg/L CaCO3	1	3/21/2013 7:15:36 PM
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/21/2013 7:15:36 PM
Total Alkalinity (as CaCO3)	670	20		mg/L CaCO3	1	3/21/2013 7:15:36 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	1100	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-5
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 2:34:00 PM
Lab ID: 1303833-005 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	3/26/2013 4:03:23 PM
Toluene	ND	1.0		µg/L	1	3/26/2013 4:03:23 PM
Ethylbenzene	ND	1.0		µg/L	1	3/26/2013 4:03:23 PM
Xylenes, Total	ND	2.0		µg/L	1	3/26/2013 4:03:23 PM
Surr: 4-Bromofluorobenzene	91.4	69.4-129		%REC	1	3/26/2013 4:03:23 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	680	25	*	mg/L	50	3/23/2013 1:21:08 AM
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	3/22/2013 1:54:28 AM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	3/22/2013 1:42:03 AM
Sulfate	1900	25	*	mg/L	50	3/23/2013 1:21:08 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	1600	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:18:13 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.020		mg/L	1	3/29/2013 1:34:27 PM
Barium	0.12	0.020		mg/L	1	3/29/2013 1:34:27 PM
Cadmium	ND	0.0020		mg/L	1	3/29/2013 1:34:27 PM
Calcium	540	10		mg/L	10	3/29/2013 2:21:50 PM
Chromium	ND	0.0060		mg/L	1	3/29/2013 1:34:27 PM
Iron	12	1.0		mg/L	20	3/29/2013 2:24:42 PM
Lead	0.0057	0.0050		mg/L	1	3/29/2013 1:34:27 PM
Magnesium	50	1.0		mg/L	1	3/29/2013 1:34:27 PM
Manganese	9.5	0.020		mg/L	10	3/29/2013 2:21:50 PM
Potassium	6.8	1.0		mg/L	1	3/29/2013 1:34:27 PM
Selenium	ND	0.050		mg/L	1	3/29/2013 1:34:27 PM
Silver	ND	0.0050		mg/L	1	3/29/2013 1:34:27 PM
Sodium	830	10		mg/L	10	3/29/2013 2:21:50 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	6100	0.010		µmhos/cm	1	3/21/2013 7:40:00 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.10	1.68	H	pH units	1	3/21/2013 7:40:00 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	820	20		mg/L CaCO3	1	3/21/2013 7:40:00 PM
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/21/2013 7:40:00 PM
Total Alkalinity (as CaCO3)	820	20		mg/L CaCO3	1	3/21/2013 7:40:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	4480	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-6
Project: Bloomfield Crude Station **Collection Date:** 3/20/2013 3:05:00 PM
Lab ID: 1303833-006 **Matrix:** AQUEOUS **Received Date:** 3/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	2.0		µg/L	2	3/27/2013 4:22:24 PM
Toluene	ND	2.0		µg/L	2	3/27/2013 4:22:24 PM
Ethylbenzene	ND	2.0		µg/L	2	3/27/2013 4:22:24 PM
Xylenes, Total	ND	4.0		µg/L	2	3/27/2013 4:22:24 PM
Surr: 4-Bromofluorobenzene	83.2	69.4-129		%REC	2	3/27/2013 4:22:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **JRR**
Chloride	120	10		mg/L	20	3/22/2013 2:19:17 AM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	3/22/2013 2:06:53 AM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	3/22/2013 2:06:53 AM
Sulfate	920	10	*	mg/L	20	3/22/2013 2:19:17 AM
SM2340B: HARDNESS						Analyst: **JLF**
Hardness (As CaCO3)	1000	6.6		mg/L	1	3/29/2013 10:32:00 AM
EPA METHOD 7470: MERCURY						Analyst: **TMG**
Mercury	ND	0.00020		mg/L	1	3/25/2013 3:20:04 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**
Arsenic	ND	0.20		mg/L	10	3/29/2013 1:45:13 PM
Barium	1.8	0.20		mg/L	10	3/29/2013 1:45:13 PM
Cadmium	0.054	0.020		mg/L	10	3/29/2013 1:45:13 PM
Calcium	290	20		mg/L	20	3/29/2013 2:30:15 PM
Chromium	0.073	0.060		mg/L	10	3/29/2013 1:45:13 PM
Iron	470	100		mg/L	2000	3/29/2013 3:34:23 PM
Lead	0.11	0.050		mg/L	10	3/29/2013 1:45:13 PM
Magnesium	72	20		mg/L	20	3/29/2013 2:30:15 PM
Manganese	6.8	0.020		mg/L	10	3/29/2013 1:45:13 PM
Potassium	25	20		mg/L	20	3/29/2013 2:30:15 PM
Selenium	ND	0.50		mg/L	10	3/29/2013 1:45:13 PM
Silver	ND	0.050		mg/L	10	3/29/2013 1:45:13 PM
Sodium	580	20		mg/L	20	3/29/2013 2:30:15 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**
Conductivity	3600	0.010		µmhos/cm	1	3/21/2013 8:09:36 PM
SM4500-H+B: PH						Analyst: **JML**
pH	7.46	1.68	H	pH units	1	3/21/2013 8:09:36 PM
SM2320B: ALKALINITY						Analyst: **JML**
Bicarbonate (As CaCO3)	1100	20		mg/L CaCO3	1	3/21/2013 8:09:36 PM
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/21/2013 8:09:36 PM
Total Alkalinity (as CaCO3)	1100	20		mg/L CaCO3	1	3/21/2013 8:09:36 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	2630	200	*	mg/L	1	3/25/2013 3:45:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R9348**	RunNo: **9348**
Prep Date:	Analysis Date: **3/21/2013**	SeqNo: **266558** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R9348**	RunNo: **9348**
Prep Date:	Analysis Date: **3/21/2013**	SeqNo: **266559** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.0	90	110			
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	93.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Sulfate	9.7	0.50	10.00	0	96.5	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R9348**	RunNo: **9348**
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **266612** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R9348**	RunNo: **9348**
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **266613** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.7	90	110			
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	93.3	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.9	90	110			
Sulfate	9.6	0.50	10.00	0	96.5	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R9384**	RunNo: **9384**
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **267901** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R9384**	RunNo: **9384**
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **267901** 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: **R9384**	RunNo: **9384**
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **267902** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	99.0	90	110			
Sulfate	10	0.50	10.00	0	100	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R9435**	RunNo: **9435**
Prep Date:	Analysis Date: **3/26/2013**	SeqNo: **269509** 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								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	18		20.00		90.1	69.4	129			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R9435**	RunNo: **9435**
Prep Date:	Analysis Date: **3/26/2013**	SeqNo: **269515** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	105	80	120			
Xylenes, Total	65	2.0	60.00	0	108	80	120			
Surr: 4-Bromofluorobenzene	20		20.00		102	69.4	129			

Sample ID **1303833-001AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-3**	Batch ID: **R9435**	RunNo: **9435**
Prep Date:	Analysis Date: **3/26/2013**	SeqNo: **269517** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	87.4	80	120			
Toluene	18	1.0	20.00	0	88.1	80	120			
Ethylbenzene	18	1.0	20.00	0	89.1	80	120			
Xylenes, Total	55	2.0	60.00	0	91.3	80	120			
Surr: 4-Bromofluorobenzene	20		20.00		101	69.4	129			

Sample ID **1303833-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-3**	Batch ID: **R9435**	RunNo: **9435**
Prep Date:	Analysis Date: **3/26/2013**	SeqNo: **269518** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	86.7	80	120	0.735	20	
Toluene	17	1.0	20.00	0	86.6	80	120	1.71	20	
Ethylbenzene	18	1.0	20.00	0	87.5	80	120	1.80	20	
Xylenes, Total	54	2.0	60.00	0	89.2	80	120	2.38	20	
Surr: 4-Bromofluorobenzene	20		20.00		101	69.4	129	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R9474**	RunNo: **9474**
Prep Date:	Analysis Date: **3/27/2013**	SeqNo: **270595** 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								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	17		20.00		85.6	69.4	129			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R9474**	RunNo: **9474**
Prep Date:	Analysis Date: **3/27/2013**	SeqNo: **270596** 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	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	105	80	120			
Xylenes, Total	63	2.0	60.00	0	105	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		88.7	69.4	129			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **MB-6636**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **6636**	RunNo: **9407**
Prep Date: **3/25/2013**	Analysis Date: **3/25/2013**	SeqNo: **268555** Units: **mg/L**

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

Sample ID **LCS-6636**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **6636**	RunNo: **9407**
Prep Date: **3/25/2013**	Analysis Date: **3/25/2013**	SeqNo: **268556** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.00020	0.005000	0	111	80	120			

Sample ID **LCSD-6636**	SampType: **LCSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSS02**	Batch ID: **6636**	RunNo: **9407**
Prep Date: **3/25/2013**	Analysis Date: **3/25/2013**	SeqNo: **268557** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.7	80	120	17.2	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R9343**	RunNo: **9343**							
Prep Date:	Analysis Date: **3/21/2013**	SeqNo: **266457**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R9343**	RunNo: **9343**							
Prep Date:	Analysis Date: **3/21/2013**	SeqNo: **266458**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	90	110			

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R9383**	RunNo: **9383**							
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **267857**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R9383**	RunNo: **9383**							
Prep Date:	Analysis Date: **3/22/2013**	SeqNo: **267858**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	101	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1303833**

03-Apr-13

Client: Western Refining Southwest, Inc.

Project: Bloomfield Crude Station

Sample ID **MB-6619**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **6619**	RunNo: **9396**
Prep Date: **3/22/2013**	Analysis Date: **3/25/2013**	SeqNo: **268242** 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-6619**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **6619**	RunNo: **9396**
Prep Date: **3/22/2013**	Analysis Date: **3/25/2013**	SeqNo: **268243** Units: **mg/L**

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

Qualifiers:

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

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: 1303833 RcptNo: 1

Received by/date: MG 03/21/13

Logged By: Michelle Garcia 3/21/2013 10:00:00 AM

Completed By: Michelle Garcia 3/21/2013 12:20:35 PM

Reviewed By: 03/21/13

Chain of Custody

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

Log In

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

001C, 002C, 003C - ADDED 1mL HNO_3 FOR ACCEPTABLE pH - 03/21/13 @1350

# of preserved bottles checked for pH:	1
(<2 or >12 unless noted) Adjusted?	Yes
Checked by:	

Special Handling (if applicable)

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

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

17. Additional remarks: 001C, 002C, 003C - HELD IN LOGIN FOR 24 HRS AFTER pH ADJUSTMENT. 03/21/13

18. Cooler Information

Chain-of-Custody Record

Client: Western Refining
Kelly Robinson

Mailing Address: 111 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4164

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Bloomfield Crude Station

Project #:

Project Manager:
Ashley Ager

Sampler: Devin Hencmann

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		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)					Air Bubbles (Y or N)
3/20/13	11:27	AQ	MW-3	Various / 7	various	-001	See Attached.															
3/20/13	12:18	AQ	MW-2			-002	See Attached															
3/20/13	13:07	AQ	MW-4			-003	See Attached															
3/20/13	14:00	AQ	MW-7			-004	See Attached															
3/20/13	14:34	AQ	MW-5			-005	See Attached															
3/20/13	15:05	AQ	MW-6			-006	See Attached															

Date	Time	Relinquished by:	Received by:	Date	Time
3/20/13	16:22		Christine Walters	3/20/13	16:22
3/20/13	17:30	Christine Walters		03/21/13	10:00

Remarks:
Please copy results to aager@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.

2012 BCS WATER SAMPLING

MONITORING WELLS:

~~[redacted]~~

MW-2

MW-3

MW-4

MW-5

MW-6

MW-7

PARAMETERS FOR ALL WELLS:

BTEX

method 8021

GENERAL CHEM

- pH
- EC
- TDS
- alkalinity
- hardness
- anions
  - chloride
  - sulfate
  - nitrate/nitrite
- cations
  - calcium
  - iron
  - magnesium
  - manganese
  - potassium
  - sodium

RCRA 8 METALS

- arsenic
- barium
- cadmium
- chromium
- lead
- silver
- selenium
- mercury

APPENDIX C
HISTORICAL GROUNDWATER SAMPLING DATA

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sep-06	**230**	50	290	**640**
	Jan-07	8.7	9.7	16	55
	Apr-07	7.8	6	61	110
	Jul-07	4.2	20	30	68
	Oct-07	0.87	18	120	180
	Jan-08	4.4	45	24	100
	May-08	0.86	12.3	<0.5	16.6
	Aug-08	1.1	7.3	14	28
	Nov-08	1.7	2	7.3	15
	Jan-09	1.6	ND	2.1	6.9
	Feb-09	<1.0	<1.0	2.3	7.7
	May-09	1.1	2.1	1.0	6.8
	Aug-09	1.2	<1.0	<1.0	2.0
	Nov-09	<1.0	<1.0	<1.0	<2.0
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Feb-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	2.5
	Jan-12	<1.0	<1.0	<1.0	<2.0
	Mar-13	<1.0	<1.0	<1.0	<2.0
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0
	Mar-13	<1.0	<1.0	<1.0	<2.0
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0
	Mar-13	<1.0	<1.0	<1.0	<2.0

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)
MW-5	Sep-94	NS	NS	NS	NS
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0
	Mar-13	<1.0	<1.0	<1.0	<2.0
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct-02	ND	ND	ND	3.2
	Jan-03	6	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sep-03	0.8	3.7	4	24
	Jan-04	0.9	0.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
	Jan-08	0.9	11	130	**930**
	Jan-09	ND	ND	66	510
	Jan-10	<5.0	<5.0	<5.0	<10
	Jan-11	<10.0	<10.0	140	**960**
	Jan-12	<10.0	<10.0	61	220
	Mar-13	<2.0	<2.0	<2.0	<4.0
MW-7	May-01	**2,400**	ND	380	**2,800**
	Jun-02	**2,000**	ND	140	**1,100**
	Oct-02	**1,100**	ND	79	490
	Jan-03	**3,200**	ND	400	**3,100**
	Jan-04	**3,300**	ND	460	**3,300**
	Jan-05	**1,600**	ND	220	**1,500**
	Jan-06	**1,400**	ND	280	**1,500**
	Jan-07	**1,200**	ND	450	**2,500**
	Jan-08	**750**	ND	520	**3,100**
	Jan-09	**570**	ND	450	**2,800**
	Jan-10	**270**	<20	460	**2,500**
	Jan-12	**140**	<20	470	**2,400**
	Jan-12	**62**	<20	640	**3,500**
	Mar-13	**44**	<20	210	**920**
NMWQCC Standard		**10**	**750**	**750**	**620**

Notes:
ug/L - micrograms per liter
NSP - not sampled due to product in well
NS - not sampled
ND - not detected
< indicates result is less than the stated laboratory method detection limit
NMWQCC - New Mexico Water Quality Control Commission
BTEX analyzed by EPA Method 8021.
Bold indicates value exceeds NMWQCC standard

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	YEAR	Lab pH (su)	Conductivity (umhos/cm)	TDS (mg/l)	Alkalinity (CaCO3) (mg/l)	Hardness (CaCO3) (mg/l)	Sodium Absorption Ratio	Bicarbonate (HCO3) (mg/l)	Carbonate (CO3) (mg/l)	Hydroxide (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Potassium (mg/l)	Sodium (mg/l)	Barium (mg/l)	Iron (mg/l)	Manganese (mg/l)	Nitrate/ Nitrite (mg/l)
MW-2	1994	6.60	4,920	**3,049**	957	NT	11.78	1,170	0.0	0.0	**1,050**	24	325	30	1.4	828	NT	NT	NT	NT
	2001	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NT	NSP	NSP	NSP
	2002	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NT	NSP	NSP	NSP
	2003	7.00	3,230	**3,220**	1,520	416	NT	1,850	<1.0	<1.0	51	369	133	20	1	660	NT	NT	NT	NT
	2004	7.00	3,100	**2,000**	1,500	420	NT	1,500	<1.0	<1.0	85	130	140	18	3	680	NT	**11**	**3.1**	<0.10
	2005	7.60	3,000	**2,000**	1,300	430	NT	1,300	7.00	<1.0	110	58	140	19	3.8	620	NT	**11**	**3.1**	<0.10
	2006	7.40	3,400	**2,000**	1,400	440	NT	1,400	4.3	<1.0	130	150	150	18	2.4	610	NT	**4**	**1.3**	<0.10
	2007	7.40	5,490	**4,580**	726	1,190	NT	724	2.57	<1.0	**43.5**	**2,460**	476	59.5	12.5	869	NT	**16.3**	**5.0**	NT
	2008	7.50	5,100	**4,350**	543	1,220	NT	534	<1.0	<1.0	42.3	**2,468**	463	49.5	2.93	739	NT	**10.7**	**6.76**	ND
	2009	7.34	4,300	**3,900**	760	NT	NT	760	ND	NT	42	**2,000**	380	42	2.3	720	0.038	BDL	**0.25**	ND
	2010	7.39	3,700	**3,160**	900	870	NT	900	ND	NT	60	**1,500**	290	34	1.8	690	0.18	**1.2**	**7.4**	ND
	2011	7.49	3,700	**2,750**	1,300	880	NT	1,300	<5.0	NT	52	**920**	290	34	6.9	740	0.21	**32**	**6.1**	NT
	2012	7.80	3,500	**2,720**	1,300	NT	NT	1,300	<5.0	NT	40	**890**	220	26	2.5	710	0.079	**7.6**	**3.7**	0.13
	2013	7.56	4,100	**3,190**	1,300	790	NT	1,300	<5.0	NT	45	**1,000**	270	30	2.9	740	0.083	**8.5**	**3.8**	<0.1
MW-3	1994	7.10	4,250	**3,413**	521	NT	8.14	635	0.0	0.0	48	**1,920**	439	37	1.4	661	NT	NT	NT	NT
	2001	7.30	4,500	**3,960**	459	1,220	NT	559	<1.0	<1.0	78	**2,250**	423	40.4	2.5	711	NT	NT	NT	NT
	2002	7.00	4,440	**3,820**	358	1,290	NT	437	<1.0	<1.0	46	**2,520**	446	43	0.6	705	NT	NT	NT	NT
	2003	7.00	4,320	**3,660**	560	1,230	NT	683	<1.0	<1.0	56	**2,330**	428	39.4	1.6	671	NT	NT	NT	NT
	2004	7.30	4,500	**4,000**	560	1,400	NT	560	1.0	<1.0	44	**2,300**	320	44	3.6	780	NT	**3.9**	**0.79**	<0.10
	2005	7.40	4,700	**2,000**	560	1,400	NT	560	1.0	<1.0	37	**2,100**	450	47	3.9	690	NT	**3.9**	**0.79**	<0.10
	2006	7.50	5,400	**3,600**	580	1,300	NT	580	1.5	<1.0	37	**2,200**	450	47	3.7	680	NT	**4.4**	**0.38**	0.36
	2007	7.50	4,780	**3,750**	565	1,120	NT	563	1.92	<1.0	36.2	**1,920**	449	43	10.36	649	NT	**1.28**	**0.41**	NT
	2008	7.50	4,330	**3,600**	627	1,090	NT	626	1.32	<1.0	34.8	**1,690**	419	39.8	2.36	594	NT	**1.91**	**0.394**	ND
	2009	7.33	4,000	**3,700**	580	NT	NT	580	ND	NT	37	**2,000**	390	37	2.2	600	0.049	**3.2**	**6.6**	3.1
	2010	7.47	3,500	**3,430**	530	1,100	NT	530	ND	NT	35	**1,800**	370	36	1.5	600	0.024	ND	0.15	5.8
	2011	7.39	4,100	**3,400**	560	1,300	NT	560	<2.0	NT	39	**2,000**	450	39	4.2	660	0.075	7	**1.2**	NT
	2012	7.75	4,000	**3,470**	560	NT	NT	560	<2.0	NT	37	**2,400**	410	39	2.3	620	0.033	**2.9**	**0.55**	14
	2013	7.66	4,000	**3,090**	540	960	NT	540	<2.0	NT	38	**1,900**	330	36	4.6	660	0.11	**16**	**0.72**	8.9
MW-4	1994	7.00	5,420	**4,389**	576	NT	10.88	703	0.0	0.0	175	**2,470**	439	53	3.5	907	NT	NT	NT	NT
	2001	7.10	5,090	**4,630**	490	1,460	NT	597	<1.0	<1.0	77	**2,680**	500	52.5	4.2	900	NT	NT	NT	NT
	2002	6.90	5,140	**4,420**	358	1,310	NT	437	<1.0	<1.0	47	**2,930**	449	47	2.6	873	NT	NT	NT	NT
	2003	7.00	4,460	**3,850**	400	1,070	NT	488	<1.0	<1.0	40	**2,570**	361	40.8	2.8	667	NT	NT	NT	NT
	2004	7.30	4,500	**3,900**	400	1,200	NT	400	3.0	<1.0	27	**2,500**	390	44	6.7	810	NT	**18**	**5.2**	<0.10
	2005	7.30	4,900	**4,000**	420	1,300	NT	420	1.0	<1.0	30	**2,200**	450	49	10	740	NT	**18**	NT	<0.10
	2006	7.40	5,400	**3,700**	450	1,200	NT	450	5.9	<1.0	31	**2,500**	410	47	7	790	NT	**3.8**	**5.4**	<0.10
	2007	7.20	4,700	**3,690**	455	1,020	NT	454	1.17	<1.0	54.5	**1,730**	410	43.3	12.1	678	NT	**0.56**	**5.73**	NT
	2008	7.60	4,500	**3,710**	458	1,040	NT	457	<1.0	<1.0	<5	**1,790**	394	41.2	3.55	637	NT	**2.72**	**5.41**	ND
	2009	7.19	4,400	**4,000**	450	NT	NT	450	ND	NT	36	**2,400**	400	42	3.7	670	0.037	ND	**4.7**	ND
	2010	7.49	4,300	**4,060**	490	1,200	NT	490	ND	NT	50	**2,400**	420	45	3.2	740	0.024	ND	**4.9**	ND
	2011	7.33	4,600	**4,010**	460	1,600	NT	460	<2.0	NT	36	**2,600**	540	55	5.4	760	0.026	**1.8**	**8.2**	NT
	2012	7.62	4,500	**4,050**	470	NT	NT	470	<2.0	NT	30	**2,700**	480	51	6.6	690	0.11	**15**	**8.8**	0.18
	2013	7.40	5,000	**4,180**	510	1,400	NT	510	<2.0	NT	41	**2,500**	480	58	12	760	0.35	**68**	**7.0**	0.16

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	YEAR	Lab pH (su)	Conductivity (umhos/cm)	TDS (mg/l)	Alkalinity (CaCO3) (mg/l)	Hardness (CaCO3) (mg/l)	Sodium Absorption Ratio	Bicarbonate (HCO3) (mg/l)	Carbonate (CO3) (mg/l)	Hydroxide (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Potassium (mg/l)	Sodium (mg/l)	Barium (mg/l)	Iron (mg/l)	Manganese (mg/l)	Nitrate/ Nitrite (mg/l)
MW-5	1994	6.90	6,000	**4,410**	775	NT	8.84	945	0.0	0.0	**996**	**1,390**	634	51	6.6	861	NT	NT	NT	NT
	2001	6.70	7,000	**5,230**	757	2,010	NT	923	<1.0	<1.0	**1,320**	**1,230**	700	63.2	5.6	924	NT	NT	NT	NT
	2002	6.50	6,880	**4,810**	567	1,880	NT	692	<1.0	<1.0	**1,200**	**1,230**	661	55.3	4.9	855	NT	NT	NT	NT
	2003	6.60	6,910	**5,080**	830	1,780	NT	1,010	<1.0	<1.0	**1,090**	**1,330**	616	58.1	4.8	829	NT	NT	NT	NT
	2004	6.80	6,700	**4,600**	840	2,000	NT	840	1.0	<1.0	**1,300**	**1,400**	690	57	11	1,000	NT	**4.3**	**11**	<0.10
	2005	7.00	6,800	**4,800**	870	1,900	NT	870	<1.0	<1.0	**1,100**	**1,200**	670	60	10	910	NT	**4.3**	**11**	<0.10
	2006	7.10	8,000	**4,300**	990	1,800	NT	990	<1.0	<1.0	**1,000**	**1,200**	630	58	12	920	NT	**11**	**58**	<0.10
	2007	7.30	6,630	**4,750**	915	1,320	NT	914	1.11	<1.0	**884**	**1,800**	621	57.6	16.6	896	NT	**0.5**	**10.8**	NT
	2008	7.10	6,750	**4,780**	933	1,510	NT	932	<1.0	<1.0	109	**1,310**	585	51.5	5.11	834	NT	**1.32**	**10.7**	ND
	2009	6.80	6,200	**5,700**	840	NT	NT	840	ND	840	**1,000**	**1,900**	570	50	5.6	860	0.07	NT	**10**	ND
	2010	7.26	5,600	**4,760**	770	1,600	NT	770	ND	NT	**880**	**1,900**	560	52	4.9	850	0.054	**0.22**	**9.7**	ND
	2011	7.18	5,800	**4,370**	780	1,600	NT	780	<2.0	NT	**350**	**900**	570	48	5.6	850	0.038	**1.7**	**9.4**	NT
	2012	7.12	4,700	**3,880**	680	NT	NT	680	<2.0	NT	**510**	**1,900**	520	45	5.6	810	0.086	**8.2**	**7.5**	0.26
	2013	7.10	6,100	**4,480**	820	1,600	NT	820	<2.0	NT	**680**	**1,900**	540	50	6.8	830	0.12	**12**	**9.5**	<0.1
MW-6	2001	6.90	5,470	**4,508**	740	1,550	NT	903	<1.0	<1.0	80	**2,780**	534	53.3	6.3	1,030	NT	NT	NT	NT
	2002	6.80	4,460	**3,560**	669	932	NT	816	<1.0	<1.0	55	**1,900**	319	33	2.5	830	NT	NT	NT	NT
	2003	7.00	3,070	**2,180**	1,140	602	NT	1,390	<1.0	<1.0	79	540	203	23.1	2.1	514	NT	NT	NT	NT
	2004	7.20	4,100	**3,000**	1,000	1,100	NT	1,000	<1.0	<1.0	96	**1,400**	390	63	29	870	NT	**23**	**4**	<0.10
	2005	7.20	4,100	**3,000**	1,100	670	NT	1,100	2.0	<1.0	93	**940**	220	28	6.7	670	NT	**23**	**4**	<0.10
	2006	7.20	7,000	**4,500**	800	1,400	NT	800	3.6	<1.0	82	**2,600**	440	68	24	1,200	NT	**87**	**11**	<0.10
	2007	7.10	7,460	**6,070**	678	1,320	NT	676	2.23	<1.0	57.5	**3,140**	529	65.1	17.3	1,500	NT	**17.7**	**13.8**	NT
	2008	7.50	2,840	**1,920**	1,140	533	NT	1,140	1.25	1.25	<1	312	195	25.6	2.83	442	NT	**24.5**	**2.62**	ND
	2009	7.14	2,800	**1,900**	1,100	NT	NT	1,100	ND	NT	180	260	180	23	2.2	430	**1.2**	**9.1**	**1.9**	ND
	2010	7.53	2,900	**2,130**	1,000	630	NT	1,000	ND	NT	170	500	210	26	1.6	510	**2.3**	**6.8**	**3.1**	ND
	2011	7.50	3,100	**1,890**	1,100	980	NT	1,100	<2.0	NT	150	490	320	46	12	570	**4.9**	**99**	**5.1**	NT
	2012	7.62	3,400	**2,560**	1,100	NT	NT	1,100	<2.0	NT	130	**970**	280	37	6.4	580	0.5	**100**	**4.2**	4.0
	2013	7.46	3,600	**2,630**	1,100	1,000	NT	1,100	<2.0	NT	120	**920**	290	72	25	580	**1.8**	**470**	**6.8**	<0.1
MW-7	2001	6.70	2,160	**1,710**	600	843	NT	732	<1.0	<1.0	52	**642**	296	25.6	1.6	234	NT	NT	NT	NT
	2002	6.80	1,870	**1,570**	432	758	NT	527	<1.0	<1.0	20	**700**	258	27.8	2.2	151	NT	NT	NT	NT
	2003	6.70	1,310	810	696	531	NT	849	<1.0	<1.0	35	57	152	36.8	1	126	NT	NT	NT	NT
	2004	6.80	1,400	920	720	520	NT	720	<1.0	<1.0	13	120	170	23	7	170	NT	**27**	**3**	<0.10
	2005	7.00	1,500	930	740	540	NT	740	1.0	<1.0	15	190	180	20	3.3	150	NT	**27**	**0.3**	<0.10
	2006	7.40	1,800	**1,200**	750	660	NT	750	3.2	<1.0	16	310	220	23	3.3	170	NT	**49**	**2.9**	<0.10
	2007	7.10	1,460	858	638	402	NT	636	1.8	<1.0	22.4	127	161	20.2	8.84	124	NT	**32.7**	**2.34**	NT
	2008	7.30	1,320	810	748	369	NT	747	<1.0	<1.0	18.1	50.9	139	15.4	1.2	120	NT	**14.4**	**1.6**	ND
	2009	7.03	1,200	750	680	NT	NT	680	ND	NT	22	6.8	150	17	0.9	140	**1.4**	**11**	**1.5**	ND
	2010	7.63	1,200	762	650	390	NT	650	ND	NT	24	6.5	130	15	ND	130	**2.4**	**8.4**	**1.2**	ND
	2011	7.50	1,300	734	670	460	NT	670	<2.0	NT	26	7.8	150	19	1.3	130	**2.7**	**47**	**1.3**	NT
	2012	7.75	1,300	800	720	NT	NT	720	<2.0	NT	24	4.4	150	17	2.6	160	**2.1**	**22**	**0.89**	<0.20
	2013	7.58	1,600	**1,100**	670	580	NT	670	<2.0	NT	22	210	200	22	3.1	160	**4.9**	**62**	**1.5**	<0.1
NMWQCC Standard		**6-9**	**NE**	**1,000**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**250**	**600**	**NE**	**NE**	**NE**	**NE**	**1.0**	**1.0**	**0.2**	**NE**

Notes:
mg/l - milligrams per liter
ND - not detected
NMWQCC - New Mexico Water Quality Control Commission
NT - not tested
NSP - not sampled due to product in the well
SU - standard units
TDS - Total Dissolved Solids
umhos/cm - microhms per centimeter
Bold indicates value exceed NMWQCC standard

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - METALS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Year	Silver (mg/l)	Arsenic (mg/l)	Beryllium (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Copper (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Lead (mg/l)	Antimony (mg/l)	Selenium (mg/l)	Thallium (mg/l)	Zinc (mg/l)
MW-2	1994	<0.01	<0.005	<0.004	<0.0005	0.01	0.012	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.032
	2011	<0.0050	<0.020	NT	<0.0020	0.011	NT	<0.0002	NT	0.017	NT	<0.050	NT	NT
	2012	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	<0.0050	NT	<0.050	NT	NT
	2013	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	0.0071	NT	<0.050	NT	NT
MW-3	1994	<0.01	<0.005	<0.004	<0.0005	<0.01	<0.01	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.023
	2011	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.0002	NT	<0.0050	NT	<0.050	NT	NT
	2012	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	<0.0050	NT	<0.050	NT	NT
	2013	<0.0050	<0.020	NT	<0.0020	0.0076	NT	<0.00020	NT	0.0052	NT	<0.050	NT	NT
MW-4	1994	<0.01	<0.005	<0.004	<0.0005	<0.01	<0.01	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.026
	2011	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.0002	NT	<0.0050	NT	<0.050	NT	NT
	2012	<0.0050	<0.020	NT	<0.0020	0.011	NT	<0.00020	NT	<0.0050	NT	<0.050	NT	NT
	2013	<0.0050	<0.020	NT	<0.0020	0.038	NT	<0.00020	NT	0.014	NT	<0.050	NT	NT
MW-5	1994	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	2011	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.0002	NT	<0.0050	NT	<0.050	NT	NT
	2012	<0.0050	<0.020	NT	<0.0020	0.0062	NT	<0.0020	NT	<0.0050	NT	<0.050	NT	NT
	2013	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	0.0057	NT	<0.050	NT	NT
MW-6	1994	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	2011	<0.0050	0.039	NT	<0.0020	0.042	NT	<0.0002	NT	0.023	NT	<0.050	NT	NT
	2012	<0.0050	0.074	NT	0.0023	0.011	NT	<0.00020	NT	0.0069	NT	<0.050	NT	NT
	2013	<0.050	<0.20	NT	**0.054**	**0.073**	NT	<0.00020	NT	**0.11**	NT	<0.50	NT	NT
MW-7	1994	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	2011	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.0002	NT	0.0072	NT	<0.050	NT	NT
	2012	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	<0.0050	NT	<0.050	NT	NT
	2013	<0.0050	<0.020	NT	<0.0020	<0.0060	NT	<0.00020	NT	0.009	NT	<0.050	NT	NT
NMWQCC		**0.05**	**0.1**	**NE**	**0.01**	**0.05**	**1**	**0.002**	**0.2**	**0.05**	**NE**	**0.05**	**NE**	**10**

Notes:
mg/l - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
NT- not tested
< - indicates value is less than laboratory detection limit.
Bold indicates value exceeds NMWQCC standard.