AP - __110__

INVESTIGATION REPORT

December 2013

Refinery Investigation Report

The HollyFrontier Companies
Navajo Refining Company
Lea Refining Facility
Lovington, New Mexico

December 2013

Prepared for:

HOLLYFRONTIER
Navajo Refining Company
Artesia, New Mexico

Prepared by:

TRC
TRC Environmental Corporation
Austin, Texas

505 East Huntland Drive
Suite 250
Austin, TX 78752

512.329.6080 PHONE
512.329.8750 FAX

www.TRCsolutions.com

December 30, 2013

Mr. Carl J. Chavez
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Refinery Investigation Report, Navajo Refining Company, Lea Refinery, Lovington, New Mexico, AP-110

Dear Mr. Chavez:

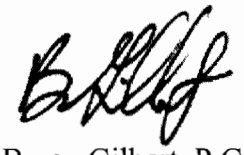
On behalf of Navajo Refining Company (NRC), TRC Environmental Corporation (TRC) is submitting the enclosed *Refinery Investigation Report* (Report) for the Navajo Lea Refinery (refinery) located in Lovington, Lea County, New Mexico. The Report summarizes the results of the (1) source determination and background evaluation investigation, and (2) human-health risk evaluation conducted at the refinery.

The source determination and background evaluation included a field investigation and a review of historical records and groundwater analytical data. Results of the source determination and background evaluation were evaluated with respect to the following objectives: (1) determine the potential source of benzene (and naphthalene) concentrations in well MW-11, and (2) determine if groundwater constituent of concern (COC) concentrations at the refinery are representative of background conditions, other upgradient sources in the vicinity of the refinery, or operations at the NRC refinery. Unidentified historical releases at the refinery process area were identified as the most likely source of benzene and naphthalene in MW-11. Potential sources of groundwater COCs other than benzene and naphthalene include some combination of NRC refinery operations, non-NRC operations at and in the vicinity of the refinery, and background conditions. No further source investigation activities are needed based on the results of the investigation and evaluation. The current groundwater flow regime towards to central portion of the refinery (i.e., the groundwater cone of depression) and the distribution of dissolved-phase COCs in groundwater indicate COCs are not migrating off-site and no additional groundwater delineation is needed.

The human-health risk evaluation was completed to determine: (1) the potential groundwater exposure pathways for refinery workers associated with the non-drinking use of groundwater at the refinery, and (2) chemical-specific concentrations in groundwater that provide an acceptable level of protection for human health for each exposure pathway. The results of the human-health risk evaluation indicated refinery workers are protected from potential health risks associated with inhalation, incidental ingestion, and dermal exposure during current use of groundwater at the refinery (restrooms, safety showers, and eye wash stations). Future groundwater samples collected from the water supply wells will be compared to the risk-based remediation goals (RBRGs) to ensure future protection of refinery workers. The RBRGs will be reevaluated if any changes to the use of groundwater at the refinery are proposed.

If you should have any questions or comments regarding this Report, please feel free to contact me at (512) 684-3104 or Julie Speer at (512) 684-3148.

Sincerely,



Bryan Gilbert, P.G.
Project Manager

Sincerely,

Julie Speer, E.I.T.
Associate Project Manager

cc: Robert Combs, Navajo Refining Company, Artesia, New Mexico
Michael Holder, P.G., Navajo Refining Company, Artesia, New Mexico
Arsin Sahba, P.G., TRC, Austin, Texas

Refinery Investigation Report

The HollyFrontier Companies/Navajo Refining Company
Lea Refining Facility
Lovington, New Mexico

Prepared for:

HOLLYFRONTIER

The HollyFrontier Companies/Navajo Refining Company
Artesia, New Mexico

Prepared by:

TRC

505 East Huntland Drive, Suite 250
Austin, Texas 78752

TRC Project No. 196364

December 2013

Principal Lead _____ **Technical Lead** _____

EXECUTIVE SUMMARY

This Refinery Investigation Report summarizes the results of the following conducted at the Lea Refinery (refinery) in Lovington, New Mexico: (1) source determination and background evaluation investigation, and (2) human-health risk evaluation.

The source determination and background evaluation results were evaluated with respect to the following objectives: (1) determine the potential source of benzene (and naphthalene) concentrations in well MW-11, and (2) determine if groundwater constituent of concern (COC) concentrations at the refinery are representative of background conditions, other upgradient sources in the vicinity of the refinery, or operations at the NRC refinery. Unidentified historical release(s) at the refinery process area were identified as the most likely source of benzene and naphthalene in MW-11. Potential sources of groundwater COCs other than benzene and naphthalene include some combination of NRC refinery operations (chromium, manganese, and iron), non-NRC operations at and in the vicinity of the refinery (chloride, nitrate-nitrite, fluoride, barium, iron, uranium, manganese, and total dissolved solids [TDS]), and background conditions (chloride, fluoride, and TDS). No further source investigation activities are needed based on the results of the investigation and evaluation. The current groundwater flow regime towards to central portion of the refinery (i.e., the groundwater cone of depression) and the distribution of dissolved-phase COCs in groundwater indicate COCs are not migrating off-site and no additional groundwater delineation is needed.

The human-health risk evaluation was completed to determine the potential exposure pathways for refinery workers associated with the non-potable use of groundwater at the refinery, and chemical-specific concentrations in groundwater that provide an acceptable level of protection for human health for each exposure pathway. The results of the human-health risk evaluation indicated refinery workers are protected from potential health risks associated with inhalation, incidental ingestion, and dermal exposure during current use of groundwater at the refinery (restrooms, safety showers, and eye wash stations). Future groundwater samples collected from the water supply wells will be compared to the risk-based remediation goals (RBRGs) to ensure future protection of refinery workers. The RBRGs will be reevaluated if any changes to the use of groundwater at the refinery are proposed.

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1.0 INTRODUCTION

TRC Environmental Corporation (TRC) is submitting this Refinery Investigation Report on behalf of Navajo Refining Company, L.L.C. (NRC) to document the results of the following conducted at the NRC Lea Refinery (refinery) located near Lovington, Lea County, New Mexico: (1) source determination and background evaluation investigation and (2) human-health risk evaluation. A work plan outlining the source determination and background investigation was submitted to the New Mexico Oil Conservation Division (OCD) on December 6, 2012. The OCD provided comments to the work plan via electronic mail on April 3, 2013, and indicated their concern for non-drinking groundwater use and associated exposure pathway risks for refinery workers. NRC provided a response to the OCD comments in electronic mail dated April 29, 2013, which stated a human-health risk evaluation for various groundwater exposure pathways for refinery workers would be included in this Refinery Investigation Report.

The objectives of the source determination and background evaluation investigation activities were to determine: (1) the likely source of benzene concentrations in monitor well MW-11, and (2) the dissolved-phase chemicals of concern (COCs) historically detected in groundwater above New Mexico Water Quality Control Commission (WQCC) groundwater standards (WQCC Standards) that are related to Facility operations, are naturally occurring, or are from other (non-refinery) sources in the vicinity of the Facility. The objectives of the human-health risk evaluation were to determine: (1) the potential groundwater exposure pathways for refinery workers associated with the non-drinking use of groundwater at the refinery, and (2) chemical-specific concentrations in groundwater that provide an acceptable level of protection for human health for each exposure pathway. A site vicinity map is presented on Figure 1.

2.0 SOURCE DETERMINATION AND BACKGROUND INVESTIGATION ACTIVITIES

Source and background investigation activities consisted of a field investigation and a historical file review as summarized below.

2.1 Field Investigation

Field investigation activities were conducted by TRC from June 18 to 20, 2013, and consisted of the following:

- Installing and sampling one groundwater monitor well (MW-30) downgradient (south/southeast) of Tanks 1201B, 1201C, and 1201D and upgradient (northwest) of the refinery process area to determine the likely source of benzene concentrations in monitor well MW-11.
- Sampling of four existing City of Lovington water supply wells (LW-9, LW-14, LW-16, and LW-18) located northwest and west (i.e., upgradient) of the refinery for laboratory analysis.

Monitor well MW-30 was drilled using air rotary methods. The return cuttings from the borehole were continuously collected and described in accordance with ASTM International (ASTM) Standard D 2488 *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).* Soil cuttings were also field screened for volatile organic compounds (VOCs) with a photoionization detector (PID). The borehole was advanced to an approximate total depth of 128 feet below ground surface (bgs) and was converted to a monitor well using 2-inch diameter, Schedule 40 polyvinyl chloride (PVC) casing and 20 linear feet of 0.010-inch machine slotted PVC screen from 108 to 128 feet bgs. The well screen was installed across the saturated zone-vadose zone interface, which was observed at a depth of approximately 110 feet bgs. The location of well MW-30 is shown on Figures 2 through 6. A boring/well construction log for MW-30 is included as Appendix A.

MW-30 was installed as specified in the December 2012 work plan, with the following deviations that did not affect the proper construction of the monitor well:

- The 8/16-grade silica sand pack was emplaced without the use of a tremie pipe due to the sand clogging the tremie pipe.
- The annular space above the sand pack was sealed by gravity feeding bentonite chips due to a mechanical failure of the grout pump.

Well MW-30 was developed by surging and purging until dry, allowing the well to recharge, and surging and purging until dry a second time. Approximately 20 gallons of water were produced from monitor well MW-30 during development.

A groundwater sample was collected from monitor well MW-30 after purging and stabilization of water quality parameters; the sample was submitted for laboratory analysis as specified in the work plan with the following deviations that did not affect the quality of the water sample:

- MW-30 was sampled using a disposable polyethylene bailer instead of a stainless steel submersible pump and low-flow/low-stress methods due to time constraints imposed by shipping deadlines. The well will be sampled using a stainless steel submersible pump and low-flow/low-stress methods during future semi-annual groundwater monitoring activities.

- Groundwater samples for analysis of metals (except mercury), anions, and total dissolved solids (TDS) were filtered with a 0.45-micron filter by the laboratory rather than in the field as stated in the work plan.

A groundwater sample was also collected from MW-30 in August 2013 during semi-annual groundwater monitoring activities using a stainless-steel submersible pump and low-flow/low-stress methods.

Groundwater samples were collected from four City of Lovington water supply wells (LW-9, LW-14, LW-16, and LW-18) on June 21, 2013, for laboratory analysis in accordance with the December 2012 work plan. Purge forms containing geochemical parameters recorded during city well sampling are provided in Appendix B. The locations of the City of Lovington water supply wells are shown on Figure 1.

2.2 Field Investigation Analytical Results

2.2.1 MW-30

Laboratory analytical results of groundwater samples collected from monitor well MW-30 in June 2013 and August 2013 indicate no COCs, including benzene and naphthalene, were detected at concentrations above WQCC Standard. The analytical results are summarized on Tables 1 and 2. The laboratory analytical report is presented in Appendix C.

2.2.2 City of Lovington Wells

Laboratory analytical results of groundwater samples collected from the four City of Lovington water wells indicated no COCs were detected above the WQCC Standards. The analytical results are summarized on Tables 1 and 2. The laboratory analytical report is presented in Appendix C.

2.3 File Review

Historical release reports and environmental status reports were reviewed by TRC as part of source determination activities, as recommended by the OCD in their April 2013 response to the December 2012 work plan. TRC accessed OCD Online and reviewed available Release Notification and Corrective Action Forms (Form C-141) and Environmental Status Reports for Groundwater Discharge Permit GW-014. In addition, TRC reviewed available well permit details and Form C-141s for underground injection wells located at and near the refinery.

3.0 GROUNDWATER COC DISTRIBUTION

Historical organic and inorganic groundwater analytical results, including the results of the February 2013 and August 2013 groundwater monitoring events, are presented in Tables 1 and 2, respectively. The following COCs have been detected above the WQCC Standards over the past four monitoring events (i.e., since January 2012):

- volatile organic compounds (VOCs): benzene and naphthalene;
- anions: chloride, fluoride, nitrate-nitrite;
- metals: manganese, barium, chromium, iron, uranium; and
- TDS.

Fluoride, chloride, chromium, and manganese have been identified as "indicator" COCs to support the source determination and background evaluation based on the following:

- These COCs have a high frequency of WQCC Standard groundwater exceedances (with the exception of chromium);
- The distribution of the WQCC Standard groundwater exceedances of these COCs encompass the majority of the affected groundwater area at the refinery; and
- The distribution of these COCs in groundwater represents potential groundwater impacts from various suspected on-site sources (e.g., injection wells, cooling tower, refinery process area, etc.), suspected off-site sources (e.g., injection wells, oil wells, etc.), and/or naturally occurring background concentrations.

The August 2013 results for fluoride, chloride, chromium, and manganese are presented in Figures 2, 3, 4, and 5, respectively. Maps for benzene and naphthalene are not provided because these COCs have not been detected above their WQCC Standards since July 2012 and February 2012, respectively. Maps for the remaining COCs (nitrate-nitrite, barium, iron, uranium, and TDS) are not provided because these COCs have a very low frequency of detections above the WQCC Standards and the distribution of these COCs is consistent with the extent of the "indicator" COCs as depicted on Figures 2 through 5.

The natural groundwater flow direction of the uppermost groundwater-bearing unit (GWBU) beneath the refinery is to the southeast. Groundwater pumping from refinery water supply wells WW-East, WW-North, and WW-South for industrial use causes a cone of depression at the central portion of the refinery. Thus, groundwater flow at and near the refinery is towards the central portion of refinery, with the exception of the southeast corner of the refinery where groundwater flows to the southeast as this area is not affected by pumping.

Arrows depicting the general groundwater flow direction throughout the refinery are included on Figures 2 through 5. Additional details regarding groundwater production and use of refinery water supply wells WW-East, WW-North, and WW-South are provided in Section 4.

The February and August 2013 groundwater monitoring results will be documented in the *2013 Annual Facility-Wide Groundwater Monitoring Report* to be submitted to OCD in early 2014.

4.0 SOURCE DETERMINATION AND BACKGROUND EVALUATION RESULTS

The results of the field investigation, groundwater COC data review, and file review were evaluated with respect to the following objectives: (1) determine the potential source of benzene concentrations in monitor well MW-11, and (2) determine if groundwater COC concentrations at the refinery are representative of background conditions, other upgradient sources in the vicinity of the refinery, or operations at the NRC refinery.

Historical spill incidents identified during the historical file review are shown on Figure 6 and are summarized in Table 3. In general, historical releases at the refinery were minor and were addressed by NRC via recovery, excavation, and/or soil and groundwater assessment.

Oil and gas production and produced-water injection wells located at or in the immediate vicinity of the refinery are shown on Figure 6 and are summarized on Table 4. Produced-water and/or crude oil releases have been documented associated with several injection wells at and near the refinery as shown on Figure 6. Several production/injection wells have been identified as potential sources of groundwater impacts at the refinery based on these releases. NRC does not own, operate, or maintain these oil and gas production or injection wells at or in the vicinity of the refinery; the majority of these wells are owned and operated by Chevron.

Concentrations of anions and metals above WQCC Standards may be sourced from oil production and injection wells. Well completion records available on OCD Online indicate drilling pits located adjacent to the wells were used during drilling and well completion operations. Standard industry practice includes the use of production pits adjacent to the wells to temporarily store or dispose of produced water. Historically, drilling and production pits were unlined and buried after they were no longer needed. Unlined drilling and production pits could potentially be buried near each production and injection well. COCs from produced water and drilling fluids in these pits could have leached to groundwater.

The active and former oil production and injection wells were installed between 1939 and 1992 to produce oil or enhance oil production. Most of the wells that were drilled between 1939 and 1953 were originally installed as oil production wells and were later converted to injection wells to enhance oil production via water-flooding and dispose of produced water. The use of water-flooding and disposal of produced water through injection wells in the vicinity of the refinery has been documented since 1963. Upwelling of produced water via breached well casings and improperly plugged and abandoned wells could have resulted during the decades of water-flooding that occurred in or near the refinery. Upwelled produced water is a likely source of observed anion (chloride, fluoride, nitrate, nitrite, and sulfate) and metal (barium, iron, manganese, and uranium) concentrations above WQCC Standards in groundwater at the refinery.

Potential sources of VOC, anion, and metal concentrations above WQCC Standards have been identified based on refinery process knowledge and the distribution of groundwater COCs at and in the vicinity of the refinery. Waste water from the refinery may contain elevated concentrations of metals and anions, while elevated concentrations of VOCs can be sourced from the refinery process area and crude oil, diesel, and naphtha storage tanks.

It should also be noted that anions and metals are naturally occurring and may be detected in New Mexico groundwater at concentrations above WQCC Standards.

The locations of potential sources associated with operation of the refinery are identified on Figures 2 through 5, which depict the extent of the "indicator" COCs fluoride, chloride, chromium, and manganese. The following section summarizes the results of the source determination and background evaluation.

4.1 NRC Lea Refinery Releases as Potential Sources

The file review revealed 22 releases have occurred at the NRC refinery and reported to regulatory agencies. A summary of the releases, including the release date, type, volume, location, and remedial actions (if any) is provided in Table 3. The location and approximate extent of each release are shown on Figure 6.

Release investigation results of the reported releases indicate that shallow soil (less than 10 feet bgs) was the only environmental media in which COCs were present at concentrations above laboratory reporting limits. None of the releases indicated a potential impact to groundwater and the presence of dissolved-phase COCs in groundwater cannot be positively attributed to any of these releases. Further discussion of the potential for the documented releases at the refinery to have sourced groundwater COCs is provided below. Select releases are further discussed in Sections 4.2 through 4.6.

4.1.1 Benzene in Monitor Well MW-11

The historical file review revealed several releases in the immediate vicinity of monitor well MW-11 (spill numbers 4, 7, 8, 10, and 15) on Figure 6 and Table 3. These releases consisted of diesel (spill number. 15) and waste water (spill numbers. 4, 7, 8, and 10). The four waste water releases (total combined volume of 75 barrels) that occurred between August 2010 and December 2011 are likely not the source of elevated benzene and naphthalene concentrations in MW-11 because benzene and naphthalene were detected above their WQCC Standards in June 2009 and prior to these waste water releases. In addition, these releases occurred in close proximity to other monitor wells (MW-6, MW-8, MW-27, and MW-29), and benzene and naphthalene have never been detected at concentrations above the laboratory reporting limit in these wells.

Diesel released in February 2009 (spill number 15) is not believed to be the potential source of the benzene and naphthalene concentrations detected in MW-11. Laboratory analytical results of soil samples collected from borings installed within the footprint of the February 2009 release indicated soil COCs (including benzene and naphthalene) were not present at concentrations above the laboratory reporting limit at depths greater than 1 foot bgs (diesel typically contains low levels of benzene). The source of benzene and naphthalene in well MW-11 is likely associated with unidentified historical releases in the refinery process area as discussed in Section 4.2.

4.1.2 Anions and Metals

Waste water and cooling water have the potential to contain anions and metals. The file review revealed four waste water releases (designated as release numbers 4, 7, 8, and 10 on Table 3 and Figure 6) and one cooling water release (designated as release number 3) that have occurred within the central portion of the refinery and refinery process area. The waste water and cooling water releases occurred in or after 2010 while elevated chloride, manganese, and chromium have been detected at concentrations above WQCC Standards prior to 2010 and COC concentration trends at monitor wells within the central portion of the refinery and refinery process area (i.e., MW-8, MW-11, MW-13, MW-26) have remained stable. Therefore, these waste water and cooling water releases are not the likely sources of the chloride, chromium, and manganese in groundwater at the refinery. The fluoride distribution in groundwater was not consistent with any of the reported NRC releases.

4.2 Refinery Process Area

A table summarizing the monitor wells and groundwater COCs potentially associated with the refinery process area is presented below.

Potentially Affected Wells	COCs (WQCC Standard Exceedances since January 2012)
MW-11	Benzene, Naphthalene
MW-13	Benzene

The refinery process area is located at the northwest portion of the refinery as shown on Figures 2 through 6. Benzene was detected at well MW-13 above the WQCC Standard at a concentration of 0.016 milligrams per liter (mg/L) in August 2010. Benzene and naphthalene were detected at well MW-11 above their WQCC Standards at respective concentrations of 7.8 mg/L and 0.096 mg/L in February 2012. Both wells MW-11 and MW-13 are located southeast (downgradient) of the process area. The August 2010 MW-13 result and the February 2012 MW-11 result represent notable increases as compared to the preceding concentrations at each well, thus indicating a potential upgradient source.

Well MW-30 was installed northwest (upgradient) of the refinery process area in June 2013 to determine if the potential source of the benzene and naphthalene concentrations observed above WQCC standards during February and July 2012 was associated with the refinery process area or tanks located further to the northwest (upgradient). Laboratory analytical results of groundwater samples collected from well MW-30 in June 2013 and August 2013 indicate no COCs, including benzene and naphthalene, were detected at concentrations above WQCC Standards. Based on the MW-30 analytical results and historical results from surrounding monitor wells, Tank 1201A (crude oil), Tank 1201B (crude oil), Tank 1201C (waste water), and Tank 1201D (waste water) are not the likely source of benzene and naphthalene previously detected in MW-11. Benzene and naphthalene have not been detected above the laboratory reporting limit in any of the wells located immediately downgradient of these tanks (MW-2, MW-4, MW-16, and MW-30). Unidentified historical releases within the refinery process area, located southeast (downgradient) of well MW-30, are the likely source of the benzene and naphthalene concentrations in monitor well MW-11 that exceeded WQCC Standards in February and August 2012.

Benzene and naphthalene concentrations at monitor well MW-11 have decreased after reaching maximum concentrations in February 2012. Benzene concentrations have decreased at monitor well MW-13 after reaching a maximum concentration in August 2010 (naphthalene has not been historically detected at well MW-13). Benzene and naphthalene were not detected at wells MW-11 and MW-13 in February 2013 or August 2013. Regardless, the previous benzene and naphthalene concentrations detected at wells MW-11 and MW-13 were delineated by MW-30 and MW-8 to the west and northwest, MW-27 and MW-29 to the east and northeast, MW-3 to the southwest, and MW-25 and MW-26 to the southeast.

No additional source determination activities are needed associated with this potential source area based on the delineation of groundwater COCs above WQCC Standards and stable to decreasing COC concentration trends.

4.3 Refinery Cooling Tower

A table summarizing the monitor well and groundwater COC potentially associated with the refinery cooling tower is presented below.

Potentially Affected Well	COC (WQCC Standard Exceedances since January 2012)
MW-29	Chromium

The cooling tower is located at the northern portion of the refinery as shown on Figure 5. Historical groundwater monitoring results indicate chromium concentrations above the WQCC

Standard at monitor well MW-29, located southeast (downgradient) of the cooling tower. Chromium concentrations at monitor well MW-29 are delineated by MW-2 to the northwest, MW-28 to the northeast, MW-11 to the southwest, and MW-27 to the southeast. Chromium concentrations have remained generally stable since the well was first sampled in August 2010. The use of chromate corrosion inhibitors, a potential source of chromium, by the previous refinery owner/operator (Southern Union Company) was discontinued in October 1981. Thus, the elevated chromium concentrations are likely the result of historical releases at the cooling tower by the Southern Union Company (i.e., NRC has not used chromate in the cooling tower). No additional source determination activities are needed associated with the chromium concentrations at well MW-29 based on the delineation of groundwater COCs. The extent of chromium concentrations in August 2013 is depicted on Figure 5.

A "Predisposition Environmental Site Assessment" conducted by Pilko & Associates, Inc. on behalf of Southern Union Company in 1988 recommended soil and groundwater sampling at and in the vicinity of the cooling tower. Soil and groundwater sampling conducted in November 1988 indicated the presence of chromium and zinc-impacted shallow soil in the vicinity of the cooling tower (no groundwater impacts were indicated); the results were documented in the November 1989 *Environmental Sampling and Testing of Soils and Groundwater at Selected Locations* report by Pilko & Associates, Inc. It was determined that periodic historical spills of the chromate corrosion inhibitor from the cooling tower were the likely source of the impacted soils. Further soil investigation of the cooling tower area and recommendations for excavation of impacted soils were documented by Reed & Associates, Inc. in the August 1989 *Closure Plan, Southern Union Company, Lea Refinery, New Mexico, Cooling Tower Area*. A total of 1,547 cubic-yards of impacted soils were excavated from March to October 1990 and the results were reported by Geraghty & Miller, Inc. in the October 1990 *Cooling Tower Supplemental Remedial Report*. The excavation was backfilled with red clayey soils, which are currently evident in the vicinity of the cooling tower. No additional investigation or response actions associated with historical cooling tower releases are needed.

As documented in the July 20, 2013, letter entitled *April 2012 Cooling Tower Release Soil Investigation*, 10 barrels of cooling water were released from the cooling tower on April 30, 2012. Release investigation activities conducted by NRC personnel in January 2013 and by TRC in June 2013 indicated the presence of chloride and sulfate concentrations in shallow soil (0 to 1 foot below ground surface [bgs]) above New Mexico Environment Department (NMED) soil screening levels (SSLs). As requested by OCD in their August 20, 2013, electronic mail message, NRC will conduct additional investigation activities in early 2014 to delineate the extent of soils affected by the April 2012 release. Response actions (e.g., soil excavation and off-site disposal) will be conducted based on the results of the additional investigation activities.

4.4 Refinery Waste Water Separator/Reverse Osmosis Unit

A table summarizing the monitor wells and groundwater COCs potentially associated with the refinery waste water separator and reverse osmosis (RO) unit is presented below.

Potentially Affected Wells	COCs (WQCC Standard Exceedances since January 2012)
MW-1	Manganese
MW-6	Manganese, Iron

The waste water separator and RO unit are located at the northwest portion of the refinery as shown on Figure 4. It is possible historical leaks from the waste water separator and RO unit have sourced anions and metals in groundwater. NRC emptied, cleaned, and sealed and waste water separator system in 2003 following indications of potential releases prior to 2003. Historical groundwater analytical results indicate the presence of manganese and/or iron concentrations above their WQCC Standards in wells MW-1 and MW-6, which are located in the immediate vicinity of the waste water separator and RO unit.

Concentrations of manganese above WQCC Standards at wells MW-1 and MW-6 are delineated by MW-4 to the northwest, MW-29 to the northeast, MW-10 to the southwest, and MW-9 to the southeast. Elevated concentrations of iron at well MW-6 are delineated by MW-1 to the northwest, MW-11 to the northeast, MW-10 to the southwest, and MW-9 to the southeast. Manganese and iron concentrations have remained generally stable in wells MW-1 and MW-6. No additional source determination activities are needed associated with the elevated COC concentrations at or down-gradient of the waste water separator and RO unit based on the delineation of groundwater COCs above WQCC Standards and stable to decreasing COC concentration trends. The extent of the August 2013 manganese concentrations is depicted on Figure 4.

4.5 Chevron Injection Wells LSAU-9 and LPU-22

A table summarizing the monitor wells and groundwater COCs potentially associated with the Chevron injection wells LSAU-9 and LPU-22 is presented below.

Potentially Affected Wells	COCs (WQCC Standard Exceedances since January 2012)
MW-11	Manganese, Barium, Iron, Uranium
MW-13	Manganese, Chloride, TDS
MW-25	Chloride, Nitrate-Nitrite, TDS
MW-27	Chloride, TDS

Chevron produced-water injection wells LSAU-9 and LPU-22 are located at the northern portion of the refinery as shown on Figures 3 and 4. Injection wells LSAU-9 and LPU-22 are not owned, operated or maintained by NRC. The injection well details are presented on Table 4 and are summarized as follows:

- Well LSAU-9 was installed in 1939 as an oil production well and was converted to a produced-water injection well in 1963. The well was plugged and abandoned by Chevron in 2007.
- Well LPU-22 was installed in 1952 as an oil production well and was converted to a produced-water injection well in 1991. The well was plugged and abandoned by Chevron in 2008.

While there are no known releases from injection wells LSAU-9 and LPU-22, production and injection wells are potential sources of elevated concentrations of anions and metals in groundwater as discussed in Section 4.0. The distribution of anion and metal concentrations in groundwater above WQCC Standards is consistent with a source at or near injection wells LSAU-9 and LPU-22 as shown on Figures 3 and 4.

There were several minor NRC releases in the vicinity of injection wells LSAU-9 and LPU-22, including the August 2010 crude oil and waste water release (spill number 10 on Figure 6 and Table 3) and the July 2008 caustic release (spill number 16 on Figure 6 and Table 3). However, these releases were addressed by NRC via free liquid removal, soil excavation, and subsequent assessment (i.e., soil sampling) indicated no additional response actions were necessary based on the absence of soil COC concentrations above OCD remediation action levels (RALs) and NMED SSLs. The release and response details are summarized on Table 3, while the release locations are depicted on Figure 6.

Historical groundwater analytical results indicate the presence of manganese, chloride, barium, iron, uranium, nitrate-nitrite, and/or TDS concentrations above their WQCC Standards in wells MW-11, MW-13, MW-25, and MW-27. Well MW-11 is located immediately west of injection wells LSAU-9 and LPU-22, while wells MW-13, MW-25, and MW-27 are located southeast (downgradient) of injection wells LSAU-9 and LPU-22. It should be noted that barium and uranium have only been detected above their WQCC Standard in one sample since monitoring was commenced at the refinery in June 2009 (both exceedances were reported at MW-11 – barium in February 2012 and uranium in July 2012).

Concentrations of manganese, chloride, barium, iron, uranium, nitrate-nitrite, and TDS above WQCC Standards at wells MW-11, MW-13, MW-25, and MW-27 are delineated by MW-29 to the northeast, MW-26 to the east, MW-30 to the northwest, and MW-8 and MW-18 to the southwest. Elevated chloride and TDS concentrations extend to the water supply well cone of

depression to the southeast. The COC concentrations at wells MW-11, MW-13, MW-25, and MW-27 have generally remained stable to decreasing. No additional source determination activities are needed associated with the elevated COC concentrations at or downgradient of injection wells LSAU-9 and LPU-22 based on the delineation of groundwater COCs above WQCC Standards and stable to decreasing COC concentration trends. The extent of the August 2013 chloride concentrations is depicted on Figure 3, while the extent of the August 2013 manganese concentrations is depicted on Figure 4.

4.6 Chevron Injection Wells LSAU-13 and LPU-33 and November 2005 Chevron Release

A table summarizing the monitor wells and groundwater COCs potentially associated with the Chevron injection wells LSAU-13 and LPU-33 and the November 2005 Chevron release is presented below.

Potentially Affected Wells	COCs (WQCC Standard Exceedances since January 2012)
MW-19	Chloride, TDS
MW-23	Chloride, TDS
WW-South	Chloride, TDS

Chevron produced-water injection wells LSAU-13 and LPU-33 are located at the southwestern portion of the refinery as shown on Figure 3. Injection wells LSAU-13 and LPU-33 are not owned, operated or maintained by NRC. The injection well details are presented on Table 4 and are summarized as follows:

- Well LSAU-13 was installed in 1939 as an oil production well and was converted to a produced-water injection well in 1991. The well was plugged and abandoned by Chevron in 2011.
- Well LPU-33 was installed in 1953 as an oil production well and was converted to a produced-water injection well in 1966. The injection well is active.

Production and injection wells are potential sources of anions and metals in groundwater as discussed in Section 4.0. On November 28, 2005, an unknown volume of produced-water was released by Chevron at and southwest of injection well LPU-33 at the refinery (spill number 26). The release covered an area of approximately 16,300 square feet. It is unknown if Chevron conducted response or assessment activities following the release. The distribution of concentrations of anions in groundwater above WQCC Standards at the southwest portion of the refinery is consistent with a source at or near injection wells LSAU-13 and LPU-33, the location

of the November 2005 Chevron release, and other production and injection wells west-southwest of the refinery as shown on Figure 3.

Historical groundwater analytical results indicate the presence of chloride and TDS concentrations above their WQCC Standards in monitor wells MW-19 and MW-23 and refinery supply well WW-South. Wells MW-19, MW-23, and WW-South are located north and northwest (downgradient) of injection wells LSAU-13 and LPU-33. Elevated concentrations of chloride and TDS at wells MW-19, MW-23, and WW-South are delineated by MW-18 to the northwest, MW-24 to the northeast, and MW-20 and MW-21 to the southeast. Delineation is not provided to the west-southwest because the sources of the elevated chloride and TDS concentrations are located near the refinery boundary (injection wells LSAU-13 and LPU-33 and November 2005 Chevron release) and beyond the refinery boundary to the southwest (other off-site production and injection wells).

The COC concentrations at wells MW-19, MM-23, and WW-South have generally remained stable. No additional source determination activities are needed associated with the elevated COC concentrations at or downgradient of injection wells LSAU-13 and LPU-33 based on the delineation of groundwater COCs above WQCC Standards and stable to decreasing COC concentration trends. The extent of the August 2013 chloride concentrations is depicted on Figure 3.

4.7 Upgradient Off-Site Source Determination/Background Evaluation

A table summarizing the monitor wells and groundwater COCs potentially associated with background concentrations or upgradient off-site sources is presented below.

Potentially Affected Wells	COCs (WQCC Standard Exceedances since January 2012)
MW-3	Fluoride
MW-9	Fluoride
MW-15	Chloride
MW-19	Chloride, TDS
MW-24	Fluoride
MW-28	Fluoride

As discussed above in Section 2.2.2, groundwater analytical results from four upgradient City of Lovington water supply wells indicated no COCs were detected above the WQCC Standards and no upgradient sources could be positively identified based on the analytical data. The City of Lovington wells are screened in the uppermost GWBU, but the screened intervals are longer (160 to 190 feet in the city water supply wells, compared to 20 to 30 feet in the

refinery monitor wells) and extend deeper (240 to 260 feet deep in the city water supply wells, compared to 100 to 130 feet deep in the refinery monitor wells) than the refinery monitoring wells. COCs may be diluted in the water supply wells due to screened interval across multiple GWBUs and the high pumping rates, as compared to the NRC monitor wells. Therefore, the City of Lovington water supply well samples may not be representative of the shallow groundwater zone sampled at the refinery, and upgradient sources may exist that are not detected by sampling the city water supply wells.

Groundwater flows radially to the central portion of the refinery as shown on Figures 2 through 5 due to groundwater pumping from the three refinery water supply wells; however, natural groundwater flow is to the southeast. WQCC Standard exceedances of chloride and TDS in upgradient perimeter wells MW-15 and MW-19 and fluoride in upgradient perimeter wells MW-24 and MW-28 are strong indicators that naturally occurring concentrations above WQCC Standards and/or off-site sources are contributing to the presence of COCs in groundwater at the refinery.

Fluoride has been historically detected above WQCC Standard of 1.6 mg/L at wells MW-3 and MW-9, located at the north-central portion of the refinery. Fluoride concentrations above the WQCC Standard at wells MW-3 and MW-9 are also attributed to naturally occurring concentrations based on the following:

- Fluoride is a naturally occurring anion that is present in groundwater at detectable concentrations throughout New Mexico. According to the NMED website (http://www.nmenv.state.nm.us/dwb/contaminants/Fluoride.htm), "there are many areas of New Mexico with high levels of fluoride in groundwater." As indicated by the December 2007 NMED map entitled, *Fluoride Impacted Public Water Systems – Wells, Springs, and Infiltration Galleries*, fluoride concentrations routinely range from 4 to 25 mg/L across New Mexico, including the southeastern portion of the state. The reported concentrations at wells MW-3 and MW-9, which have historically ranged from 1.11 to 3.38 mg/L, are well below the referenced statewide concentrations.

- The only other refinery wells with historical fluoride concentrations above the WQCC Standard are upgradient perimeter wells MW-24 and MW-28. The reported concentrations at wells MW-3 and MW-9 are similar to those reported at upgradient perimeter wells MW-24 and MW-28, which is a strong indicator that naturally occurring concentrations above (or off-site sources) are contributing to fluoride concentrations at the refinery.

- The absence of other COCs above WQCC Standards in wells MW-3 and MW-9 indicates the fluoride concentrations are naturally occurring rather than sourced from the refinery (i.e., a refinery leak or spill would likely source other anions and metals).
- There is no known source of fluoride at the refinery.

The presence of fluoride concentrations above the WQCC Standard in wells MW-3 and MW-9 and not at other interior refinery wells may be due to a localized geologic condition that increased the fluoride concentrations at wells MW-3 and MW-9. The extent of the August 2013 fluoride concentrations is depicted on Figure 2.

Potential COC sources from historical and current oil and gas operations exist on all sides of the refinery, as follows:

- Active and former oil production and water injection wells;
- Former drilling and production pits; and
- Injection of produced water for disposal or enhanced oil recovery (i.e., water-flooding).

Production and injection wells are potential sources of anions and metals in groundwater as discussed in Section 4.0. Numerous active and former oil production and water injection wells are located immediately upgradient and crossgradient of the refinery, as shown on Figure 6. A summary of each production and injection well located within or around the perimeter of the refinery is provided in Table 4.

Chevron production wells LPU-87 and LSAU-76 are located off-site along the northern property boundary of the refinery and immediately north (upgradient) of well MW-15. Chevron injection wells LPU-14 and LSAU-4 are located approximately 300 feet and 650 feet north of LPU-87, respectively. These wells are not owned, operated or maintained by NRC. The injection and production well details are presented on Table 4 and are summarized as follows:

- Wells LPU-87 and LSAU-76 were installed in 1991 and 1992, respectively, and are temporarily abandoned and inactive.
- Well LSAU-4 was originally installed as production well in 1939 and was converted to an injection well in 1963. The well was plugged and abandoned in 2012.
- Well LPU-14 was installed in 1953 and was converted to an injection well in 1991. The well is currently active.

A file review of these four wells revealed a release occurred near LPU-87 in May 2007 after a steel surface pipe failed due to corrosion. A total of 6 barrels of crude oil and produced

water were released, affecting an approximate surface area of 3,900 square feet (spill number 24). Free standing liquid was removed with a vacuum truck and soil samples were collected from 0 to 1.5 feet bgs for laboratory analysis. Analytical results indicated no COCs, including chloride, were detected above the laboratory reporting limit.

There are no known releases from injection wells LSAU-4 or LPU-14, but they have been identified as potential sources of chloride concentrations in downgradient monitor well MW-15. Well LSAU-4 was an active injection well for over 40 years and LPU-14 has been an active injection well for 22 years.

The active and former oil production and water injection wells were installed between 1939 and 1992 to produce oil or enhance oil production from the Lovington Abo, Lovington Paddock, or the Lovington San Andres units. Each of these wells, particularly those located the northeast, north, northwest, and west of the refinery, are potential sources for the COCs observed in groundwater at the refinery. Each well could serve as a conduit for surface contamination to move into the subsurface or for cross-contamination between hydrogeologic units.

5.0 RISK ASSESSMENT

Groundwater is currently pumped from refinery water supply wells WW-East, WW-North, and WW-South for use in refinery restrooms (for hand washing and toilets) and safety showers. No groundwater is used for drinking or cooking purposes. Water supply holding tank Tank 1210 stores water pumped from water supply wells WW-North, WW-South, and WW-East. Water supply well WW-East is the primary source of refinery water supply (i.e., the well operates approximately 70 to 80 percent of the time) and water supply wells WW-North and WW-South are used to supplement well WW-East (i.e., WW-North and WW-West each operate only 10 to 15 percent of the time).

NRC is committed to protecting the safety of refinery workers and prohibits the use of refinery groundwater for drinking or cooking purposes. Signs are posted in the bathrooms and at the safety showers to notify refinery workers that drinking of the water is prohibited. NRC has collected groundwater samples from water supply well WW-East and water supply holding tank Tank 1210 on a monthly basis from August 2012 to July 2013 (except for January 2013 because Tank 1210 and well WW-East were not in operation) to evaluate the potential risk associated with use of the water in refinery restrooms and safety showers. Samples were analyzed for the Skinner List COCs, which is a list of COCs associated with refinery operations as developed by the United States Environmental Protection Agency (US EPA). Monthly sampling of Tank 1210 ceased after July 2013 as the tank was temporarily taken out of service for maintenance and remains out of service. Samples were not collected from WW-East in August 2013 and September 2013 as the well was not in service during this time.

To further protect refinery workers, a human-health risk evaluation was completed in order to assess reasonable and potential groundwater exposure pathways for refinery workers and determine chemical-specific concentrations in groundwater (risk-based remediation goals) that provide an acceptable level of protection for human health for each exposure pathway. Historical and future groundwater analytical results collected from refinery water supply wells are compared to these risk-based remediation goals to ensure refinery workers' health is protected.

5.1 Risk-Based Remediation Goals

Risk-based remediation goals (RBRGs) define chemical-specific, medium-specific concentrations that provide an acceptable level of protection for human health in a defined exposure scenario. RBRGs for groundwater at the refinery were determined in accordance with the NMED *Risk Assessment Guidance for Site Investigations and Remediation* (updated June 2012) for each COC assuming a refinery worker who comes into contact with groundwater used in refinery restrooms, safety showers, and eye wash stations.

The calculation of the RBRGs compares current human toxicity values with exposure factors as defined below to estimate contaminant concentrations in the respective medium that are considered to be protective of human health exposures over the estimated period of the exposure event (and, in the case of carcinogenic effects, over the course of a lifetime). Each RBRG represents the concentration of a chemical in the given exposure scenario corresponding to a fixed level of risk (i.e., an excess lifetime cancer risk of one in one hundred thousand, or 1E-05) or hazard (i.e., a non-cancer hazard quotient of 1). If a chemical has been shown to be associated with cancer and non-cancer effects, a medium-specific concentration considered health protective of each endpoint was calculated. Supporting documentation for the derivation of the RBRGs (risk calculation workbook) is presented as Appendix D.

5.2 Pathway Completeness Determination

Groundwater use from refinery water supply wells is limited to process water for refinery operation, as well as use in restrooms, safety showers, and eye wash stations. The potential for refinery workers to be exposed to COCs from groundwater is applicable to both current and future exposure scenarios. The complete exposure pathways identified for the refinery workers are inhalation, incidental ingestion, and dermal contact with groundwater, which would most likely happen while refinery workers are using the restroom during the workday, including washing up at the end of their shift. Eye exposure to groundwater could potentially occur when using an emergency eye wash station; however, this specific scenario would only occur under emergency/first aid situations, which is not a daily or repetitive activity, such as hand washing. Therefore, eye wash exposure to groundwater was not quantitatively evaluated in the calculation of RBRGs.

5.3 Calculations of RBRGs for Non-Potable Use Groundwater

A site-specific set of non-potable use groundwater RBRGs for COCs in groundwater were calculated for the above exposure scenarios. The RBRGs are supported by a series of mathematical models that utilize input assumptions to account for the uptake of chemicals from all exposure pathways (i.e., inhalation, ingestion, and dermal exposures) for each COC in the groundwater. Equations for each pathway are listed as follows and the summary of exposure assumptions for each pathway is presented in detail in Appendix D-1.

5.3.1 Calculation of Intake via Inhalation

Development of the RBRG for the inhalation pathway used a single volatilization constant (K) of 0.5 liters per cubic meter (L/m^3)to address the groundwater-to-air pathway for volatile contaminants as recommended in NMED's 2012 *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012). Volatile contaminants are considered those chemicals with a minimum Henry's Law constant of 1E-05 standard atmosphere cubic meter per mole ($atm\text{-}m^3/mole$) and a maximum molecular weight of 200 grams per mole (g/mole)

(USEPA, 2013). The model has been modified to define the relationship between the groundwater concentration and the average concentration of the volatilized contaminant in air for typical use (e.g., restroom use). The carcinogenic and noncarcinogenic equations for the inhalation pathway are as follows:

Equation 1. Inhalation Exposures from non-potable water

$$RBRG_{inh\,(c)} = \frac{TR_c \times AT}{EF \times ED \times ET \times IUR \times K \times 1{,}000}$$

$$RBRG_{inh\,(nc)} = \frac{THQ_{nc} \times AT}{EF \times ED \times ET \times (1/RfC) \times K}$$

where:

Parameter	Definition	Input
$RBRG_{inh\,(c)}$ =	Risk-Based Remediation Goal (cancer), Inhalation (mg/L)	chemical-specific
$RBRG_{inh\,(nc)}$ =	Risk-Based Remediation Goal (noncancer), inhalation (mg/L)	chemical-specific
TR_c =	Target Risk (cancer)	1E-05
THQ_{nc} =	Target Hazard Quotient (noncancer)	1
AT_c =	Averaging Time, carcinogens (days)	25,550
AT_{nc} =	Averaging Time, noncarcinogens (days)	9,125
EF =	Exposure Frequency, worker (day/year)	250
ED =	Exposure Duration (years)	25
ET =	Exposure Time (0.5 hours / 24 hour day)	0.5/24
IUR =	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	chemical-specific
RfC =	Reference Concentration (mg/m^3)	chemical-specific
K =	Andelman Volatilization Factor (L/m^3)	0.5

The chemical-specific information (including toxicity information) is presented in Appendix D-2.

5.3.2 Calculation of Intake via Ingestion

Groundwater use is limited to production use, restrooms, safety showers, and eye wash stations and it is not used for drinking. Therefore, exposure to contaminants in the groundwater may occur via incidental ingestion due to splashing during routine activities (e.g., cleaning activities, restroom use, etc.). The carcinogenic and noncarcinogenic equations for this pathway are as follows:

Equation 2. Ingestion Exposures from non-potable water

$$RBRG_{ing\ (c)} = \frac{TR_c \times AT}{EF \times CSF \times IRW}$$

$$RBRG_{ing\ (nc)} = \frac{THQ_{nc} \times BW \times AT}{EF \times ED \times (1/RfD_o) \times IRW}$$

where:

Parameter	Definition	Input
$RBRG_{ing\ (c)}$ =	Risk-Based Remediation Goal (cancer), Ingestion (mg/L)	chemical-specific
$RBRG_{ing\ (nc)}$ =	Risk-Based Remediation Goal (noncancer), Ingestion (mg/L)	chemical-specific
TR_c =	Target Risk (cancer)	1E-05
THQ_{nc} =	Target Hazard Quotient (noncancer)	1
BW =	Body Weight,adult (kg)	70
AT_c =	Averaging Time, carcinogens (days)	25,550
AT_{nc} =	Averaging Time, noncarcinogens (days)	9,125
EF =	Exposure Frequency, worker (day/year)	250
ED =	Exposure Duration (years)	25
CSF =	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	chemical-specific
RfD_o =	Oral Reference Dose (mg/kg-day)	chemical-specific
IRW =	Water Ingestion Rate (L/day)	0.168

The incidential ingestion rate of 0.168 liters per day (L/day) is based on USEPA's 2011 Exposure Factors Handbook (USEPA, 2011), as shown in Appendix D-1 based on USEPA's recommended values for water ingestion while swimming, mean value of 0.021 liters per hour L/hr x 8 hours per day (hr/d) = 0.168 L/d. Chemical-specific information (including toxicity information) for the incidental ingestion pathway is presented in Appendix D-2.

5.3.3 Calculation of Intake via Dermal Exposure

Dermal contact with groundwater is evaluated using USEPA's Risk Assessment Guidance for Superfund, Part E (USEPA, 2004), specifically, Equation 3.1 from RAGS, Part E, which is presented below:

Equation 3. Dermal Absorbed Dose – Water Contact

$$DAD = [DAevent \times EV \times ED \times EF \times SA] / [BW \times AT]$$

Parameter	Definition	Input
DAD =	Dermally Absorbed Dose (mg/kg-day)	calculated
DAevent =	Absorbed dose per event (mg/cm2-event)	chemical-specific
SA =	Skin surface area available for contact (cm^2)	4,980
EV =	Event frequency (events/day)	1
EF =	Exposure frequency (day/year)	250
ED =	Exposure duration (years)	25
BW =	Body weight (kg)	70
ATc =	Averaging Time, carcinogens (days)	25,550
ATnc =	Averaging Time, noncarcinogens (days)	9,125

In order to calculate the DAD factor, the absorbed dose per event (DAevent) must be calculated for each COC. The DAevent is calculated using inputs and equations found in USEPA's RAGS Part E Spreadsheets for Organics and Inorganic Chemicals in Water (USEPA, 2004). The chemical-specific inputs and resulting DAevent values are summarized on Appendix D-3. Once the DAD values are calculated for each COC, the dermal contact with groundwater RBRGs can be calculated using the Equations below:

Equation 4. Dermal Contact, RBRG Calculations

$$RBRG_{der\,(c)} = \frac{TR_c}{DAD \times (CSF/GIABS) \times CF}$$

$$RBRG_{der\,(nc)} = \frac{THQ_{nc}}{DAD \times (1/R\!fD_o \times GIABS) \times CF}$$

where:

Parameter	Definition	Input
$RBRG_{der\,(c)}$ =	Risk-Based Remediation Goal (cancer), Dermal(mg/L)	chemical-specific
$RBRG_{der\,(nc)}$ =	Risk-Based Remediation Goal (noncancer), Dermal(mg/L)	chemical-specific
TR_c =	Target Risk (cancer)	1E-05
THQ_{nc} =	Target Hazard Quotient (noncancer)	1
CF =	Conversion factor (L/cm^3)	1E-03
CSF =	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	chemical-specific
$R\!fD_o$ =	Oral Reference Dose (mg/kg-day)	chemical-specific
GIABS =	Fraction absorbed in gastrointestinal tract (unitless)	chemical-specific

According to USEPA RAGS Part E (2004), COCs are assessed when the dermal pathway contributes more than 10% of the oral pathway, which is provided in Appendix D-4.

5.3.4 Calculation of Final Risk-Based Remediation Goals

Once RBRGs have been calculated for each exposure pathway, they are combined using the following formulas for cancer and non-cancer endpoints:

Equation 5. RBRGs for non-potable water

$$RBRG_{(c)} = \frac{1}{RBRG_{inh(c)} + RBRG_{ing(c)} + RBRG_{der(c)}}$$

$$RBRG_{(nc)} = \frac{1}{RBRG_{inh(nc)} + RBRG_{ing(nc)} + RBRG_{der(nc)}}$$

The final RBRG is the lower of the cancer and non-cancer endpoints. A summary of the groundwater RBRGs protective of non-potable use by a refinery worker is provided in Appendix D-4. The final RBRGs can be used to compare against groundwater data to identify whether groundwater conditions may pose an unacceptable health risk to a refinery worker.

5.4 Human-Health Risk Evaluation Results

A comparison of final RBRGs and laboratory analytical results of groundwater samples collected from refinery water supply wells WW-East, WW-North, and WW-South and water supply holding tank Tank 1210 is provided in Tables 5 and 6. No COCs have been detected at concentrations above the RBRGs in any of the samples collected to date. Therefore, refinery workers are protected from potential health risks associated with inhalation, incidental ingestion, and dermal exposure during the current uses of groundwater at the refinery (restrooms, safety showers, and eye wash stations). Future groundwater samples collected from the water supply wells and Tank 1210 will compared to the RBRGs to ensure future protection of refinery workers. In addition, the RBRGs will be reevaluated if any changes to the use of groundwater at the refinery are proposed.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the field investigation, groundwater COC data review, and file review were evaluated with respect to the following objectives: (1) determine the potential source of benzene concentrations in well MW-11, and (2) determine if groundwater COC concentrations at the refinery are representative of background conditions, other upgradient sources in the vicinity of the refinery, or operations at the NRC refinery. The following summarizes the results of the source determination and background evaluation:

- Laboratory analytical results of groundwater samples collected from recently installed well MW-30 indicate no COCs, including benzene and naphthalene, were detected at concentrations above WQCC Standards. Based on the MW-30 analytical results and historical results from surrounding monitor wells, unidentified historical releases at the refinery process area are the most likely source(s) of benzene and naphthalene concentrations in well MW-11 that exceeded the WQCC Standards in February and August 2012. Benzene and naphthalene concentrations in well MW-11 were below WQCC Standards in February and August 2013.

- The file review indicated 22 releases have occurred at the refinery since 2001 and have been reported to the regulatory agency. Release response and assessment activities indicate that surface soil was the only environmental media in which COCs were present at concentrations above laboratory reporting limits. None of the releases indicated a potential impact to groundwater. No additional source determination or groundwater investigation activities are needed associated with these potential sources.

- Potential sources of VOCs, anions, metals, and TDS at the refinery include the refinery process area, cooling tower, and waste water separator and RO unit. The WQCC Standard exceedances in groundwater associated with these potential sources have been delineated within the refinery boundaries. No additional source determination or groundwater investigation activities are needed associated with these potential sources.

- Potential on-site and off-site (upgradient) sources of anions, metals, and TDS not associated with the NRC refinery include oil production wells, produced water injection wells, and produced water releases. The WQCC Standard exceedances associated with these non-NRC refinery sources have been delineated within the refinery boundaries with the exception of chloride and TDS concentrations in upgradient perimeter monitor well MW-19. No additional source determination or groundwater investigation activities are needed associated with these sources.

- Groundwater analytical results from four upgradient City of Lovington water supply wells indicated no COCs were detected above the WQCC Standards and no upgradient

sources could be positively identified based on the analytical data. However, the City of Lovington water supply well samples may not be representative of the uppermost GWBU being assessed by NRC at the refinery due to different well construction (the water supply wells are screened over a longer and deeper zone than the monitor wells). Anions, metals, and TDS are naturally occurring and may be detected in New Mexico groundwater at concentrations above WQCC Standards.

- The distribution of "indicator" groundwater COC concentrations above WQCC Standards indicates the following:
    - Fluoride was detected above the WQCC Standard in wells MW-3, MW-9, MW-24, and MW-28 due to off-site sources and/or background concentrations.
    - Chloride was detected above the WQCC Standard in wells MW-15, MW-19, MW-23, and WW-South due to off-site sources and/or background concentrations and in wells MW-13, MW-25, and MW-27 due to potential non-NRC source areas at the refinery.
    - Manganese was detected above the WQCC Standard in wells MW-11 and MW-13 due to potential non-NRC source areas at the refinery and in wells MW-1 and MW-6 due to potential on-site refinery source areas (i.e., waste water separator and RO unit).
    - Chromium was detected above the WQCC Standard in well MW-29 due to a potential on-site refinery source area (i.e., cooling tower).

No further source investigation activities are needed based on the results of the investigation and evaluation. The current groundwater flow regime towards to central portion of the refinery (i.e., the groundwater cone of depression) and the distribution of dissolved-phase COCs in groundwater indicate COCs are not migrating off-site and no additional groundwater delineation is needed.

The human-health risk evaluation indicated refinery workers are protected from potential health risks associated with inhalation, incidental ingestion, and dermal exposure during current use of groundwater at the refinery (restrooms, safety showers, and eye wash stations). Future groundwater samples collected from the water supply wells and Tank 1210 will be compared to the RBRGs to ensure future protection of refinery workers. The RBRGs will be reevaluated if any changes to the use of groundwater at the refinery are proposed. Samples will be collected from refinery water supply well "WW-East" and Tank T-1210 on a quarterly basis (pending operational status of WW-East and Tank T-1210) for laboratory analysis of skinner list COCs.

FIGURES

Document Path: S:\#Holly\Navajo Lovington Refinery\Documents\2013 Source Determination Report\Figures\Figure-1.mxd

LEGEND

- C — CITY OF LOVINGTON WATER SUPPLY WELL
- RAIL
- FENCE

N

0 400 800 1,600

FEET

REFINERY VICINITY MAP

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0003	MXD: Figure-1
AUTHOR: RBLAISDELL	DATE: 12/6/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 1

Document Path: S:\#Holly\Navajo Lovington Refinery\Documents\2013 Source Determination Report\Figures\Figure-2.mxd

LEGEND

- INJECTION WELL
- MONITORING WELL
- OIL PRODUCTION WELL
- OIL PRODUCTION-CONVERTED TO INJECTION WELL
- RECOVERY WELL
- REFINERY WATER SUPPLY WELL
- CITY OF LOVINGTON WATER SUPPLY WELL
- 1.6 FLUORIDE WQCC GROUNDWATER STANDARD CONTOUR(DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION
- BUILDINGS
- TANKS
- RAIL
- FENCE
- POTENTIAL SOURCE
- 2.40 FLUORIDE CONCENTRATION MILLIGRAMS PER LITER
- NS NOT SAMPLED

N

0 200 400 800
FEET

FLUORIDE CONCENTRATION MAP AUGUST 2013

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0003	MXD: Figure-2
AUTHOR: RBLAISDELL	DATE: 12/30/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 2

Document Path: S:\#Holly\Navajo Lovington Refinery\Documents\2013 Source Determination Report\Figures\Figure-3.mxd

LEGEND

- INJECTION WELL
- MONITORING WELL
- OIL PRODUCTION WELL
- OIL PRODUCTION-CONVERTED TO INJECTION WELL
- RECOVERY WELL
- REFINERY WATER SUPPLY WELL
- CITY OF LOVINGTON WATER SUPPLY WELL
- CHLORIDE WQCC GROUNDWATER STANDARD CONTOUR(DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION
- BUILDINGS
- TANKS
- RAIL
- FENCE
- POTENTIAL SOURCE
- 31.2 CHLORIDE CONCENTRATION MILLIGRAMS PER LITER
- NS NOT SAMPLED

N

0 200 400 800
FEET

CHLORIDE CONCENTRATION MAP AUGUST 2013

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0003	MXD: Figure-3
AUTHOR: RBLAISDELL	DATE: 12/30/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 3

Document Path: S:\#Holly\Navajo Lovington Refinery\Documents\2013 Source Determination Report\Figures\Figure-4.mxd

LEGEND

- INJECTION WELL
- MONITORING WELL
- OIL PRODUCTION WELL
- OIL PRODUCTION-CONVERTED TO INJECTION WELL
- RECOVERY WELL
- REFINERY WATER SUPPLY WELL
- CITY OF LOVINGTON WATER SUPPLY WELL
- 0.20 MANGANESE WQCC GROUNDWATER STANDARD CONTOUR(DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION
- BUILDINGS
- TANKS
- RAIL
- FENCE
- POTENTIAL SOURCE
- 0.315 MANGANESE CONCENTRATION MILLIGRAMS PER LITER
- NS NOT SAMPLED

N

0 200 400 800
FEET

MANGANESE CONCENTRATION MAP AUGUST 2013

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0003	MXD: Figure-4
AUTHOR: RBLAISDELL	DATE: 12/30/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 4

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LEGEND

- INJECTION WELL
- MONITORING WELL
- OIL PRODUCTION WELL
- OIL PRODUCTION-CONVERTED TO INJECTION WELL
- RECOVERY WELL
- REFINERY WATER SUPPLY WELL
- CITY OF LOVINGTON WATER SUPPLY WELL
- 0.05 CHROMIUM WQCC GROUNDWATER STANDARD CONTOUR(DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION
- BUILDINGS
- TANKS
- RAIL
- FENCE
- POTENTIAL SOURCE
- 0.117 CHROMIUM CONCENTRATION MILLIGRAMS PER LITER
- NS NOT SAMPLED

N

0 200 400 800
FEET

CHROMIUM CONCENTRATION MAP AUGUST 2013

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0003	MXD: Figure-5
AUTHOR: RBLAISDELL	DATE: 12/30/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 5

Document Path: S:\#Holly\Navajo Lovington Refinery\Documents\2013 Source Determination Report\Figures\Figure-6.mxd

LEGEND

- INJECTION WELL
- MONITORING WELL
- OIL PRODUCTION WELL
- OIL PRODUCTION-CONVERTED TO INJECTION WELL
- RECOVERY WELL
- REFINERY WATER SUPPLY WELL
- CITY OF LOVINGTON WATER SUPPLY WELL
- Navajo Spill
- Other Operator Spill
- RAIL
- FENCE
- FLARE
- BUILDINGS
- TANKS

N

0 250 500 1,000

FEET

SPILLS AND PRODUCTION AND INJECTION WELL MAP

NAVAJO REFINING COMPANY
LEA REFINERY LOVINGTON, NM

PROJECT NO: 196364.0001	MXD: Figure-6
AUTHOR: RBLAISDELL	DATE: 12/30/2013

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 6

TABLES

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

Monitor Well	Sample Date	WQCC Volatiles					WQCC Semi-Volatiles				
		Benzene (mg/L)	Ethyl-benzene (mg/L)	Toluene (mg/L)	Total Xylenes (mg/L)	Total Naphthalene (8260, mg/L)	Total Naphthalene (8270, mg/L)	Naphthalene (8270, mg/L)	1-Methylnaphthalene (mg/L)	2-Methylnaphthalene (mg/L)	Total Phenols (mg/L)
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	**--**	**--**	**--**	**0.005**
MW-1	06/19/09	<0.0050	**0.012**	<0.0050	**0.031**	<0.0050	--	--	--	--	--
	01/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	<0.00020	<0.00020	<0.00020
	08/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/01/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/27/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-2	06/22/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/16/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/03/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/19/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00022**
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-3	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
(duplicate)	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-4	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/13/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00044**	**0.00044**	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-5	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
(duplicate)	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

Monitor Well	Sample Date	WQCC Volatiles					WQCC Semi-Volatiles				
		Benzene (mg/L)	Ethyl-benzene (mg/L)	Toluene (mg/L)	Total Xylenes (mg/L)	Total Naphthalene (8260, mg/L)	Total Naphthalenes (8270, mg/L)	Naphthalene (8270, mg/L)	1-Methylnaphthalene (mg/L)	2-Methylnaphthalene (mg/L)	Total Phenols (mg/L)
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	**--**	**--**	**--**	**0.005**
MW-6	06/18/09	<0.0050	<0.0050	<0.0050	<0.015	**0.0075**	--	--	--	--	--
(duplicate)	06/18/09	<0.0050	<0.0050	<0.0050	<0.015	**0.0074**	--	--	--	--	--
	02/02/10	<0.0050	**0.013**	<0.0050	<0.015	**0.0099**	--	--	--	--	--
	08/19/10	<0.0050	**0.015**	<0.0050	<0.015	<0.0050	--	**0.0017**	--	**0.0017**	<0.0010
	03/01/11	<0.0050	**0.018**	<0.0050	<0.015	**0.013**	**0.0094**	**0.0062**	<0.00020	**0.0032**	**0.0255**
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.0008**	**0.0008**	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-7	06/19/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/02/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/01/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/27/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-8	06/18/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/27/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-9	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/01/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-10	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/13/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/19/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	<0.00020	<0.00020
	03/03/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00028**	**0.00028**	<0.00020	<0.00020	<0.00020
	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00032**

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

		WQCC Volatiles					WQCC Semi-Volatiles				
Monitor Well	Sample Date	Benzene (mg/L)	Ethyl-benzene (mg/L)	Toluene (mg/L)	Total Xylenes (mg/L)	Total Naphthalene (8260, mg/L)	Total Naphthalenes (8270, mg/L)	Naphthalene (8270, mg/L)	1-Methylnaphthalene (mg/L)	2-Methylnaphthalene (mg/L)	Total Phenols (mg/L)
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	--	--	--	**0.005**
MW-11	06/18/09	**0.10**	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	**0.20 E**	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/18/10	**0.078**	**0.021**	<0.0050	<0.015	<0.0050	**0.00036**	**0.00036**	--	--	**0.00122**
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	**1.2**	<0.0050	<0.0050	<0.015	<0.0050	**0.00036**	**0.00036**	--	<0.00020	**0.00089**
	02/01/12	**7.8**	**0.051**	<0.0050	**0.200**	**0.096**	**0.0435**	**0.039**	--	**0.0045**	**0.0035**
	07/27/12	**0.049**	<0.0050	<0.0050	<0.015	<0.0050	**0.00022**	**0.00022**	<0.00020	<0.00020	**0.00023**
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-12	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	DAMAGED WELL - NO SAMPLES COLLECTED									
MW-12R	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-13	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/18/10	**0.016**	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/25/11	**0.0057**	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00091**
	07/19/11	**0.0063**	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-14	06/16/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.000205	<0.00020	<0.000205	<0.000205	<0.000205
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
MW-15	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/19/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-16	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00030**	**0.00030**	--	<0.00020	<0.00020
(duplicate)	07/15/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

Monitor Well	Sample Date	WQCC Volatiles					WQCC Semi-Volatiles				
		Benzene (mg/L)	Ethyl-benzene (mg/L)	Toluene (mg/L)	Total Xylenes (mg/L)	Total Naphthalene (8260, mg/L)	Total Naphthalenes (8270, mg/L)	Naphthalene (8270, mg/L)	1-Methylnaphthalene (mg/L)	2-Methylnaphthalene (mg/L)	Total Phenols (mg/L)
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	**--**	**--**	**--**	**0.005**
MW-17	08/20/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	--	DAMAGED WELL - NO SAMPLES COLLECTED									
MW-17R	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-18	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00021**	**0.00021**	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-19	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/24/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-20	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/25/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-21	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00031**	<0.00020	<0.00020	**0.00031**	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-22	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/31/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-23	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/19/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

		WQCC Volatiles					WQCC Semi-Volatiles				
Monitor Well	Sample Date	Benzene (mg/L)	Ethyl-benzene (mg/L)	Toluene (mg/L)	Total Xylenes (mg/L)	Total Naphthalene (8260, mg/L)	Total Naphthalenes (8270, mg/L)	Naphthalene (8270, mg/L)	1-Methylnaphthalene (mg/L)	2-Methylnaphthalene (mg/L)	Total Phenols (mg/L)
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	**--**	**--**	**--**	**0.005**
MW-24	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	07/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-25	08/23/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/18/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-26	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/22/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00061**
MW-27	08/18/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/25/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00099**
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	**0.00034**
	02/01/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/26/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-28	08/28/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/23/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/19/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00086**
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	**0.00022**
MW-29	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
(Dupl #1)	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/28/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/14/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	01/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	**0.00050**	**0.00050**	--	<0.00020	<0.00020
	07/24/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/26/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
MW-30	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/20/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 1. Organic Constituent Concentrations in Groundwater, Navajo Refining Company, Lea Refinery, Lovington, NM

		WQCC Volatiles					WQCC Semi-Volatiles				
Monitor Well	**Sample Date**	**Benzene (mg/L)**	**Ethyl-benzene (mg/L)**	**Toluene (mg/L)**	**Total Xylenes (mg/L)**	**Total Naphthalene (8260; mg/L)**	**Total Naphthalenes (8270; mg/L)**	**Naphthalene (8270; mg/L)**	**1-Methylnaphthalene (mg/L)**	**2-Methylnaphthalene (mg/L)**	**Total Phenols (mg/L)**
NM WQCC Groundwater Standards:		**0.010**	**0.75**	**0.75**	**0.62**	**0.03**	**0.03**	**--**	**--**	**--**	**0.005**
RW-1	06/19/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	02/02/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/19/10	<0.0050	<0.0050	<0.0050	**0.015**	<0.0050	--	--	--	--	--
	03/01/11	<0.0050	<0.0050	<0.0050	**0.0054**	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/27/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/27/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
North Well	06/18/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/03/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/19/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
South Well	06/22/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/24/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/03/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	02/19/13	0.0052	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
East Well	06/18/09	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	01/14/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	08/25/10	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	--	--	--	--	--
	03/03/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	07/20/11	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	02/02/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	--	<0.00020	<0.00020
	07/30/12	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	08/27/12	<0.0050	<0.0050	<0.0050	<0.015	--	<0.00020	<0.00020	<0.00020	--	<0.00020
	09/26/12	<0.0050	<0.0050	<0.0050	<0.015	--	<0.00020	<0.00020	<0.00020	--	<0.00020
	10/22/12	<0.0050	<0.0050	<0.0050	<0.015	--	<0.00020	<0.00020	<0.00020	--	<0.00020
	12/27/12	<0.0050	<0.0050	<0.0050	<0.015	--	<0.00020	<0.00020	<0.00020	--	<0.00020
LW-9	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
(duplicate)	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LW-14	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LW-16	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LW-18	06/21/13	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Notes:

Bold indicates analyte was detected above the laboratory reporting limit

Shading indicates detected result exceeded the New Mexico Water Quality Control Commission (WQCC) Human Health Standard

mg/L = milligrams per liter

< = Not reported above laboratory reporting limit

-- = Not Analyzed

E = Value above quantitation range

Analyses performed by ALS Laboratory Group, Houston, Texas

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-Nitrite (as N) (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (ug/L)	Zinc (mg/L)
	20 NMAC 6.2.3103 Groundwater Standards	250	1.6	10	600	1,000	5.0	0.1	2.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.03	10.0
MW-1	06/19/09	131	0.827	3.75	123	694	<0.0100	0.00914	0.147	0.175	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.774	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0124
	01/19/10	146	0.249	5.84	145	1,240	0.0202	0.00634	0.164	0.236	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	2.72	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00615	0.00989
	08/18/10	126	0.623	2.59	111	694	<0.0100	0.00841	0.117	0.182	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	1.62	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00538
	03/01/11	100	0.502	1.84	83.4	580	<0.0100	0.00821	0.0984	0.189	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	1.62	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00689
	07/20/11	34.7	0.623	1.14	73.9	492	<0.0100	0.00808	0.0903	0.168	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.485	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00832
	02/02/12	29.9	0.773	<1.00	65.4	392	<0.0100	0.00782	0.0843	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.780	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00766
	07/27/12	27.3	0.944	<2.00	59.5	358	0.0249	0.00870	0.0917	0.193	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	1.05	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00759
	02/27/13	30.0	0.872	<2.00	67.2	400	<0.0100	0.00857	0.0974	0.184	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.[illegible]	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0107
	08/21/13	33.2	1.03	<1.00	70.5	406	0.0158	0.00589	0.102	0.187	<0.00200	0.016	<0.00500	<0.00500	<0.200	<0.00500	1.43	<0.000200	<0.00500	0.0164	<0.00500	<0.00500	<0.00500	0.00641
MW-2	06/22/09	238	0.765	2.69	66.8	988	0.0657	0.0386	0.0803	0.190	<0.00200	<0.00500	<0.00500	0.00621	<0.200	<0.00500	0.00583	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.110
	01/19/10	246	0.672	3.39	55.1	966	<0.0100	<0.00500	0.00500	0.191	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00538	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0166
	08/16/10	276	0.824	3.23	55.9	1,190	0.1367	<0.00500	0.193	0.155	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0204
	03/03/11	221	0.763	3.49	57.6	1,030	<0.0100	<0.00500	0.176	0.171	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0117
	07/14/11	190	0.647	2.98	58.4	966	<0.0100	<0.00500	0.160	0.192	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0230
	01/30/12	214	0.784	3.43	75.1	1,230	<0.0100	<0.00500	0.130	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0255
	07/24/12	201	0.898	3.24	76.3	908	<0.0100	<0.00500	0.140	0.233	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0191
	02/19/13	213	0.810	3.90	86.6	834	0.0102	<0.00500	0.141	0.197	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0436
	08/20/13	178	0.92	5.33	88.9	682	0.0346	<0.00500	0.118	0.216	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00721
MW-3	06/16/09	29.1	3.18	2.19	64.6	504	0.308	0.00815	0.115	0.160	<0.00200	0.00709	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.0151	<0.00500	<0.00500	<0.00500	--	<0.0100
	01/14/10	49.9	3.18	2.11	76.5	540	0.144	0.00703	0.119	0.148	<0.00200	0.00977	<0.00500	0.121	<0.200	<0.00500	0.00597	<0.000200	0.0200	0.00842	<0.00500	<0.00500	0.000625	0.0195
(duplicate)	01/14/10	49.8	3.18	2.11	75.0	552	0.142	0.00798	0.125	0.167	<0.00200	0.01050	<0.00500	0.148	<0.200	<0.00500	0.00699	<0.000200	0.0216	0.0096	<0.00500	<0.00500	0.000721	0.0230
	08/19/10	72.7	2.99	1.52	77.7	518	0.0767	0.00935	0.127	0.151	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00790	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/24/11	88.2	2.58	3.02	80.5	566	<0.0100	0.00892	0.124	0.178	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0524
	07/15/11	67.3	2.37	2.59	74.7	568	<0.0100	0.0125	0.113	0.202	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00510	<0.00500	<0.00500	<0.00500	<0.00500	0.0156
	01/30/12	65.6	2.94	2.37	86.3	472	<0.0100	0.0117	0.0831	0.168	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00621	<0.00500	<0.00500	<0.00500	<0.00500	0.00886
	07/25/12	35.0	2.70	<2.00	81.3	436	<0.0100	0.0152	0.0773	0.209	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00673
	02/27/13	54.2	2.47	2.30	89.5	478	<0.0100	0.0156	0.101	0.186	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00546	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	08/22/13	46.1	3.08	2.06	81.9	456	0.0185	0.0169	0.0782	0.178	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
MW-4	06/16/09	28.9	0.841	1.84	61.5	422	0.180	<0.00500	0.174	0.160	<0.00200	0.00534	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0120
	01/13/10	29.3	1.10	1.67	66.7	416	0.0345	<0.00500	0.0932	0.177	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00102	<0.00500
	08/19/10	26.1	1.10	1.10	65.8	324	0.0607	<0.00500	0.0862	0.136	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/28/11	27.1	1.02	1.91	64.4	378	0.0131	<0.00500	0.0951	0.163	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00533
	07/15/11	25.8	1.12	1.57	63.6	422	0.144	<0.00500	0.141	0.172	<0.00200	0.00619	<0.00500	<0.00500	<0.200	<0.00500	0.0114	<0.000200	<0.00500	0.0103	<0.00500	<0.00500	<0.00500	0.0211
	01/30/12	30.0	1.08	1.71	73.4	388	0.0119	<0.00500	0.0796	0.150	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0147
	07/24/12	28.9	1.18	<2.00	69.4	414	<0.0100	<0.00500	0.0883	0.199	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0102
	02/21/13	26.6	1.05	<2.00	75.5	360	<0.0100	0.00525	0.0841	0.157	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0116
	08/20/13	26.4	1.20	1.72	71.6	382	<0.0100	0.00500	0.0902	0.156	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00506
MW-5	06/16/09	186	1.39	3.31	131	952	0.796	0.0233	0.0639	0.116	<0.00200	<0.00500	<0.00500	<0.00500	0.399	<0.00500	0.0067	<0.000200	0.0103	<0.00500	<0.00500	<0.00500	--	<0.0100
	01/18/10	26.4	0.781	4.91	80.6	508	<0.0100	<0.00500	0.0966	0.135	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	08/20/10	18.5	1.13	3.43	77.7	440	0.0814	<0.00500	0.0967	0.0986	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/28/11	29.8	1.03	2.91	70.5	570	0.123	<0.00500	0.100	0.085	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0142	<0.000200	<0.00500	0.0112	<0.00500	<0.00500	<0.00500	0.0368
	07/19/11	20.9	0.858	2.72	59.0	524	<0.0100	<0.00500	0.0968	0.087	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0309
	01/31/12	26.9	1.04	2.49	61.2	504	<0.0100	<0.00500	0.0972	0.0557	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00948
(duplicate)	01/31/12	27.1	1.05	2.54	62.0	436	<0.0100	<0.00500	0.0947	0.0728	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0119
	07/25/12	15.9	1.10	2.22	50.1	434	0.0205	<0.00500	0.0931	0.134	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0562
	02/21/13	10.9	1.04	2.01	40.8	412	0.0487	<0.00500	0.104	0.0997	<0.00200	<0.00500	<0.00500	0.0434	<0.200	<0.00500	0.0158	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00582	0.0289
	08/20/13	13.9	1.16	2.05	44.2	448	<0.0100	<0.00500	0.105	0.100	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0208

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-Nitrite (as N) (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)
	NMWQCC Groundwater Standards	250	1.6	10	600	1,000	5.0	0.1	1.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.02	10.0
MW-6	06/18/09	188	0.113	0.678	101	844	<0.0100	0.0201	0.186	0.175	<0.00200	<0.00500	<0.00500	<0.00500	0.418	<0.00500	2.36	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.00996
(duplicate)	06/18/09	168	<0.100	0.682	90.4	812	<0.0100	0.0221	0.200	0.192	<0.00200	<0.00500	<0.00500	<0.00500	0.219	<0.00500	2.76	<0.000200	<0.00500	0.00653	<0.00500	<0.00500	--	0.0141
	02/02/10	188	<0.100	0.822	90.2	1,100	<0.0200	0.0250	0.499	0.234	<0.00200	<0.00500	<0.00500	<0.00500	2.00	<0.00500	4.51	<0.000200	<0.00500	0.00634	<0.00500	<0.00500	0.0113	<0.00500
	08/19/10	285	<0.100	<1.00	111	1,250	0.0152	0.0456	0.376	0.244	<0.00200	<0.00500	<0.00500	<0.00500	1.06	<0.00500	6.61	<0.000200	<0.00500	0.00766	<0.00500	<0.00500	0.00785	<0.00500
	03/01/11	293	<0.100	0.750	80.7	1,300	<0.0100	0.0390	0.404	0.271	<0.00200	<0.00500	<0.00500	<0.00500	0.711	<0.00500	5.58	<0.000200	<0.00500	0.00896	<0.00500	<0.00500	0.00659	<0.00500
	07/20/11	174	<0.500	<0.500	114	970	<0.0100	0.0336	0.220	0.223	<0.00200	0.00972	<0.00500	<0.00500	1.57	<0.00500	4.51	<0.000200	<0.00500	0.00576	<0.00500	<0.00500	<0.00500	0.0176
	02/02/12	58.4	0.313	<1.00	88.0	398	<0.0100	<0.00500	0.0827	0.190	<0.00200	<0.00500	<0.00500	<0.00500	0.488	<0.00500	1.25	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00599	0.00858
	07/24/12	77.7	0.217	<2.00	80.1	690	<0.0100	0.0128	0.143	0.265	<0.00200	<0.00500	<0.00500	<0.00500	1.28	<0.00500	2.53	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.0102	0.0194
	02/27/13	65.4	0.368	<2.00	77.1	542	<0.0100	0.0126	0.154	0.214	<0.00200	<0.00500	<0.00500	<0.00500	1.31	<0.00500	1.97	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00789	0.0123
(duplicate)	02/27/13	65.7	0.370	<2.00	77.6	556	<0.0100	0.0124	0.158	0.216	<0.00200	<0.00500	<0.00500	<0.00500	1.33	<0.00500	2.02	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00833	0.0106
	08/21/13	43.3	0.441	<0.200	76.6	502	0.0244	<0.00500	0.129	0.198	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	1.58	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00606	<0.00500
MW-7	06/19/09	30.6	1.12	1.66	67.2	384	<0.0100	0.00923	0.169	0.161	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.127	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0137
	02/02/10	28.0	0.854	1.72	62.2	350	<0.0200	0.00869	0.199	0.169	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.125	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	08/18/10	27.2	0.570	1.12	60.2	370	0.0223	0.00532	0.252	0.161	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.141	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	03/01/11	26.5	0.599	1.91	58.2	376	<0.0100	0.00525	0.237	0.161	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.411	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00593
	07/20/11	23.3	0.626	1.35	56.8	396	<0.0100	0.00669	0.246	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.417	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/02/12	25.5	0.633	1.66	61.5	356	<0.0100	<0.00500	0.229	0.166	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.550	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00746
	07/27/12	23.6	0.796	2.01	55.2	342	0.0727	<0.00500	0.234	0.196	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.642	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0114
	02/27/13	25.8	0.709	<2.00	67.3	286	<0.0100	<0.00500	0.227	0.178	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.300	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00844
	08/21/13	26.9	0.748	1.62	60.8	290	< 0.0100	<0.00500	0.220	0.178	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.347	<0.000200	<0.00500	<0.00500	0.00600	<0.00500	<0.00500	<0.00500
MW-8	06/18/09	219	0.730	3.46	73.3	798	<0.0100	0.00501	0.181	0.228	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00919	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0458
	01/18/10	151	0.493	3.80	67.6	742	<0.0100	0.00726	0.157	0.215	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00545
	08/18/10	220	0.560	7.08	65.3	1,000	0.0377	0.00676	0.204	0.170	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00501	0.00760
	02/25/11	144	0.820	<0.500	87.5	694	<0.0100	<0.00500	0.106	0.175	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.251	<0.000200	<0.00500	0.00620	<0.00500	<0.00500	<0.00500	0.0316
	07/19/11	213	0.522	4.49	72.4	1,000	<0.0100	<0.00500	0.229	0.278	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00928	0.0213
	02/01/12	216	0.498	8.21	102	1,050	<0.0100	<0.00500	0.221	0.219	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00636	<0.000200	<0.00500	0.0119	<0.00500	<0.00500	0.00745	0.0339
	07/27/12	224	0.490	8.55	122	1,090	<0.0100	<0.00500	0.160	0.294	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00523	<0.00500	<0.00500	0.00714	0.00888
	02/26/13	246	0.371	11.1	118	1,000	<0.0100	0.00627	0.170	0.380	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00592	<0.000200	<0.00500	0.00599	<0.00500	<0.00500	0.00690	0.0188
	08/21/13	101	0.513	9.49	129	788	< 0.0100	<0.00500	0.119	0.266	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0208	<0.000200	<0.00500	0.0135	<0.00500	<0.00500	<0.00500	0.0107
MW-9	06/16/09	23.0	1.63	0.748	73.2	380	0.0468	0.0373	0.0911	0.122	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	<0.0100
	01/14/10	23.9	1.78	1.72	74.4	450	0.0164	0.0351	0.0676	0.139	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.000656	<0.00500
	08/19/10	21.8	1.64	1.32	75.2	412	0.115	0.0358	0.0649	0.121	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00961	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	03/01/11	24.1	1.63	2.01	74.6	414	0.0112	0.0382	0.0586	0.131	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00662
	07/15/11	24.9	1.65	1.78	70.2	434	0.0371	0.0374	0.0647	0.166	<0.00200	0.00741	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00511	<0.00500	<0.00500	<0.00500	0.00932
	01/31/12	31.5	2.22	1.43	80.5	484	<0.0100	0.0341	0.0653	0.108	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00529
	07/25/12	30.4	1.98	<2.00	77.8	420	0.0306	0.0292	0.0721	0.182	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00708	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00716
	02/27/13	31.3	1.11	2.82	79.1	440	<0.0100	0.0171	0.0766	0.154	<0.00200	<0.00500	<0.00500	<0.00500	0.702	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0167
	08/22/13	35.7	1.26	3.01	74.0	466	0.0467	0.0246	0.0736	0.153	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
MW-10	06/16/09	32.2	0.878	1.83	76.5	378	<0.0200	<0.00500	0.113	0.138	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0127
	01/13/10	33.4	1.05	1.84	77.9	436	<0.0100	<0.00500	0.0815	0.162	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.000911	0.0133
	08/19/10	31.7	1.07	1.91	79.8	508	0.0556	<0.00500	0.0796	0.129	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00569
	03/03/11	32.8	0.945	2.06	79.1	422	<0.0100	<0.00500	0.0772	0.159	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0133
	07/15/11	30.7	1.06	1.68	75.7	470	0.0318	<0.00500	0.0855	0.177	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	01/31/12	42.9	1.00	1.85	87.4	444	<0.0100	<0.00500	0.0865	0.109	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0252
	07/25/12	42.7	1.10	<2.00	82.6	382	<0.0100	0.00516	0.0882	0.186	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00861
	02/27/13	48.0	0.960	<2.00	83.5	416	<0.0100	0.00546	0.0972	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00633
	08/22/13	95.0	0.994	2.12	72.2	516	< 0.0100	<0.00500	0.104	0.168	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00671

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-Nitrite (as N) (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	Methylene Chloride (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)
	NM WQCC Groundwater Standards	250	1.6	10	600	1000	5.0	0.1	1.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.03	10.0
MW-11	06/18/09	204	0.579	1.23	43.1	994	<0.0100	<0.00500	0.194	0.199	<0.00200	<0.00500	<0.00500	<0.00500	0.571	<0.00500	6.29	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0212
	01/18/10	164	0.527	1.37	71.4	842	<0.0100	<0.00500	0.147	0.238	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0559	<0.000200	<0.00500	0.0126	<0.00500	<0.00500	0.00635	<0.00500
	08/18/10	146	0.616	2.38	50.6	802	0.0125	<0.00500	0.471	0.255	<0.00200	<0.00500	<0.00500	<0.00500	0.347	<0.00500	4.24	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00718	<0.00500
	02/25/11	143	0.549	<0.500	82.3	1,010	<0.0100	<0.00500	0.241	0.244	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0101	<0.000200	<0.00500	0.00856	<0.00500	<0.00500	0.00878	0.0982
	07/19/11	134	0.575	0.778	57.0	894	<0.0100	<0.00500	0.150	0.232	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0301	<0.000200	<0.00500	0.00846	<0.00500	<0.00500	0.00616	0.0265
	02/01/12	175	0.749	<0.500	4.96	966	<0.0100	0.0176	1.08	0.288	<0.00200	<0.00500	<0.00500	<0.00500	1.77	<0.00500	1.45	<0.000200	<0.00500	0.0169	<0.00500	<0.00500	0.0138	0.0189
	07/27/12	133	0.708	<2.00	59.7	784	<0.0100	0.0128	0.827	0.374	<0.00200	<0.00500	<0.00500	<0.00500	1.05	<0.00500	2.54	<0.000200	<0.00500	0.0351	<0.00500	<0.00500	0.00500	<0.00500
	02/27/13	140	0.576	3.11	32.6	908	<0.0100	0.00802	0.561	0.349	<0.00200	<0.00500	0.00604	<0.00500	<0.200	<0.00500	5.24	<0.000200	0.00631	0.0861	<0.00500	<0.00500	0.0127	0.0226
(duplicate)	02/27/13	143	0.585	3.23	32.0	908	<0.0100	0.00787	0.574	0.349	<0.00200	<0.00500	0.00574	<0.00500	<0.200	<0.00500	5.47	<0.000200	0.00619	0.0811	<0.00500	<0.00500	0.0125	0.0199
	08/21/13	182	0.668	4.04	75.3	854	< 0.0100	<0.00500	0.195	0.283	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	2.62	<0.000200	<0.00500	0.00869	<0.00500	<0.00500	0.00723	0.00547
(duplicate)	08/21/13	172	0.673	4.19	76.2	868	< 0.0100	<0.00500	0.198	0.290	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	2.61	<0.000200	<0.00500	0.00906	<0.00500	<0.00500	0.00714	0.00592
MW-12	06/16/09	23.0	1.16	1.98	49.6	354	<0.0200	0.00516	0.0775	0.200	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	<0.0100
	01/18/10	26.1	1.05	2.31	49.8	398	<0.0100	<0.00500	0.0755	0.235	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0219	<0.000200	<0.00500	0.0182	<0.00500	<0.00500	<0.00500	<0.00500
	08/20/10	25.8	1.22	2.00	50.3	340	0.115	0.00550	0.0756	0.176	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/25/11	28.5	1.14	<0.500	50.8	402	<0.0100	0.00504	0.076	0.198	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0185
	07/19/11	26.8	0.856	2.91	51.2	410	<0.0100	<0.00500	0.0828	0.215	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00976	<0.000200	0.00575	0.00684	<0.00500	<0.00500	<0.00500	<0.00500
	--	DAMAGED WELL - NO SAMPLES COLLECTED																						
MW-12R	08/21/13	31.2	1.40	8.14	71.1	404	< 0.0100	<0.00500	0.0937	0.194	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0129	<0.000200	0.00647	0.0103	<0.00500	<0.00500	<0.00500	0.00956
MW-13	06/16/09	604	0.220	2.65	138	1,290	<0.0200	<0.00500	0.0692	0.253	<0.00200	<0.00500	0.0285	<0.00500	<0.200	<0.00500	0.0176	<0.000200	<0.00500	0.0126	<0.00500	<0.00500	--	0.0269
	01/18/10	604	0.170	1.08	79.8	2,210	<0.0100	<0.00500	0.111	0.231	<0.00200	0.00728	0.00624	<0.00500	<0.200	<0.00500	0.0591	<0.000200	<0.00500	0.0110	<0.00500	<0.00500	0.0119	0.00769
	08/18/10	390	0.278	<1.00	144	1,570	0.0196	<0.00500	0.106	0.221	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.234	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.0128	0.00618
	02/25/11	340	0.281	<0.500	235	1,630	<0.0100	<0.00500	0.0692	0.242	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.225	<0.000200	<0.00500	0.0144	<0.00500	<0.00500	0.0170	0.0744
	07/19/11	351	0.327	<0.500	244	1,560	<0.0100	<0.00500	0.0800	0.249	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.302	<0.000200	<0.00500	0.0121	<0.00500	<0.00500	0.0188	0.00785
	02/01/12	418	0.322	<0.500	122	1,590	<0.0100	<0.00500	0.0752	0.228	<0.00200	<0.00500	0.00663	<0.00500	<0.200	<0.00500	0.341	<0.000200	<0.00500	0.0136	<0.00500	<0.00500	0.0128	0.0553
	07/26/12	462	0.422	<2.00	123	1,600	<0.0100	<0.00500	0.112	0.284	<0.00200	<0.00500	0.00644	<0.00500	<0.200	<0.00500	0.459	<0.000200	<0.00500	0.0108	<0.00500	<0.00500	0.0158	0.0361
	02/26/13	430	0.366	<2.00	135	1,610	0.0139	<0.00500	0.129	0.270	<0.00200	<0.00500	0.00657	<0.00500	<0.200	<0.00500	0.571	<0.000200	0.00568	0.0820	<0.00500	<0.00500	0.0123	0.0359
	08/21/13	540	0.389	< 1.00	108	1,580	< 0.0100	0.00590	0.159	0.265	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.392	<0.000200	<0.00500	0.0209	<0.00500	<0.00500	0.0153	0.00931
MW-14	06/16/09	93.0	0.851	5.16	60.9	540	<0.0200	<0.00500	0.0770	0.132	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0199	<0.000200	0.0215	<0.00501	<0.00500	<0.00500	--	0.0255
	01/18/10	103	0.810	6.03	59.0	598	<0.0100	<0.00500	<0.00500	<0.0200	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	08/20/10	74.1	0.986	2.76	61.3	340	0.103	<0.00500	0.0774	0.131	<0.00200	0.0119	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00964	0.0480	<0.00500	<0.00500	0.00527	<0.00500
	02/25/11	58.2	0.918	2.32	58.7	440	0.0101	<0.00500	0.0778	0.151	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0234	<0.000200	0.00903	0.0139	<0.00500	<0.00500	0.00541	0.0532
	07/18/11	48.4	1.05	1.36	53.0	482	0.176	0.00615	0.110	0.156	<0.00200	1.15	0.122	0.218	2.68	<0.00500	1.48	<0.000200	0.0860	0.436	<0.00500	<0.00500	0.00544	0.0446
	01/31/12	59.7	0.984	1.58	58.3	444	<0.0100	<0.00500	0.0802	0.129	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0276	<0.000200	0.00608	0.0186	<0.00500	<0.00500	<0.00500	0.0287
	07/25/12	69.3	1.03	<2.00	54.8	446	0.0116	<0.00500	0.0905	0.216	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0321	<0.000200	<0.00500	0.0240	<0.00500	<0.00500	<0.00500	0.0448
	02/22/13	71.9	0.795	<2.00	52.9	428	<0.0100	<0.00500	0.0900	0.174	<0.00200	<0.00500	<0.00500	0.0705	<0.200	<0.00500	0.0349	<0.000200	0.0121	0.0106	<0.00500	<0.00500	0.00591	0.148
MW-15	08/20/10	221	0.921	3.22	77.6	776	0.079	<0.00500	0.145	0.175	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0198
	02/24/11	190	0.885	4.28	67.0	738	<0.0100	<0.00500	0.127	0.165	<0.00200	0.0102	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0385
	07/14/11	236	0.701	4.18	60.9	940	<0.0100	<0.00500	0.173	0.201	<0.00200	0.0132	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00657	<0.00500	<0.00500	<0.00500	0.0122
	01/30/12	286	0.840	4.09	78.6	1,330	<0.0100	<0.00500	0.180	0.178	<0.00200	0.00644	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00967
	07/24/12	291	0.965	8.22	80.3	1,050	<0.0100	<0.00500	0.178	0.227	<0.00200	0.0110	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00636
	02/19/13	254	0.819	5.12	76.0	882	0.0682	<0.00500	0.178	0.191	<0.00200	0.175	<0.00500	<0.00500	0.610	<0.00500	0.0198	<0.000200	<0.00500	0.0704	<0.00500	<0.00500	<0.00500	0.0160
	08/20/13	379	0.910	6.82	71.3	1,200	< 0.0100	<0.00500	0.232	0.194	<0.00200	0.00594	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00854
(duplicate)	08/20/13	364	0.931	6.83	72.7	1,230	< 0.0100	<0.00500	0.232	0.188	<0.00200	0.00582	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00619
MW-16	08/20/10	25.3	0.930	1.13	73.7	406	0.0746	<0.00500	0.109	0.156	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00554	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0145
	02/24/11	28.1	0.928	2.36	73.7	412	<0.0100	<0.00500	0.107	0.162	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00671	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0248
	07/15/11	25.5	1.04	1.82	72.0	484	0.188	<0.00500	0.129	0.181	<0.00200	0.0119	<0.00500	<0.00500	0.613	<0.00500	0.0164	<0.000200	<0.00500	0.0591	<0.00500	<0.00500	<0.00500	0.0176
(duplicate)	07/15/11	21.0	0.733	1.98	54.1	476	0.0374	<0.00500	0.118	0.185	<0.00200	0.0251	<0.00500	<0.00500	0.241	<0.00500	0.00820	<0.000200	<0.00500	0.0234	<0.00500	<0.00500	<0.00500	0.0166
	01/30/12	27.9	0.994	1.79	77.6	398	<0.0100	<0.00500	0.0964	0.166	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00899
	07/24/12	26.6	1.14	<2.0	72.6	404	0.0102	<0.00500	0.0966	0.202	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0162	<0.000200	<0.00500	0.0112	<0.00500	<0.00500	<0.00500	0.0167
	02/20/13	24.0	0.966	<2.00	68.1	316	<0.0100	0.00547	0.0968	0.172	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00693
	08/20/13	24.7	1.02	1.75	64.0	392	0.0260	<0.00500	0.105	0.192	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0219	<0.000200	<0.00500	0.0177	<0.00500	<0.00500	<0.00500	<0.00500

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-Nitrite (as N) (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)
	Groundwater Standards	250	1.6	10	600	1,000	5.0	0.1	1.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.03	10.0
MW-17	08/20/10	[illegible]	0.517	4.27	72.6	[illegible]	0.146	<0.00500	0.180	0.157	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0142
	02/24/11	412	0.435	5.33	80.0	[illegible]	<0.0100	<0.00500	0.152	0.162	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0478
	07/18/11	[illegible]	0.753	4.07	82.7	[illegible]	<0.0100	<0.00500	0.141	0.165	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0126
	--	DAMAGED WELL - NO SAMPLES COLLECTED																						
MW-17R	08/22/13	246	0.602	3.44	81.7	[illegible]	0.0302	<0.00500	0.154	0.188	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0819	<0.000200	0.00531	0.0189	<0.00500	<0.00500	<0.00500	<0.00500
MW-18	08/23/10	176	0.456	0.733	287	[illegible]	0.0787	<0.00500	0.0575	0.334	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	[illegible]	<0.000200	0.00561	0.0298	0.00548	<0.00500	0.0123	0.0772
	02/24/11	[illegible]	0.514	4.14	298	[illegible]	0.0157	<0.00500	0.0766	0.330	<0.00200	0.0186	<0.00500	<0.00500	<0.200	<0.00500	0.00536	<0.000200	<0.00500	0.0144	0.00501	<0.00500	0.00883	0.0439
	07/18/11	218	0.800	5.74	234	[illegible]	0.0244	<0.00500	0.05636	0.396	<0.00200	0.0111	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.0129	<0.00500	<0.00500	0.00666	0.0661
	01/31/12	106	0.722	3.89	94.3	584	0.0113	<0.00500	0.0645	0.133	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0191
	07/25/12	103	0.753	2.01	63.4	562	0.0110	<0.00500	0.0780	0.230	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00684
	02/22/13	181	0.564	4.02	116	782	0.0742	<0.00500	0.105	0.249	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0129	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.0138	0.0187
	08/22/13	197	0.531	5.59	130	[illegible]	<0.0100	<0.00500	0.110	0.243	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00509	<0.00500	<0.00500	<0.00500	<0.00500
MW-19	08/23/10	[illegible]	0.536	2.94	178	[illegible]	0.101	0.0476	0.229	<0.0200	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00666	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0227
	02/24/11	235	0.713	2.87	90.7	828	<0.0100	<0.00500	0.0764	0.180	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0318
	07/18/11	[illegible]	0.734	3.66	142	[illegible]	<0.0100	<0.00500	0.092	0.266	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00781	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0553
	01/31/12	610	0.568	4.12	121	[illegible]	<0.0100	<0.00500	0.0688	0.350	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00553	<0.000200	<0.00500	0.00525	<0.00500	<0.00500	<0.00500	0.0345
	07/25/12	1,130	0.450	5.11	117	[illegible]	0.0114	<0.00500	0.106	0.535	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00593	<0.000200	<0.00500	0.00664	<0.00500	<0.00500	<0.00500	0.0714
	02/26/13	540	0.519	4.21	115	[illegible]	<0.0100	<0.00500	0.0870	0.300	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00566	<0.00500	<0.00500	<0.00500	0.0629
	08/22/13	487	0.645	3.43	92.6	[illegible]	<0.0100	<0.00500	0.0857	0.241	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00512
(duplicate)	08/22/13	475	0.672	3.38	95.7	[illegible]	0.0182	<0.00500	0.0864	0.237	<0.00200	0.0143	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00900	<0.00500	<0.00500	<0.00500	<0.00500
MW-20	08/23/10	169	0.570	1.74	65.1	868	0.0891	<0.00500	0.122	0.143	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00970
	02/25/11	187	0.603	2.58	66.3	840	<0.0100	<0.00500	0.120	0.150	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0643
	07/18/11	148	0.765	2.06	51.3	[illegible]	<0.0100	<0.00500	0.134	0.159	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0278
	01/31/12	174	0.641	2.51	61.4	726	<0.0100	<0.00500	0.114	0.149	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0171
	07/25/12	189	0.742	2.24	56.0	848	<0.0100	<0.00500	0.107	0.217	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0187
	02/22/13	155	0.570	2.26	55.8	600	0.0294	<0.00500	0.102	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0165
	08/20/13	180	0.755	2.40	60.4	736	0.0104	<0.00500	0.102	0.172	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00966	<0.000200	<0.00500	0.0112	<0.00500	<0.00500	<0.00500	0.0242
MW-21	08/23/10	115	0.250	2.12	52.7	966	0.195	<0.00500	0.232	0.208	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0567	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00898	0.0307
	02/28/11	182	0.257	3.02	56.7	[illegible]	<0.0100	<0.00500	0.258	0.257	<0.00200	0.00620	<0.00500	<0.00500	<0.200	<0.00500	0.102	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.0101	0.0184
(duplicate)	02/28/11	183	0.249	2.99	56.3	[illegible]	<0.0100	<0.00500	0.256	0.252	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.101	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00975	0.0213
	07/19/11	191	0.163	2.62	57.0	[illegible]	<0.0100	<0.00500	0.242	0.225	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0346	<0.000200	<0.00500	0.00836	<0.00500	<0.00500	0.00873	0.0286
	01/31/12	200	0.229	2.84	64.7	[illegible]	<0.0100	<0.00500	0.245	0.216	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0375	<0.000200	<0.00500	0.00746	<0.00500	<0.00500	0.00704	0.0170
	07/26/12	186	0.306	2.64	60.4	[illegible]	<0.0100	<0.00500	0.244	0.261	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.038	<0.000200	<0.00500	0.00827	<0.00500	<0.00500	0.00862	0.0163
	02/22/13	160	0.246	2.86	78.3	968	0.0818	<0.00500	0.224	0.286	<0.00200	0.0364	<0.00500	<0.00500	0.403	<0.00500	0.0467	<0.000200	<0.00500	0.0409	<0.00500	<0.00500	0.00962	0.0319
	08/20/13	156	0.268	3.96	82.5	972	<0.0100	<0.00500	0.179	0.308	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0668	<0.000200	<0.00500	0.0219	<0.00500	<0.00500	0.00936	0.0195
MW-22	08/23/10	115	0.552	1.76	62.3	726	0.121	<0.00500	0.165	0.174	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0306	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00604	0.0916
	02/28/11	117	0.587	2.36	68.6	678	<0.0100	<0.00500	0.146	0.173	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0108	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00616	0.0487
	07/19/11	107	0.568	2.06	64.1	740	<0.0100	<0.00500	0.150	0.178	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00721	<0.000200	<0.00500	0.00546	<0.00500	<0.00500	0.00638	0.0203
	01/31/12	141	0.570	2.26	74.3	766	<0.0100	<0.00500	0.151	0.141	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0103	<0.000200	<0.00500	0.00762	<0.00500	<0.00500	0.00501	0.0183
	07/26/12	149	0.628	2.09	68.3	830	<0.0100	<0.00500	0.143	0.196	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00949	<0.000200	<0.00500	0.00839	<0.00500	<0.00500	0.00564	0.0068
	02/21/13	178	0.500	2.30	80.4	798	0.0231	<0.00500	0.145	0.180	<0.00200	0.0305	<0.00500	<0.00500	0.269	<0.00500	0.0386	<0.000200	<0.00500	0.0520	<0.00500	<0.00500	0.00590	0.0208
	08/21/13	176	0.606	2.94	83.0	890	<0.0100	<0.00500	0.137	0.210	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0233	<0.000200	<0.00500	0.0209	<0.00500	<0.00500	0.00658	0.00566
MW-23	08/23/10	[illegible]	0.782	2.92	121	[illegible]	0.237	<0.00500	0.245	0.157	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00669	<0.000200	<0.00500	0.00859	<0.00500	<0.00500	<0.00500	0.0570
	02/28/11	511	0.676	3.47	81.9	[illegible]	<0.0100	<0.00500	0.164	0.151	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00831	<0.000200	<0.00500	0.00930	<0.00500	<0.00500	<0.00500	0.0463
	07/19/11	712	0.670	3.79	108	[illegible]	<0.0100	<0.00500	0.272	0.181	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00647	<0.000200	<0.00500	0.00912	<0.00500	<0.00500	<0.00500	0.0213
	02/01/12	887	0.697	4.07	85.4	[illegible]	0.0108	<0.00500	0.268	0.159	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00658	<0.000200	<0.00500	0.00714	<0.00500	<0.00500	<0.00500	0.0207
	07/26/12	774	0.750	3.45	100	[illegible]	<0.0100	<0.00500	0.252	0.198	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0101
	02/26/13	662	0.690	3.46	93.9	[illegible]	<0.0100	<0.00500	0.170	0.196	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00944	<0.000200	<0.00500	0.0155	<0.00500	<0.00500	<0.00500	0.0179
	08/21/13	[illegible]	0.808	3.29	115	[illegible]	<0.0100	<0.00500	0.141	0.207	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0315	<0.000200	<0.00500	0.0286	<0.00500	<0.00500	0.00533	0.00919

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-Nitrite (as N) mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)
	NMWQCC Groundwater Standards	250	1.6	10	600	1000	5.0	0.1	1.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.030	10.0
MW-24	08/24/10	34.6	1.31	2.40	53.9	422	0.187	<0.00500	0.0867	0.140	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00922
	02/28/11	39.6	1.16	2.94	55.3	414	<0.0100	<0.00500	0.0878	0.154	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00634	<0.00500	<0.00500	<0.00500	0.0245
	07/14/11	43.1	1.55	2.38	48.1	504	<0.0100	<0.00500	0.0932	0.173	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00543	<0.00500	<0.00500	<0.00500	0.0249
	02/01/12	50.6	1.41	2.32	62.3	418	<0.0100	<0.00500	0.0946	0.127	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00760	<0.000200	<0.00500	0.00725	<0.00500	<0.00500	<0.00500	0.0101
	07/30/12	51.8	1.42	2.39	55.1	420	<0.0100	<0.00500	0.0889	0.179	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00508	<0.000200	<0.00500	0.00758	<0.00500	<0.00500	<0.00500	0.0127
(duplicate)	07/30/12	55.5	2.34	2.34	58.8	446	<0.0100	<0.00500	0.0851	0.160	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00731	<0.00500	<0.00500	<0.00500	0.0155
	02/26/13	46.6	2.39	2.05	68.6	442	<0.0100	<0.00500	0.0913	0.187	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0106	<0.000200	<0.00500	0.0165	<0.00500	<0.00500	<0.00500	0.0151
	08/21/13	56.5	2.17	2.04	55.6	426	< 0.0100	<0.00500	0.0856	0.183	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0146	<0.000200	<0.00500	0.0157	<0.00500	<0.00500	<0.00500	0.00684
MW-25	08/23/10	178	0.871	2.42	182	946	0.244	<0.00500	0.246	0.174	<0.00200	0.0476	<0.00500	<0.00500	<0.200	<0.00500	0.0109	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0194
	02/28/11	206	0.729	2.83	93.9	998	<0.0100	<0.00500	0.205	0.198	<0.00200	0.0507	<0.00500	<0.00500	<0.200	<0.00500	0.00715	<0.000200	<0.00500	0.00516	<0.00500	<0.00500	0.00535	0.0424
	07/18/11	77.8	1.12	3.64	96.2	634	0.0441	<0.00500	0.186	0.173	<0.00200	0.00732	<0.00500	<0.00500	<0.200	<0.00500	0.00608	<0.000200	<0.00500	0.00832	<0.00500	<0.00500	<0.00500	0.00556
	02/01/12	175	0.813	4.56	84.4	820	<0.0100	<0.00500	0.228	0.175	<0.00200	0.00744	<0.00500	<0.00500	<0.200	<0.00500	0.00804	<0.000200	<0.00500	0.00708	<0.00500	<0.00500	0.00602	0.00582
	07/26/12	133	0.892	3.74	144	1,110	<0.0100	<0.00500	0.178	0.220	<0.00200	0.00961	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0102
	02/26/13	109	0.710	3.68	113	788	<0.0100	<0.00500	0.149	0.241	<0.00200	0.00822	<0.00500	<0.00500	<0.200	<0.00500	0.0104	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00807	0.0148
	08/22/13	313	0.696	3.36	74.7	1,290	< 0.0100	<0.00500	0.224	0.262	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0122	<0.000200	<0.00500	0.0210	<0.00500	<0.00500	0.00862	<0.00500
(duplicate)	08/22/13	310	0.684	3.42	74.3	1,270	< 0.0100	<0.00500	0.226	0.263	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0127	<0.000200	<0.00500	0.0210	<0.00500	<0.00500	0.00860	0.00607
MW-26	08/24/10	217	0.484	2.88	98.5	958	0.115	<0.00500	0.131	0.169	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0156	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0161
	02/28/11	202	0.517	3.86	125	940	<0.0100	<0.00500	0.110	0.187	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00890	<0.000200	<0.00500	0.00734	<0.00500	<0.00500	0.00602	0.0254
	07/14/11	184	<0.500	3.95	128	1,106	<0.0100	<0.00500	0.0994	0.192	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00679	<0.000200	<0.00500	0.00792	<0.00500	<0.00500	0.00546	0.0328
	02/01/12	196	0.568	3.68	131	952	<0.0100	<0.00500	0.0854	0.163	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0122	<0.000200	<0.00500	0.0133	<0.00500	<0.00500	<0.00500	0.00949
	07/26/12	179	0.647	3.11	121	940	0.0121	<0.00500	0.0966	0.214	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00694	<0.000200	<0.00500	0.00568	<0.00500	<0.00500	0.00559	0.0117
	02/26/13	144	0.640	4.78	138	760	0.0134	<0.00500	0.103	0.189	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0635	<0.000200	<0.00500	0.0558	<0.00500	<0.00500	<0.00500	0.0233
	08/22/13	222	0.611	5.55	133	1,170	0.0319	<0.00500	0.0910	0.209	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0174	<0.000200	<0.00500	0.00539	<0.00500	<0.00500	0.00577	0.00877
MW-27	08/18/10	115	0.644	5.10	118	752	0.218	<0.00500	0.100	0.152	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0534	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00544	0.0213
	02/25/11	144	0.595	<0.500	78.5	746	<0.0100	<0.00500	0.0985	0.139	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0336	<0.000200	<0.00500	0.00769	<0.00500	<0.00500	0.00625	0.0453
	07/20/11	150	0.510	1.69	73.2	812	0.0378	<0.00500	0.112	0.165	<0.00200	0.0353	<0.00500	<0.00500	0.393	<0.00500	0.0179	<0.000200	<0.00500	0.0415	<0.00500	<0.00500	0.00571	0.0294
	02/01/12	164	0.691	2.43	99.8	676	<0.0100	<0.00500	0.0902	0.126	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00556	<0.008000	<0.00500	0.00533	<0.00500	<0.00500	<0.00500	0.0121
	07/26/12	164	0.680	2.95	65.3	754	0.0155	<0.00500	0.118	0.172	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00587	<0.000200	<0.00500	0.00737	<0.00500	<0.00500	<0.00500	0.0117
	02/26/13	199	0.647	2.77	70.7	756	<0.0100	<0.00500	0.120	0.184	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0586	<0.000200	0.00513	0.0593	<0.00500	<0.00500	<0.00500	0.0104
	08/20/13	260	0.562	7.12	75.5	1,110	0.0440	<0.00500	0.162	0.222	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0239	<0.000200	<0.00500	0.0189	<0.00500	<0.00500	0.00899	<0.00500
MW-28	08/24/10	71.2	1.28	1.70	60.3	440	0.129	<0.00500	0.0846	0.153	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/23/11	106	1.57	<0.500	67.4	540	<0.0100	<0.00500	0.0923	0.147	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	07/14/11	106	1.28	2.40	67.8	732	<0.0100	<0.00500	0.103	0.172	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00658	<0.000200	<0.00500	0.00696	<0.00500	<0.00500	<0.00500	0.0190
	01/30/12	80.6	1.18	2.53	81.1	572	<0.0100	<0.00500	0.0746	0.152	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0113
	07/24/12	74.9	1.25	2.33	81.6	500	<0.0100	<0.00500	0.0830	0.204	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00812
	02/19/13	65.5	1.41	2.57	88.4	468	<0.0100	<0.00500	0.0883	0.174	<0.00200	<0.00500	<0.00500	0.203	<0.200	<0.00500	0.0275	<0.000200	0.0100	<0.00500	<0.00500	<0.00500	<0.00500	0.0466
	08/20/13	70.4	1.77	2.42	77.4	490	< 0.0100	<0.00500	0.0790	0.168	<0.00200	<0.00500	<0.00500	0.0101	<0.200	<0.00500	0.00874	<0.000200	<0.00500	0.00561	<0.00500	<0.00500	<0.00500	0.0168
MW-29	08/24/10	458	0.753	2.18	167	726	0.0261	<0.00500	0.0644	0.189	<0.00200	0.0317	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0433
Dupl. #1	08/24/10	132	0.741	2.15	100	742	<0.0100	<0.00500	0.0652	0.186	<0.00200	0.0321	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0375
	02/28/11	119	0.819	3.05	101	670	<0.0100	<0.00500	0.0630	0.195	<0.00200	0.0241	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0301
	07/14/11	135	0.707	2.61	71.6	798	<0.0100	<0.00500	0.0652	0.189	<0.00200	0.162	<0.00500	<0.00500	<0.200	<0.00500	0.00532	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0267
	01/30/12	152	0.769	3.22	96.3	898	<0.0100	<0.00500	0.0580	0.181	<0.00200	0.106	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0240
	07/24/12	250	0.828	4.08	90.1	1,220	<0.0100	<0.00500	0.0978	0.249	<0.00200	0.261	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0162
	02/26/13	159	0.788	2.90	82.4	722	<0.0100	<0.00500	0.0857	0.182	<0.00200	0.0690	<0.00500	<0.00500	<0.200	<0.00500	0.0471	<0.000200	<0.00500	0.0334	<0.00500	<0.00500	<0.00500	0.0132
	08/20/13	152	0.934	2.95	96.2	654	< 0.0100	<0.00500	0.0738	0.187	<0.00200	0.117	<0.00500	<0.00500	<0.200	<0.00500	0.0159	<0.000200	<0.00500	0.00667	<0.00500	<0.00500	<0.00500	<0.00500
MW-30	06/21/13	51.2	1.87	3.51	96.7	426	0.0436	0.00588	0.0424	0.164	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	0.00913	<0.00500	0.00554	<0.00500	<0.00500	<0.00500
	08/20/13	63.7	1.59	2.85	87.0	438	< 0.0100	<0.00500	0.0761	0.159	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0589	<0.000200	<0.00500	0.0263	<0.00500	<0.00500	<0.00500	<0.00500

Table 2. Inorganic Constituent Concentrations in Groundwater, Navajo Refining Company, Lovington Refinery

Monitor Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-[illegible] mg/L)	Sulfate (mg/L)	Total Dissolved [illegible] (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Total Mercury (mg/L)	[illegible] (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (µg/L)	Zinc (mg/L)
	[illegible] Groundwater Standards	250	1.6	10	600	1,000	5.0	0.1	1.0	0.75	0.01	0.05	0.05	1.0	1.0	0.05	0.20	0.002	1.0	0.2	0.05	0.05	0.03	10.0
RW-1	06/19/09	34.8	1.21	--	70.8	398	<0.0100	0.010	0.160	0.161	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0380	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.00548
	02/02/10	34.2	0.913	1.52	66.0	388	<0.0200	0.00857	0.190	0.166	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0467	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	08/19/10	27.8	0.991	1.42	72.3	380	0.0202	0.0104	0.162	0.154	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	03/01/11	28.9	1.03	1.74	74.3	380	<0.0100	0.0121	0.149	0.153	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00933	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00854
	07/20/11	26.4	0.883	1.36	72.5	384	<0.0100	0.0108	0.158	0.156	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/02/12	29.6	1.11	1.44	79.9	384	<0.0100	0.0106	0.139	0.165	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00771	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00526
	07/27/12	27.3	1.18	<2.00	68.9	344	0.0532	0.0103	0.163	0.177	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0182	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00764
	02/27/13	28.0	1.09	<2.00	80.2	378	<0.0100	0.0103	0.132	0.159	<0.00200	<0.00500	<0.00500	<0.00500	0.655	<0.00500	0.00656	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00801
	08/21/13	32.3	1.28	1.50	86.9	392	<0.0100	0.0101	0.153	0.175	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0270	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
North Well	06/18/09	140	0.933	2.72	80.6	664	<0.0100	0.00536	0.0997	0.151	<0.00200	0.0104	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	<0.00500
	01/14/10	143	0.793	2.90	74.2	638	<0.0100	<0.00500	0.107	0.172	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00134	<0.00500
	08/24/10	127	0.932	1.81	80.4	594	<0.0100	0.00552	0.100	0.147	<0.00200	<0.00500	<0.00500	0.00856	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.0161	<0.00500	<0.00500	<0.00500	0.00920
	03/03/11	137	0.932	2.76	75.2	804	<0.0100	0.00503	0.0968	0.159	<0.00200	0.0199	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	07/20/11	124	0.803	2.07	76.5	628	<0.0100	<0.00500	0.106	0.142	<0.00200	0.0140	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0695
	02/02/12	149	0.977	2.54	82.1	656	0.0126	<0.00500	0.0944	0.132	<0.00200	0.0145	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	07/30/12	121	0.986	2.63	72.7	528	<0.0100	0.00523	0.106	0.159	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0178
	02/19/13	105	1.02	2.54	83.3	496	<0.0100	0.00693	0.0998	0.162	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	0.00537	<0.00500	<0.00500	<0.00500	0.00873
South Well	06/22/09	[illegible]	0.665	3.02	106	[illegible]	<0.0100	<0.00500	0.154	0.189	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0195
	01/14/10	498	0.686	3.27	113	1,520	0.0176	<0.00500	0.138	0.229	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0224	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00236	<0.00500
	08/24/10	477	0.651	2.18	101	1,760	<0.0100	<0.00500	0.172	0.186	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.00576	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0207
	03/03/11	549	0.647	3.24	122	1,840	<0.0100	<0.00500	0.147	0.261	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	0.0226	<0.000200	<0.00500	<0.00500	0.00500	<0.00500	<0.00500	0.0329
	07/20/11	420	0.687	2.48	103	[illegible]	<0.0100	<0.00500	0.157	0.195	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	02/12/12	368	0.756	3.02	89.0	[illegible]	<0.0100	<0.00500	0.117	0.165	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00777
	07/30/12	135	1.01	2.53	73.3	582	<0.0100	<0.00500	0.103	0.160	<0.00200	0.0111	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0401
	02/19/13	[illegible]	0.743	2.88	99.2	[illegible]	<0.0100	0.00576	0.149	0.197	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0172
East Well	06/18/09	107	0.980	2.59	84.0	554	0.0131	<0.00500	0.0820	0.143	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	--	0.0172
	01/14/10	138	0.991	2.70	72.7	676	<0.0100	<0.00500	0.0941	0.154	<0.00200	0.0119	<0.00500	0.00953	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	0.00111	0.0291
	08/25/10	106	1.00	0.523	74.5	522	<0.0100	<0.00500	0.0873	0.136	<0.00200	0.0145	<0.00500	0.00745	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0146
	03/03/11	135	0.905	2.68	75.6	644	<0.0100	<0.00500	0.0970	0.152	<0.00200	0.0189	<0.00500	<0.00500	<0.200	0.00662	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0347
	07/20/11	124	0.810	1.83	73.8	596	<0.0100	<0.00500	0.1040	0.142	<0.00200	0.0200	<0.00500	<0.00500	<0.200	0.0116	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00936
	02/02/12	150	0.967	2.56	81.4	664	0.0150	<0.00500	0.0993	0.145	<0.00200	0.0166	<0.00500	<0.00500	<0.200	0.00988	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0937
	07/30/12	144	0.962	2.40	80.9	636	<0.0100	<0.00500	0.0922	0.136	<0.00200	0.0157	<0.00500	0.00774	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0166
LW-9	06/21/13	72.3	1.03	3.95	80.5	466	0.0191	0.00667	0.0958	0.155	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	0.00550	<0.00500	<0.00500	0.00888
(duplicate)	06/21/13	71.7	1.04	3.71	79.5	460	<0.0100	0.00618	0.103	0.142	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	0.00593	<0.00500	<0.00500	0.00789
LW-14	06/21/13	36.2	1.04	3.69	74.8	386	<0.0100	0.00701	0.0931	0.142	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	0.00638	<0.00500	<0.00500	0.00761
LW-16	06/21/13	54.2	0.923	4.75	81.0	444	<0.0100	0.00638	0.0552	0.135	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	0.00660	<0.00500	<0.00500	0.00848
LW-18	06/21/13	59.7	0.922	3.67	70.7	448	<0.0100	0.00606	0.0725	0.138	<0.00200	<0.00500	<0.00500	<0.00500	<0.200	<0.00500	<0.00500	<0.000200	<0.00500	<0.00500	0.00613	<0.00500	<0.00500	0.00598

Notes:

Bold indicates analyte was detected above the laboratory reporting limit

Shading indicates detected result exceeded the New Mexico Water Quality Control Commission (WQCC) Human Health Standard

mg/L = milligrams per liter

< = Not reported above laboratory reporting limit

-- = Not Analyzed

Samples collected for metals analysis (except for Total Mercury) were field filtered with 0.45 micron filter

Analyses performed by ALS Laboratory Group, Houston, Texas

Table 3. On-Site Navajo Refining Company Releases, Navajo Refining Company, Lea Refinery, Lovington, NM

Figure 6 Release Number	Date of Release	Release Amount (bbl)	Amount Recovered (bbl)	Approximate Release Location	Substance Released	Remedial Actions Taken	Additional Actions Required?
1	12/27/2012	50 - 60	50 - 60	HEP pump station	Gasoil	Free liquids were removed via vacuum truck. The remaining gasoil was excavated along with contaminated soil and transported off-site for disposal. The investigation of this release was conducted concurrent with the investigation of the January 2011 release. TRC advanced three soil borings in June 2013. Soil samples were collected and the results were all below NM OCD RALs.	No
2	6/6/2012	3000	2956	Tank 104B	Gasoil	Free liquids were removed via vacuum truck. The remaining gasoil was excavated along with contaminated soil and transported off-site for disposal. SESI collected samples from the surface and shallow subsurface (2 - 4 feet bgs) soils in July and August 2012 respectively. Analytical results were below NMED Soil Screening Levels. SESI concluded that the high viscosity of the gasoil would prevent any further vertical migration.	No
3	4/30/2012	10	0	Cooling tower	Cooling Water	A soil sample and background soil sample were collected within and near the release footprint in January 2013. TRC collected four additional surface soil samples and advanced a soil boring in June 2013. Three of the samples exceeded the NMED Soil Screening Level for chloride. Additional soil assessment will be conducted to determine the appropriate response action (e.g., excavation).	Yes - Response Actions Ongoing
4	12/10/2011	15	0	Frac tank just west of Tank 1209B	Waste Water	No observations (i.e., staining and odor) of potential soil impacts. Minimal volume released.	No
5	8/1/2011	350	280	Tank 1215	Asphalt/Gasoil Mixture (crude bottoms)	Free liquids were removed via vacuum truck. Approximately 650 cubic-yards of contaminated soil was excavated for off-site disposal.	No
6 [1]	3/18/2011	5	0	Crude oil sump at Hobbs manifold (crude inlet)	Crude Oil	Approximately 12 cubic-yards of contaminated soil was excavated for off-site disposal.	No
7	3/17/2011	40	0	Tank 1209B	Non-Hazardous Waste Water	No observations (i.e., staining and odor) of potential soil impacts. Minimal volume released.	No
8	2/27/2011	10	0	Tank 1209B	Waste Water	No observations (i.e., staining and odor) of potential soil impacts. Minimal volume released.	No
9	1/29/2011	37	35	HEP pump station	Gasoil/Water	Free liquids were removed via vacuum truck. The remaining gasoil was excavated along with contaminated soil and transported off-site for disposal in January 2013. This release was investigated in June 2013 along with the December 2012 gasoil release. TRC advanced a soil boring in the footprint of the release in June 2013. Analytical results were below the NM OCD RALs.	No
10	8/10/2010	10	6	From north Unit to southeast near the firehouse.	Crude Oil / Waste Water	Free liquids were removed via vacuum truck. Contaminated soil was excavated and transported off-site for disposal. SESI installed two soil borings in April 2011. All soil analytical results were below OCD RALs and NMED Soil Screening Levels.	No
11 [1]	8/9/2010	10-12	0	D-70 soft water tank	Water	Minimal volume released.	No
12	6/22/2010	680	475	Tank 1204	Cleaning Solution	The solution consisted of three drums BP 44231 soap, one half drum BP 9272 H2S scavenger, and two to three drums diesel with the remainder water. Free liquids were removed via vacuum truck. Contaminated soil was excavated and transported off-site for disposal. SESI advanced two soil borings in April 2011. All the analytical results were below PCD RALs and NMED Soil Screening Levels.	No
13	4/21/2010	12-15	7-9	Pipeline from Tank 1202	Crude / Naphtha Mixture	Free liquids were removed via vacuum truck. SESI advanced a soil boring in May 2010. Analytical results exceeded NM OCD RALs to a depth of 10 feet bgs. Contaminated soil was excavated and transported off-site for disposal. The excavation was backfilled with clean soil.	No
14	7/26/2009	25	15	Tank 1214	Gasoil	Free liquids were removed via vacuum truck. Contaminated soil was excavated and transported off-site for disposal. SESI advanced three soil borings in August 2009. Analytical results exceeded NM OCD RALs to a depth of 5 feet bgs. SESI concluded that the high viscosity of the gasoil would prevent any further vertical migration and no further action was required.	No
15	2/21/2009	100	80	150 feet x 30 feet west of plant southwest of office, northeast of tank 102A, and southwest of tank 1209	Diesel	This release consisted of three separate areas reported and remediated as a single release. See Figure 6 for release locations. Free liquids were removed via vacuum truck. SESI advanced six soil borings in February 2009. Soil analytical results exceeded OCD RALs to a maximum depth of 10 feet bgs. Contaminated soil was excavated and transported off-site for disposal.	No
16	7/10/2008	150	120	Caustic scrubber	Caustic	Free liquids were removed via vacuum truck. SESI installed two soil borings in April 2009. Soil analytical results were below OCD RALs and NMED Soil Screening Levels.	No
17	10/25/2007	Unknown	2	Pipeline	Crude Oil	Contaminated soil was excavated and transported off-site for disposal.	No
18	10/10/2007	20	5	Pipeline sump	Crude Oil	Free liquids were removed via vacuum truck. Contaminated soil was excavated and transported off-site for disposal. SESI installed two soil borings in April 2009. Soil analytical results were below OCD RALs.	No

Table 3. On-Site Navajo Refining Company Releases, Navajo Refining Company, Lea Refinery, Lovington, NM

Figure 6 Release Number	Date of Release	Release Amount (bbl)	Amount Recovered (bbl)	Approximate Release Location	Substance Released	Remedial Actions Taken	Additional Actions Required?
19	10/12/2005	Unknown	30	Pipe rack near reverse osmosis unit	Naphtha/Kerosene Mixture	Free liquids were removed via vacuum truck. SESI installed one soil boring in May 2009. Soil analytical results were below OCD RALs.	No
20	3/29/2005	Unknown	0	Tank 103A	Diesel	SESI installed three soil borings in March 2005. Soil analytical results were below OCD RALs. A groundwater sample was taken from BH-1 03-05. Groundwater analytical results were below WQCC Standards.	No
21	12/7/2003	70	30	Relief valve near Tank 103B	Diesel	Free liquids were removed via vacuum truck. Contaminated soil was excavated and transported off-site for disposal. SESI installed three soil borings in December 2003. Soil analytical results were below OCD RALs. Additional investigation activities were conducted in April 2009. Calcium carbonate (i.e., caliche) rock was observed at a depth of 0.5 feet in borings drilled throughout the affected area.	No
22	12/16/2001	760	550	Tank 103B	Diesel	Free liquids were removed via vacuum truck. SESI sampled several small excavations and found that the vertical migration of diesel was inhibited by areas of "hardpan" soils. The upper 3 to 6 inches of soil were tilled to aid evaporation. SESI installed three borings, drilled one monitoring well (MW-12), and collected several surface grab samples between 2001 and 2009. Soil analytical results exceeded OCD RALs to a depth of 35 feet bgs but no groundwater COCs have been detected in well MW-12 or replacement well MW-12R above WQCC Standards.	No

Notes:
(1) - Release location unknown based on C-141 Form and release not shown on Figure 6
bbl - barrels
bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and xylenes
TPH - total petroleum hydrocarbons
NMWQCC - New Mexico Water Quality Control Commission
NM OCD - New Mexico Oil Conservation Division
NMED - New Mexico Environmental Department
SESI - Safety and Environmental Solutions Incorporated
RAL - Remediation Action Level

Table 4. Summary of Production and Injection Wells, Navajo Refining Company, Lovington Refinery

Well ID	API No.	Operator	Well Type	Date Installed	Construction (ft bgs)		Status	Documented Spills	Order No.	Volume Spilled (bbl)	Volume Recovered (bbl)	Area Affected (sf)
					Total Depth	Perforated Interval(s)						
LA 2	30-025-03804	PRE-ONGARD	Production	1952	8500	8280-8350	Recompleted (1972)	--	--	--	--	--
				1972	8460	8392-8439	P&A (1973 & 1991)					
LA 3	30-025-03805	PRE-ONGARD	Production	1952	8450	8280-8350	P&A (1975 & 1991)	--	--	--	--	--
LA 9	30-025-05365	Vanguard Permian	Production	1951	8500	8345-8430	Active	--	--	--	--	--
LA 10	30-025-05366	Vanguard Permian	Production	1952	8500	8300-8450	TA	--	--	--	--	--
LPU 12	30-025-05382	Chevron	Production	1953	6250	6204-6249	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	6295	6115-6248; OH 6250-6295	TA; P&A pending					
LPU 13	30-025-03777	Chevron	Production	1953	6279	6148-6236; OH 6258-6279	Converted to Injection (1966)	--	--	--	--	--
			Injection	1966		6148-6236	P&A (2013)					
LPU 14	30-025-03780	Chevron	Production	1953	6270	OH 6079-6270	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	6300	OH 6079-6300	Active					
LPU 21	30-025-03802	Chevron	Production	1953	6275	6103--6226	Converted to Injection (1973)	--	--	--	--	--
			Injection	1973			Active	1/26/2003 - Produced water and crude oil from injection line	1RP-398; 1RP-796	230	130	19,300
LPU 22	30-025-03801	Chevron	Production	1952	8603	6162-6224;	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991		6073-6350	P&A (2008)					
LPU 23	30-025-05380	Chevron	Production	1952	8455	6120-6170	Converted to Injection (1991)	--	--	--	--	--
			Injection	1972			Active					
LPU 27	30-025-05355	Chevron	Production	1953	6275	OH 6080-6275	Converted to Injection (1966)	--	--	--	--	--
			Injection	1966	6275		Active					
LPU 28	30-025-05371	Chevron	Production	1953	6252	6126-6234	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	6252	6110-6252	P&A (2007)					

Table 4. Summary of Production and Injection Wells, Navajo Refining Company, Lovington Refinery

Well ID	API No.	Operator	Well Type	Date Installed	Construction (ft bgs)		Status	Documented Spills	Order No.	Volume Spilled (bbl)	Volume Recovered (bbl)	Area Affected (sf)
					Total Depth	Perforated Interval(s)						
LPU 32	30-025-03807	Chevron	Production	1953	6229	6060-6130	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991		6060-6199	Active					
LPU 33	30-025-03806	Chevron	Production	1953	6150	6040-6140	Converted to Injection (1966)	--	--	--	--	--
			Injection	1966	6237	6040-6140; OH 6150-6237	Active	11/28/2005 - produced water from flowline	1RP-1225	unknown	0	16,300
LPU 38	30-025-05372	Chevron	Production	1953	6232	6040-6230	Converted to Injection (1971)	--	--	--	--	--
			Injection	1971		6040-6220	P&A (2007)					
LPU 39	30-025-03785	Chevron	Production	1953	6224	OH 6017-6224	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	6280	OH 6017-6280	P&A (2006)					
LPU 84	30-025-30776	Chevron	Production	1990	6310	6099-6115	TA	--	--	--	--	--
LPU 86	30-025-31066	Chevron	Production	1991	6350	6002-6287	TA	--	--	--	--	--
LPU 87	30-025-31108	Chevron	Production	1991	6458	6181-6379	TA	5/3/2007 - crude oil and produced water from flowline	1RP-1400	6	0.5	3,900
LPU 88	30-025-31139	Chevron	Production	1991	6350	6099-6286	Active	--	--	--	--	--
LPU 89	30-025-31148	Chevron	Production	1991	6350	6077-6302	P&A (2010)	--	--	--	--	--
LPU 91	30-025-31068	Chevron	Production	1991	6345	6052-6282	TA	--	--	--	--	--
LPU 92	30-025-31082	Chevron	Production	1992	6335	5997-6279	P&A (2007)	--	--	--	--	--
LPU 93	30-025-31069	Chevron	Production	1991	6450	6011-6303	Active	--	--	--	--	--
LPU 94	30-025-31083	Chevron	Production	1991	6350	6023-6254	P&A (2007)	--	--	--	--	--
LPU 95	30-025-31109	Titan Resources	Production	1991	6420	6081-6385	P&A (2000)	--	--	--	--	--
LPU 96	30-025-31084	Chevron	Production	1991	6330	6011-6252	Active	11/16/2007 - produced water from flowline	1RP-1665	5	0	1,250
LPU 98	30-025-31086	Chevron	Production	1991	6330	6012-6204	Active	--	--	--	--	--

Table 4. Summary of Production and Injection Wells, Navajo Refining Company, Lovington Refinery

Well ID	API No.	Operator	Well Type	Date Installed	Construction (ft bgs)		Status	Documented Spills	Order No.	Volume Spilled (bbl)	Volume Recovered (bbl)	Area Affected (sf)
					Total Depth	Perforated Interval(s)						
LPU 102	30-025-31542	Chevron	Production	1992	5050	4686-5032	TA	--	--	--	--	--
LPU 103	30-025-31310	Chevron	Production	1992	6458	6058-6379	TA	--	--	--	--	--
LPU 134	30-025-31634	Chevron	Production	1992	6226	6034-6213	Active	--	--	--	--	--
LSAU 4	30-025-03778	Chevron	Production	1939	5012	OH 4644-5012	Converted to Injection (1963)	--	--	--	--	--
			Injection	1963			P&A (2012)					
LSAU 5	30-025-03779	Chevron	Production	1940	5000	OH 4660-5000	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	5130	4625-5130	P&A (2012)					
LSAU 6	30-025-05350	Chevron	Production	1945	5000	OH 4825-5000	Converted to Injection (1963)	--	--	--	--	--
			Injection	1963			P&A (2010)					
LSAU 9	30-025-03800	Chevron	Production	1939	5100	OH 4645-5100	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991		4645-5065	P&A (2007)					
LSAU 10	30-025-03799	Chevron	Production	1939	5110	OH 4631-5110	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	5115	OH 4600-5115	P&A (2010)					
LSAU 13	30-025-03803	Chevron	Production	1939	5068	OH 4518-5068	Convert to Injection (1991)	--	--	--	--	--
			Injection	1991	5068		P&A (2011)					
LSAU 14	30-025-05358	Chevron	Production	1939	5087	OH 4530-5087	Converted to Injection (1963)	--	--	--	--	--
			Injection	1963			Active					
LSAU 23	30-025-05357	Chevron	Production	1939	5081	OH 4530-5081	Converted to Injection (1992)	--	--	--	--	--
			Injection	1992			Active					

Table 4. Summary of Production and Injection Wells, Navajo Refining Company, Lovington Refinery

Well ID	API No.	Operator	Well Type	Date Installed	Construction (ft bgs)		Status	Documented Spills	Order No.	Volume Spilled (bbl)	Volume Recovered (bbl)	Area Affected (sf)
					Total Depth	Perforated Interval(s)						
LSAU 24	30-025-03781	Chevron	Production	1939	5075	OH 4515-5075	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991			Active	2/14/2007 - produced water from injection line	1RP-1216	200	30	8,000
LSAU 54	30-025-20045	Chevron	Injection	1963	5037	4662-5037	P&A (2007)	--	--	--	--	--
LSAU 58	30-025-05381	Chevron	Production	1941	4990	OH 4570-4990	Converted to Injection (1991)	--	--	--	--	--
			Injection	1991	5070	OH 4570-5070	P&A (2010)					
LSAU 66	30-025-31029	Chevron	Production	1991	5130	4687-4748; 4952-4962	P&A (2010)	--	--	--	--	--
LSAU 67	30-025-31030	Chevron	Production	1991	5113	4667-5040	P&A (2007)	--	--	--	--	--
LSAU 69	30-025-31363	Chevron	Production	1991	5031	4664-5014	Active	--	--	--	--	--
LSAU 70	30-025-31364	Chevron	Production	1991	5022	4648-5030	Active	--	--	--	--	--
LSAU 76	30-025-31542	Chevron	Production	1992	5100	4686-5032	TA	--	--	--	--	--
LSAU 77	30-025-31543	Chevron	Production	1992	5146	4688-5035	Active	--	--	--	--	--
LSAU 79	30-025-31545	Chevron	Production	1992	5124	4680-5081	P&A (2007)	--	--	--	--	--

Notes:

bbl = barrels

ft bgs = feet below ground surface

LA = Lovington Abo Unit

LPU = Lovington Paddock Unit

LSAU = Lovington San Andres Unit

Chevron = Chevron Midcontinent, LP

OH = open hole

P&A = Plugged and Abandoned

TA = Temporarily Abandoned

Table 5. Comparison of Skinner List Constituent Concentrations in WW-East and Tank 1210 to Risk-Based Remediation Goals
Navajo Refining Company, Lea Refinery, Lovington, NM

Analyte	NM WQCC Groundwater Standards	Risk-Based Remediation Goal	1210 Tank											
			8/27/2012	9/26/2012	10/22/2012	11/20/2012	12/27/2012	2/28/2013	3/27/2013	4/9/2013	4/30/2013	5/29/2013	6/18/2013	7/23/2013
Volatiles mg/L (8260)														
1,1,1-Trichloroethane	--	369	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1-Dichloroethane	--	1.21	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dibromoethane	--	0.00344	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichloroethane	--	0.0783	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,4-Dioxane	--	0.170	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
2-Butanone	--	240	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzene	0.01	0.149	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Carbon disulfide	--	28.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorobenzene	--	3.17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chloroform	--	0.122	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	0.75	0.404	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Methyl tert-butyl ether	--	5.82	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Styrene	--	37.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Tetrachloroethene	--	1.04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	0.75	22.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Trichloroethene	--	0.117	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Xylenes, Total	0.62	10.6	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Semivolatiles mg/L (8270)														
1,2-Dichlorobenzene	0.03	11.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1,3-Dichlorobenzene	--	NA	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1,4-Dichlorobenzene	--	0.265	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1-Methylnaphthalene	--	0.109	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
2,4-Dimethylphenol	0.005	8.37	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
2,4-Dinitrophenol	--	1.22	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2-Methylphenol	--	23.6	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
3&4-Methylphenol	--	23.5	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
4-Nitrophenol	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Acenaphthylene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Anthracene	--	19.2	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benz(a)anthracene	--	0.000582	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzenethiol	--	0.361	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(a)pyrene	--	0.0000345	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(b)fluoranthene	--	0.000340	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(k)fluoranthene	--	0.00344	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Bis(2-ethylhexyl)phthalate	--	0.00455	<0.00020	<0.00020	**0.00056**	**0.00036**	**0.00023**	**0.00037**	**0.00034**	<0.00020	**0.00024**	**0.00024**	**0.00032**	<0.00020
Chrysene	--	0.0582	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dibenz(a,h)acridine	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dibenz(a,h)anthracene	--	0.0000224	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Diethyl phthalate	--	372	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dimethyl phthalate	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Di-n-butyl phthalate	--	17.6	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluoranthene	--	1.46	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluorene	--	3.44	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Indene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Indeno(1,2,3-cd)pyrene	--	0.000327	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Naphthalene	--	0.115	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.0006**	<0.00020	<0.00020
Phenanthrene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Phenol	--	159	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Pyrene	--	1.21	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Pyridine	--	0.608	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Quinoline	--	0.00441	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Total Naphthalene*	0.03	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.0006**	<0.00020	<0.00020
Metals mg/L (6020/7470)														
Antimony	--	0.243	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Arsenic	0.1	0.0114	**0.00550**	**0.00532**	<0.00500	**0.00523**	**0.00547**	**0.00546**	**0.00515**	**0.00534**	**0.00587**	**0.00566**	**0.00514**	**0.00540**
Barium	1.0	122	**0.106**	**0.109**	**0.109**	**0.106**	**0.107**	**0.138**	**0.116**	**0.121**	**0.110**	**0.108**	**0.103**	**0.118**
Beryllium	--	1.22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Cadmium	0.01	0.608	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Chromium	0.05	913	**0.0112**	**0.0112**	**0.00930**	<0.00500	**0.00873**	<0.00500	**0.00979**	**0.00888**	**0.00849**	**0.00856**	**0.00912**	<0.00500
Cobalt	0.05	0.183	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Lead	0.05	NA	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Nickel	0.2	6.69	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Selenium	0.05	3.04	<0.00500	**0.00531**	<0.00500	**0.00524**	**0.00622**	<0.00500	**0.00570**	<0.00500	<0.00500	<0.00500	**0.00530**	<0.00500
Silver	0.05	3.04	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Vanadium	--	3.04	**0.0269**	**0.0283**	**0.0241**	**0.0248**	**0.0296**	**0.0241**	**0.0264**	**0.0264**	**0.0254**	**0.0274**	**0.0264**	**0.0261**
Zinc	10.0	183	**0.00821**	**0.0300**	<0.00500	**0.351**	**0.0111**	**0.0113**	**0.0287**	**0.0138**	**0.0758**	**0.00807**	<0.00500	**0.0734**
Mercury	0.002	0.0420	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	**0.000222**	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cyanide mg/L (E335.3/SW9014/M4500CN E&G)														
Cyanide	--	0.0858	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200

Notes:
Bold indicates analyte was detected above the laboratory reporting limit
Shading indicates detected result exceeded the New Mexico Water Quality Control Commission (WQCC) Human Health Standard
J = analyte was detected below the laboratory reporting limit, reported value is estimated
mg/L = milligrams per liter
< = Not reported above laboratory reporting limit
-- = No Water Quality Standard Available
*Total Naphthalene plus monomethlynaphthalates
Analyses performed by ALS Laboratory Group, Houston, Texas

Table 5. Comparison of Skinner List Constituent Concentrations in WW-East and Tank 1210 to Risk-Based Remediation Goals
Navajo Refining Company, Lea Refinery, Lovington, NM

Analyte	NM WQCC Groundwater Standards	Risk-Based Remediation Goal	East Water Well										
			8/27/2012	9/26/2012	10/22/2012	12/27/2012	2/28/2013	3/27/2013	4/8/2013	5/29/2013	6/18/2013	7/23/2013	10/29/2013
Volatiles mg/L (8260)													
1,1,1-Trichloroethane	--	369	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1-Dichloroethane	--	1.21	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dibromoethane	--	0.00344	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichloroethane	--	0.0783	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,4-Dioxane	--	0.170	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
2-Butanone	--	240	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzene	0.01	0.149	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Carbon disulfide	--	28.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorobenzene	--	3.17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chloroform	--	0.122	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	0.75	0.404	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Methyl tert-butyl ether	--	5.82	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Styrene	--	37.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Tetrachloroethene	--	1.04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	0.75	22.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Trichloroethene	--	0.117	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Xylenes, Total	0.62	10.6	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Semivolatiles mg/L (8270)													
1,2-Dichlorobenzene	0.03	11.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1,3-Dichlorobenzene	--	NA	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1,4-Dichlorobenzene	--	0.265	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
1-Methylnaphthalene	--	0.109	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.00032**	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
2,4-Dimethylphenol	0.005	8.37	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
2,4-Dinitrophenol	--	1.22	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2-Methylphenol	--	23.6	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
3&4-Methylphenol	--	23.5	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
4-Nitrophenol	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Acenaphthylene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Anthracene	--	19.2	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benz(a)anthracene	--	0.000582	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzenethiol	--	0.361	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(a)pyrene	--	0.0000345	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(b)fluoranthene	--	0.000340	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzo(k)fluoranthene	--	0.00344	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Bis(2-ethylhexyl)phthalate	--	0.00455	<0.00020	<0.00020	<0.00020	**0.00079**	<0.00020	**0.00021**	<0.00020	**0.00024**	**0.00023**	<0.00020	<0.00020
Chrysene	--	0.0582	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dibenz(a,h)acridine	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dibenz(a,h)anthracene	--	0.0000224	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Diethyl phthalate	--	372	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dimethyl phthalate	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Di-n-butyl phthalate	--	17.6	0.054 J	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluoranthene	--	1.46	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluorene	--	3.44	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Indene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Indeno(1,2,3-cd)pyrene	--	0.000327	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Naphthalene	--	0.115	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.00058**	<0.00020	<0.00020	<0.00020
Phenanthrene	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Phenol	--	159	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Pyrene	--	1.21	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Pyridine	--	0.608	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Quinoline	--	0.00441	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Total Naphthalene*	0.03	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.00032**	<0.00020	**0.00058**	<0.00020	<0.00020	<0.00020
Metals mg/L (6020/7470)													
Antimony	--	0.243	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Arsenic	0.1	0.0114	0.00485 J	**0.00622**	<0.00500	**0.00808**	**0.00548**	**0.00571**	**0.00557**	**0.00566**	**0.00518**	**0.00644**	<0.00500
Barium	1.0	122	**0.0944**	**0.220**	**0.110**	**0.120**	**0.0902**	**0.102**	**0.108**	**0.109**	**0.102**	**0.0802**	**0.109**
Beryllium	--	1.22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Cadmium	0.01	0.608	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Chromium	0.05	913	**0.0152**	**0.0180**	**0.0157**	**0.0226**	**0.0126**	**0.0137**	**0.0137**	**0.0138**	**0.0133**	<0.00500	**0.0126**
Cobalt	0.05	0.183	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Lead	0.05	NA	0.00454 J	**0.0365**	**0.0353**	**0.107**	**0.00646**	**0.00556**	**0.0176**	**0.0106**	<0.00500	**0.0104**	<0.00500
Nickel	0.2	6.69	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Selenium	0.05	3.04	0.00467 J	**0.00518**	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Silver	0.05	3.04	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Vanadium	--	3.04	**0.0239**	**0.0338**	**0.0274**	**0.0440**	**0.0253**	**0.0257**	**0.0270**	**0.0265**	**0.0261**	**0.0332**	**0.0251**
Zinc	10.0	183	**0.0252**	**0.268**	**0.194**	**0.425**	**0.0252**	**0.0364**	**0.875**	**0.104**	**0.0528**	**0.184**	**0.00742**
Mercury	0.002	0.0420	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cyanide mg/L (E335.3/SW9014/M4500CN E&G)													
Cyanide	--	0.0858	**0.00900 J**	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	

Notes:
Bold indicates analyte was detected above the laboratory reporting limit
Shading indicates detected result exceeded the New Mexico Water Quality Control Commission (WQCC) Human Health Standard
J = analyte was detected below the laboratory reporting limit, reported value is estimated
mg/L = milligrams per liter
< = Not reported above laboratory reporting limit
-- = No Water Quality Standard Available
*Total Naphthalene plus monomethlynaphthalates
Analyses performed by ALS Laboratory Group, Houston, Texas

Table 6. Comparison of Semi-Annual Groundwater Monitoring Analytical Results of Refinery Water Supply Wells to Risk-Based Remediation Goals
Navajo Refining Company, Lovington Refinery

Analyte	NMWQCC Groundwater Standards	Risk-Based Remediation Goal	North Well								South Well								East Well						
			06/18/09	01/14/10	08/24/10	03/03/11	[illegible]	[illegible]	[illegible]	02/19/13	[illegible]	01/14/10	[illegible]	03/03/11	07/20/11	02/02/12	[illegible]	02/19/13	06/18/09	01/14/10	08/25/10	03/03/11	07/20/11	02/02/12	[illegible]
Volatiles mg/L (SW8260)																									
Benzene	0.01	0.149	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	0.75	0.404	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	0.75	22.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Xylenes	0.62	10.6	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Total Naphthalene	0.03	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Semi-Volatiles mg/L (SW8270)																									
Total Naphthalenes	0.03	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002
Naphthalene	--	0.115	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002
1-Methylnaphthalene	--	0.109	--	--	--	<0.0002	--	--	<0.0002	<0.00020	--	--	--	<0.0002	--	--	<0.0002	<0.00020	--	--	--	<0.0002	--	--	<0.0002
2-Methylnaphthalene	--	0.455	--	--	--	<0.0002	<0.0002	<0.00020	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.00020	<0.0002	<0.00020	--	--	--	<0.0002	<0.0002	<0.00020	<0.0002
Total Phenols	0.005	159	--	--	--	<0.0002	<0.00020	<0.00020	<0.0002	<0.00020	--	--	--	<0.0002	<0.00020	<0.00020	<0.0002	<0.00020	--	--	--	<0.0002	<0.00020	<0.00020	<0.0002
Dissolved Metals mg/L (SW6020/SW7470A)																									
Aluminum	5.0	608	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**0.0126**	<0.0100	<0.0100	<0.0100	**0.0176**	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**0.0131**	<0.0100	<0.0100	<0.0100	<0.0100	**0.0150**	<0.0100
Arsenic	0.1	0.0114	**0.00536**	<0.0050	**0.00552**	**0.00503**	<0.00500	<0.00500	**0.00523**	0.00693	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.00576	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Barium	1.0	122	**0.0997**	**0.107**	**0.100**	**0.0968**	**0.106**	**0.0944**	**0.106**	0.0998	**0.154**	**0.138**	**0.172**	**0.147**	**0.157**	**0.117**	**0.103**	0.149	**0.0820**	**0.0941**	**0.0873**	**0.0970**	**0.1040**	**0.0993**	**0.0922**
Boron	0.75	122	**0.151**	**0.172**	**0.147**	**0.159**	**0.142**	**0.132**	**0.159**	0.162	**0.189**	**0.229**	**0.186**	**0.261**	**0.195**	**0.165**	**0.160**	0.197	**0.143**	**0.154**	**0.136**	**0.152**	**0.142**	**0.145**	**0.136**
Cadmium	0.01	0.608	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.00200	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.00200	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Chromium	0.05	913	**0.0104**	<0.0050	<0.0050	**0.0199**	**0.0140**	**0.0145**	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0111**	<0.00500	<0.0050	**0.0119**	**0.0145**	**0.0189**	**0.0200**	**0.0166**	**0.0157**
Cobalt	0.05	0.183	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	1.0	24.3	<0.0050	<0.0050	**0.00856**	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.00500	<0.0050	**0.00953**	**0.00745**	<0.0050	<0.0050	<0.0050	**0.00774**
Iron	1.0	426	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Lead	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	**0.00662**	**0.0116**	**0.00988**	<0.0050
Manganese	0.2	85.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	**0.0224**	**0.00576**	**0.0226**	<0.0050	<0.0050	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Mercury	0.002	0.0420	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.000200	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.000200	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	1.0	3.04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nickel	0.2	6.690	<0.0050	<0.0050	**0.0161**	<0.0050	<0.0050	<0.0050	<0.0050	0.00537	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Selenium	0.05	3.04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	0.05	3.04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Uranium	0.03	1.83	--	**0.00134**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	--	**0.00236**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	--	**0.00111**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Zinc	10.0	183	<0.0050	<0.0050	**0.00920**	<0.0050	**0.0695**	<0.0050	**0.0178**	0.00873	**0.0195**	<0.0050	**0.0207**	**0.0329**	<0.0050	**0.00777**	**0.0401**	0.0172	**0.0172**	**0.0291**	**0.0146**	**0.0347**	**0.00936**	**0.0937**	**0.0166**
Anions mg/L (EPA 300.0)																									
Chloride	250	--	**140**	**143**	**127**	**137**	**124**	**149**	**121**	**105**	**497**	**498**	**477**	**549**	**430**	**358**	**135**	**359**	**107**	**138**	**106**	**135**	**124**	**150**	**144**
Fluoride	1.6	24.3	**0.933**	**0.793**	**0.932**	**0.932**	**0.803**	**0.977**	**0.986**	**1.02**	**0.665**	**0.686**	**0.651**	**0.647**	**0.687**	**0.756**	**1.01**	**0.743**	**0.980**	**0.991**	**1.00**	**0.905**	**0.810**	**0.967**	**0.962**
Nitrate-Nitrite	10	--	**2.72**	**2.90**	**1.81**	**2.76**	**2.07**	**2.54**	**2.63**	**2.54**	**3.02**	**3.27**	**2.18**	**3.24**	**2.48**	**3.02**	**2.53**	**2.88**	**2.59**	**2.70**	**0.523**	**2.68**	**1.83**	**2.56**	**2.40**
Sulfate	600	--	**80.6**	**74.2**	**80.4**	**75.2**	**76.5**	**82.1**	**72.7**	**83.3**	**106**	**113**	**101**	**122**	**103**	**89.0**	**73.3**	**99.2**	**84.0**	**72.7**	**74.5**	**75.6**	**73.8**	**81.4**	**80.9**
Total Dissolved Solids mg/L (M2540C)																									
Total Dissolved Solids	1,000	--	**664**	**638**	**594**	**804**	**628**	**656**	**528**	**496**	**1,450**	**1,820**	**1,760**	**1,940**	**1,600**	**1,210**	**582**	1,170	**554**	**676**	**522**	**644**	**596**	**664**	**636**

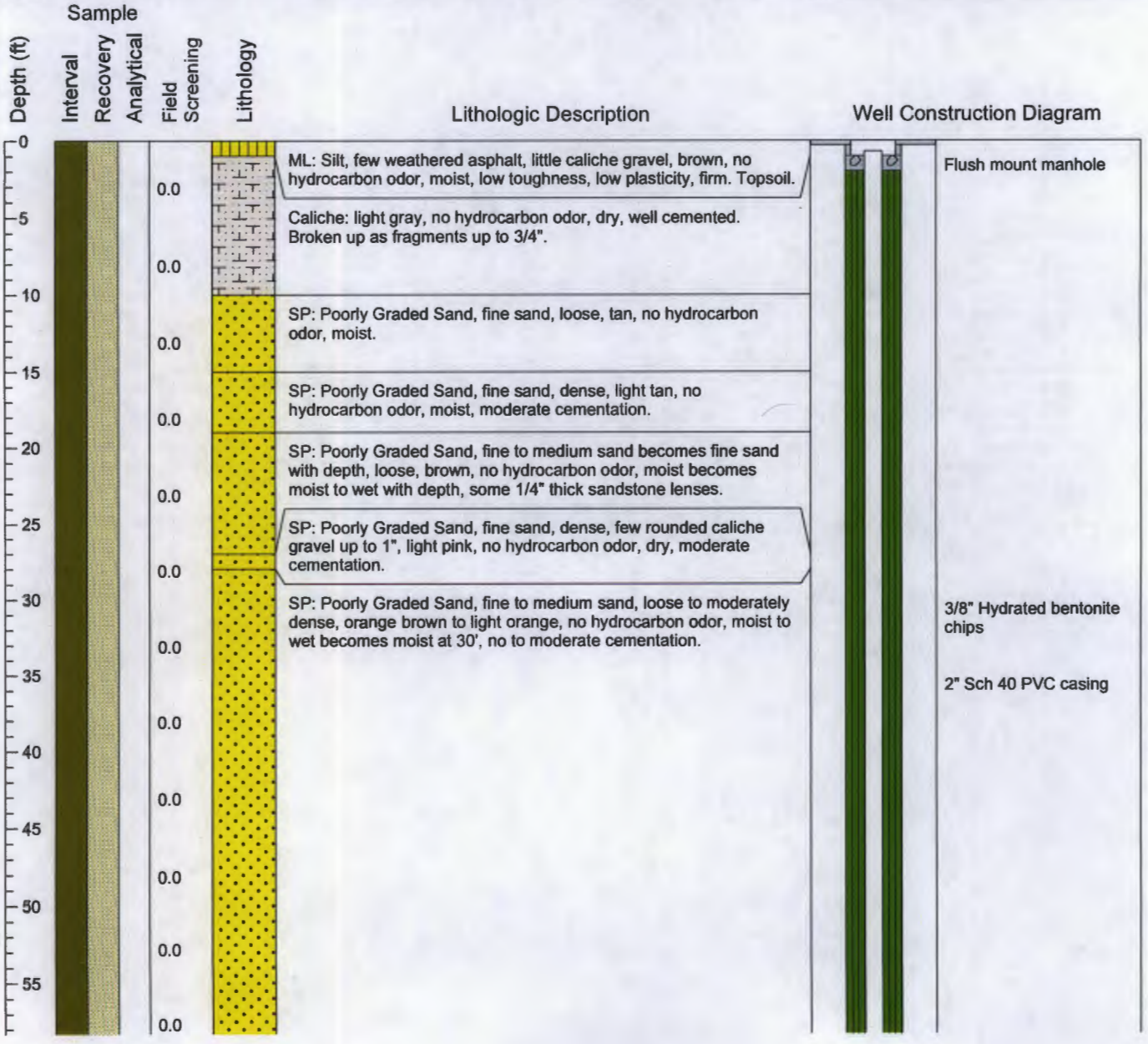
Notes:
Bold indicates analyte was detected above the laboratory reporting limit
Shading indicates detected result exceeded the New Mexico Water Quality Control Commission (WQCC) Human Health Standard
mg/L = milligrams per liter
< = Not reported above laboratory reporting limit
-- = Not Analyzed, Not Available
Samples collected for metals analysis (except for Total Mercury) were field filtered with 0.45 micron filter
Analyses performed by ALS Laboratory Group, Houston, Texas

APPENDIX A

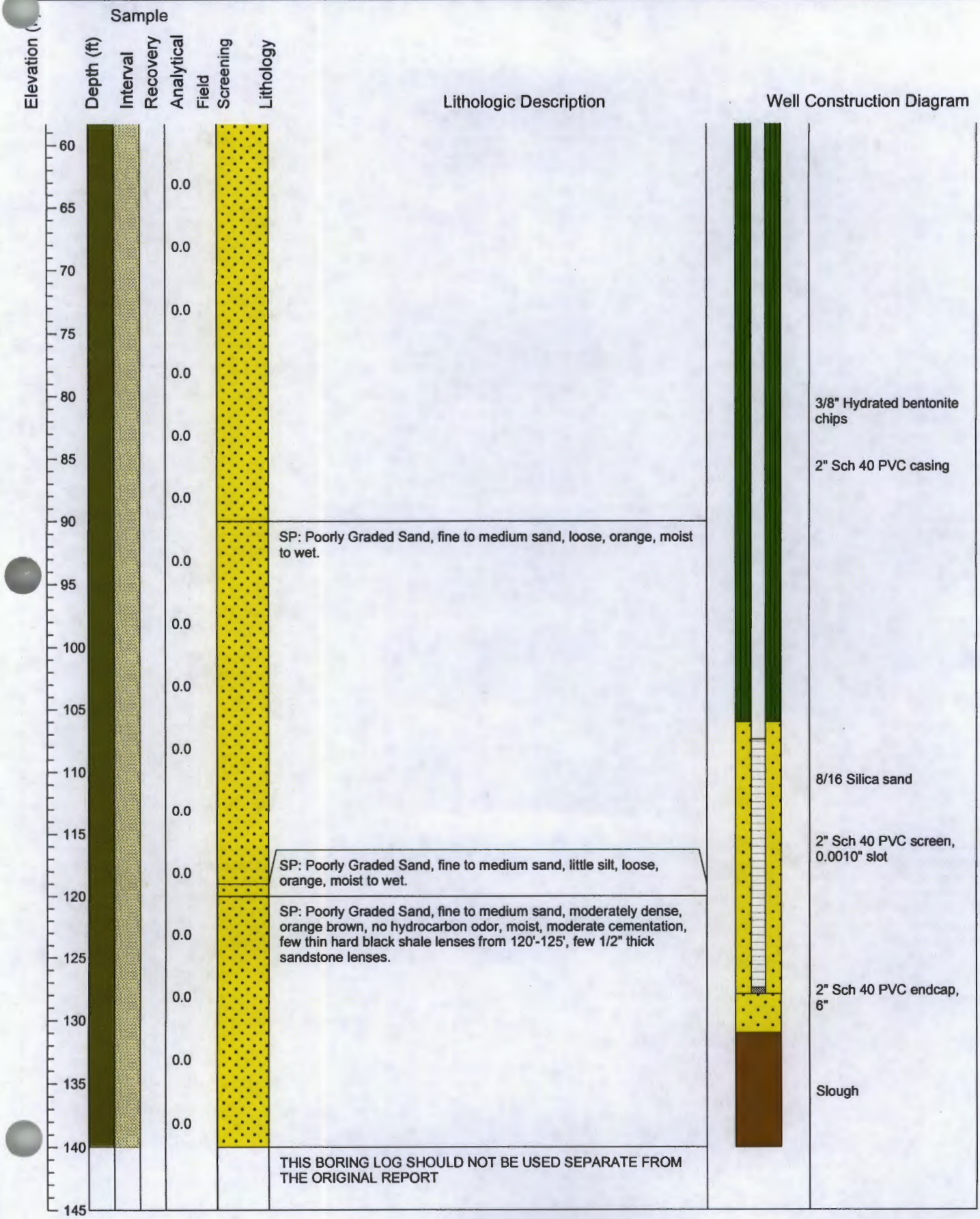
MW-30 BORING/WELL COMPLETION LOG

TRC	BORING LOG and WELL CONSTRUCTION	MW-30

Client: Navajo Refining Company	TRC Project #: 196364.0001.0000
Site: Lea Refinery	Start Date: 6/18/2013
Address: 7406 South Main St, Lovington, New Mexico	Finish Date: 6/20/2013
Project: Groundwater Investigation	Permit #: L-13332
Drilling Company: Talon Drilling — Drilling Crew: Gabe Perez and crew	TRC Site Rep.: J. Ward
Drilling Method: Air rotary	TRC Reviewer:B. Gilbert
Boring Diameter (in): 6 1/4 — Boring Depth (ft bgs):140	X-Y Coord. System:NA
Sampling Method: Air rotary cuttings	Latitude: NA
Blow Count Method: NA	Longitude:NA
Field Screening Parameter: Volatile organics	Elevation Datum: NA
Meter: MiniRAE PID — Units: ppm	Ground Elevation (ft): NA
Well Depth (ft bgs): 128 — Well Depth (ft toc): 127.91	Well Elevation (ft): NA
Casing Length (ft): 107.41 — Screen Length (ft): 20	Well Measuring Point: Top of Casing
Surface Completion: Flush mount pad and manhole	Depth to Water (ft toc): 110.49
Well Development: Pump and surge - 20 gallons removed	Date/Time: 6/21/2013, 1900



TRC	BORING LOG and WELL CONSTRUCTION	MW-30
Client: Navajo Refining Company	Site: Lea Refinery	Page 2 of 2



APPENDIX B

CITY OF LOVINGTON WELL PURGE FORMS

GROUNDWATEF \MPLING FORM

TRC

Sample Location	LD-16
Client	Holly Frontier
Site	NRC Lovington

Depth to Water (ft)	Before Sampling	—	Sample Collection Time	1420
	After Sampling	—	Purge Method	Grab well pump
Total Depth (ft)		—	Sample Method	Grab
Standing Water Column (ft)		—	Water Description	Clear no odor
One Purge Volume (gal)		—	Sampling Personnel	[illegible]

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
6/21/13	1259	0.25	0.25	—	10.59	22.79	544	0.377	20.2	68.0	0.05
	1302	0.25	0.50	—	10.91	19.23	508	0.376	69.0	57.1	0.04
↓	1305	0.25	0.75	—	10.87	19.11	504	0.369	68.3	55.4	0.05

Form Date: 01/24/07

Initial _____ Date 6/21/13

GROUNDWATER SAMPLING FORM

TRC

Sample Location	LW-9
Client	Holly Frontier
Site	NRC Lovington

Depth to Water (ft)	Before Sampling	NA	Sample Collection Time	1330
	After Sampling	NA	Purge Method	Spirit, QED well pump
Total Depth (ft)		NA	Sample Method	Grab
Standing Water Column (ft)		NA	Water Description	Clear no odor
One Purge Volume (gal)		NA	Sampling Personnel	S WARD

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
6/21/13	1149	0.25 gal	0.25	—	7.80	22.19	572	0.357	127.2	14.21	0.21
	1152	0.25 gal	0.50	—	6.62	19.85	546	0.394	163.4	93.9	0.19
	1155	0.25 gal	0.75	—	6.97	19.68	543	0.393	153.3	78.8	0.08

GROUNDWATER SAMPLING FORM

~~8.50~~ 8.20 - 8.03

TRC	Sample Location	LW-18
	Client	Holly Frontier
	Site	NRC Lovington

Depth to Water (ft)	Before Sampling	—	Sample Collection Time	1445
	After Sampling	—	Purge Method	Grab well pump
Total Depth (ft)		—	Sample Method	Grab
Standing Water Column (ft)		—	Water Description	Clear No odor
One Purge Volume (gal)		—	Sampling Personnel	S CWARP

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
6/20/13	1326	0.25	0.25	—	11.02	20.63	516	0.367	18.9	230.0 %	0.44
	1329	0.25	0.50	—	10.85	19.21	492	0.359	45.4	9.40	0.42
	1332	0.25	0.75	—	10.74	19.08	487	0.357	46.8	6.74	0.81

GROUNDWATER SAMPLING FORM

TRC

Sample Location	CD-14
Client	Holly Frontier
Site	NRC Lovington

Depth to Water (ft)	Before Sampling	—	Sample Collection Time	1515
	After Sampling	—	Purge Method	GB well pump
Total Depth (ft)		—	Sample Method	Grab
Standing Water Column (ft)		—	Water Description	Clear No odor
One Purge Volume (gal)		—	Sampling Personnel	S CW

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
6/21/13	1354	0.25	0.25	—	11.14	5.56	442	0.462	54.3	44.00	0.54
↓	1357	0.25	0.50	—	11.04	4.09	441	0.487	56.1	26.39	0.64
	1400	0.25	0.75	—	10.81	17.97	440	0.331	53.3	6.65	0.32

APPENDIX C

ALS ENVIRONMENTAL LABORATORY REPORTS

09-Jul-2013

Robert Combs
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5382
Fax: (575) 746-5421

Re: GW Source Investigation and Background Evaluation Work Order: **1306942**

Dear Robert,

ALS Environmental received 7 samples on 22-Jun-2013 09:45 AM for the analyses presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

The total number of pages in this revised report is 71.

Regards,

Electronically approved by: Sonia West

Sonia West
Project Manager

Certificate No: T104704231-13-12

ALS Environmental

Date: 09-Jul-13

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: **1306942**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1306942-01	LW-9	Water		6/21/2013 13:30	6/22/2013 09:45	☐
1306942-02	LW-9-D	Water		6/21/2013 13:30	6/22/2013 09:45	☐
1306942-03	LW-16	Water		6/21/2013 14:20	6/22/2013 09:45	☐
1306942-04	LW-18	Water		6/21/2013 14:45	6/22/2013 09:45	☐
1306942-05	LW-14	Water		6/21/2013 15:15	6/22/2013 09:45	☐
1306942-06	EB-06-21-13-01	Water		6/21/2013 17:05	6/22/2013 09:45	☐
1306942-07	MW-30	Water		6/21/2013 17:20	6/22/2013 09:45	☐

Client:	Navajo Refining Company
Project:	GW Source Investigation and Background Evaluation
Work Order:	1306942

Case Narrative

As per your request, this report has been revised to change the project name.

Batch 71019, Semivolatile Organics 8270, Sample LW-9: The MSD RPD was outside of the control limits for 4-Nitrophenol. The individual recoveries were within the control limits.

Batch R149704, Volatile Organics 8260, Sample 1306949-03A: MS/MSD are for an unrelated sample.

Batch R149796, Volatile Organics 8260, Sample LW-9: The MS/MSD recoveries for Isopropylbenzene and Tetrachloroethene were outside of the control limits due to matrix interference.

Batch R149850, Anions 300.0, Sample MW-30: MS/MSD recoveries were above the control limits for Sulfate due to high concentration to the background sample. Results are flagged with an O. The associated LCS recoveries and MS/MSD RPD were within the control limits.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9
Lab ID: 1306942-01
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 01:26 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	**0.0191**		**0.0100**	**mg/L**	1	6/27/2013 10:30 PM
Arsenic	**0.00667**		**0.00500**	**mg/L**	1	6/27/2013 10:30 PM
Barium	**0.0958**		**0.00500**	**mg/L**	1	6/27/2013 10:30 PM
Boron	**0.155**		**0.0200**	**mg/L**	1	6/27/2013 10:30 PM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 10:30 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Iron	ND		0.200	mg/L	1	6/27/2013 10:30 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Selenium	**0.00550**		**0.00500**	**mg/L**	1	6/27/2013 10:30 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 10:30 PM
Zinc	**0.00888**		**0.00500**	**mg/L**	1	6/27/2013 10:30 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1´-Biphenyl	ND		0.20	µg/L	1	6/27/2013 11:09 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/27/2013 11:09 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Methylphenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/27/2013 11:09 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
3,3´-Dichlorobenzidine	ND		0.20	µg/L	1	6/27/2013 11:09 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/27/2013 11:09 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9
Lab ID: 1306942-01
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/27/2013 11:09 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/27/2013 11:09 PM
Acenaphthene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Acenaphthylene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Acetophenone	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Anthracene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Atrazine	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benzaldehyde	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Bis(2-chloroisopropyl)ether	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Caprolactam	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Carbazole	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Chrysene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Dibenzofuran	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Fluoranthene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Fluorene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Hexachloroethane	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Isophorone	ND		0.20	µg/L	1	6/27/2013 11:09 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9
Lab ID: 1306942-01
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Nitrobenzene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/27/2013 11:09 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Phenanthrene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Phenol	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Pyrene	ND		0.20	µg/L	1	6/27/2013 11:09 PM
Surr: 2,4,6-Tribromophenol	*72.1*		*34-129*	*%REC*	1	6/27/2013 11:09 PM
Surr: 2-Fluorobiphenyl	*60.3*		*40-125*	*%REC*	1	6/27/2013 11:09 PM
Surr: 2-Fluorophenol	*55.6*		*20-120*	*%REC*	1	6/27/2013 11:09 PM
Surr: 4-Terphenyl-d14	*76.8*		*40-135*	*%REC*	1	6/27/2013 11:09 PM
Surr: Nitrobenzene-d5	*60.4*		*41-120*	*%REC*	1	6/27/2013 11:09 PM
Surr: Phenol-d6	*60.5*		*20-120*	*%REC*	1	6/27/2013 11:09 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
2-Butanone	ND		0.010	mg/L	1	6/29/2013 12:53 AM
2-Hexanone	ND		0.010	mg/L	1	6/29/2013 12:53 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/29/2013 12:53 AM
Acetone	ND		0.010	mg/L	1	6/29/2013 12:53 AM
Benzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Bromoform	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Bromomethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Carbon disulfide	ND		0.010	mg/L	1	6/29/2013 12:53 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Chloroethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Chloroform	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Chloromethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942
Sample ID: LW-9 **Lab ID:** 1306942-01
Collection Date: 6/21/2013 01:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
m,p-Xylene	ND		0.010	mg/L	1	6/29/2013 12:53 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Methylene chloride	ND		0.010	mg/L	1	6/29/2013 12:53 AM
Naphthalene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
o-Xylene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Styrene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Toluene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Trichloroethene	ND		0.0050	mg/L	1	6/29/2013 12:53 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/29/2013 12:53 AM
Xylenes, Total	ND		0.015	mg/L	1	6/29/2013 12:53 AM
Surr: 1,2-Dichloroethane-d4	*104*		*70-125*	*%REC*	1	6/29/2013 12:53 AM
Surr: 4-Bromofluorobenzene	*101*		*72-125*	*%REC*	1	6/29/2013 12:53 AM
Surr: Dibromofluoromethane	*99.8*		*71-125*	*%REC*	1	6/29/2013 12:53 AM
Surr: Toluene-d8	*98.9*		*75-125*	*%REC*	1	6/29/2013 12:53 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**72.3**		**0.500**	**mg/L**	1	7/1/2013 06:47 AM
Fluoride	**1.03**		**0.100**	**mg/L**	1	7/1/2013 06:47 AM
Sulfate	**80.5**		**0.500**	**mg/L**	1	7/1/2013 06:47 AM
Nitrate/Nitrite (as N)	**3.95**		**2.00**	**mg/L**	10	7/1/2013 11:42 AM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	7/1/2013 11:42 AM
Surr: Selenate (surr)	*109*		*85-115*	*%REC*	1	7/1/2013 06:47 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	**702**		**1.00**	**µmhos/cm**	1	6/27/2013 08:04 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**466**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9-D
Lab ID: 1306942-02
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:02 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	ND		0.0100	mg/L	1	6/27/2013 11:30 PM
Arsenic	**0.00618**		**0.00500**	**mg/L**	1	6/29/2013 12:44 AM
Barium	**0.103**		**0.00500**	**mg/L**	1	6/27/2013 11:30 PM
Boron	**0.142**		**0.0200**	**mg/L**	1	6/29/2013 12:44 AM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:30 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:30 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Selenium	**0.00593**		**0.00500**	**mg/L**	1	6/27/2013 11:30 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:30 PM
Zinc	**0.00789**		**0.00500**	**mg/L**	1	6/27/2013 11:30 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1'-Biphenyl	ND		0.20	µg/L	1	6/28/2013 08:42 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 08:42 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 08:42 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
3,3'-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 08:42 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 08:42 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9-D
Lab ID: 1306942-02
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 08:42 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 08:42 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benzaldehyde	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Bis(2-chloroisopropyl)ether	**0.46**		**0.20**	**µg/L**	1	6/28/2013 08:42 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 08:42 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9-D
Lab ID: 1306942-02
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 08:42 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Phenanthrene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 08:42 PM
Surr: 2,4,6-Tribromophenol	*91.1*		*34-129*	*%REC*	1	6/28/2013 08:42 PM
Surr: 2-Fluorobiphenyl	*66.5*		*40-125*	*%REC*	1	6/28/2013 08:42 PM
Surr: 2-Fluorophenol	*62.0*		*20-120*	*%REC*	1	6/28/2013 08:42 PM
Surr: 4-Terphenyl-d14	*88.1*		*40-135*	*%REC*	1	6/28/2013 08:42 PM
Surr: Nitrobenzene-d5	*75.5*		*41-120*	*%REC*	1	6/28/2013 08:42 PM
Surr: Phenol-d6	*69.0*		*20-120*	*%REC*	1	6/28/2013 08:42 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
2-Butanone	ND		0.010	mg/L	1	6/29/2013 01:19 AM
2-Hexanone	ND		0.010	mg/L	1	6/29/2013 01:19 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/29/2013 01:19 AM
Acetone	ND		0.010	mg/L	1	6/29/2013 01:19 AM
Benzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Bromoform	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Bromomethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Carbon disulfide	ND		0.010	mg/L	1	6/29/2013 01:19 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Chloroethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Chloroform	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Chloromethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-9-D
Lab ID: 1306942-02
Collection Date: 6/21/2013 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
m,p-Xylene	ND		0.010	mg/L	1	6/29/2013 01:19 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Methylene chloride	ND		0.010	mg/L	1	6/29/2013 01:19 AM
Naphthalene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
o-Xylene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Styrene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Toluene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Trichloroethene	ND		0.0050	mg/L	1	6/29/2013 01:19 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/29/2013 01:19 AM
Xylenes, Total	ND		0.015	mg/L	1	6/29/2013 01:19 AM
Surr: 1,2-Dichloroethane-d4	*105*		*70-125*	*%REC*	1	6/29/2013 01:19 AM
Surr: 4-Bromofluorobenzene	*102*		*72-125*	*%REC*	1	6/29/2013 01:19 AM
Surr: Dibromofluoromethane	*100*		*71-125*	*%REC*	1	6/29/2013 01:19 AM
Surr: Toluene-d8	*99.1*		*75-125*	*%REC*	1	6/29/2013 01:19 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**71.7**		**0.500**	**mg/L**	1	7/1/2013 07:09 AM
Fluoride	**1.04**		**0.100**	**mg/L**	1	7/1/2013 07:09 AM
Sulfate	**79.5**		**0.500**	**mg/L**	1	7/1/2013 07:09 AM
Nitrate/Nitrite (as N)	**3.71**		**2.00**	**mg/L**	10	7/1/2013 12:26 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	7/1/2013 12:26 PM
Surr: Selenate (surr)	*107*		*85-115*	*%REC*	1	7/1/2013 07:09 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	**704**		**1.00**	**µmhos/cm**	1	6/27/2013 08:06 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**460**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-16
Lab ID: 1306942-03
Collection Date: 6/21/2013 02:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:04 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	ND		0.0100	mg/L	1	6/27/2013 11:36 PM
Arsenic	**0.00638**		**0.00500**	**mg/L**	1	6/29/2013 12:49 AM
Barium	**0.0552**		**0.00500**	**mg/L**	1	6/27/2013 11:36 PM
Boron	**0.135**		**0.0200**	**mg/L**	1	6/29/2013 12:49 AM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:36 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:36 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Selenium	**0.00660**		**0.00500**	**mg/L**	1	6/27/2013 11:36 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:36 PM
Zinc	**0.00848**		**0.00500**	**mg/L**	1	6/27/2013 11:36 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1´-Biphenyl	ND		0.20	µg/L	1	6/28/2013 09:01 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 09:01 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:01 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
3,3´-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 09:01 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:01 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-16
Lab ID: 1306942-03
Collection Date: 6/21/2013 02:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:01 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 09:01 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benzaldehyde	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Bis(2-chloroisopropyl)ether	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 09:01 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-16
Lab ID: 1306942-03
Collection Date: 6/21/2013 02:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 09:01 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Phenanthrene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 09:01 PM
Surr: 2,4,6-Tribromophenol	*94.3*		*34-129*	*%REC*	1	6/28/2013 09:01 PM
Surr: 2-Fluorobiphenyl	*75.6*		*40-125*	*%REC*	1	6/28/2013 09:01 PM
Surr: 2-Fluorophenol	*75.3*		*20-120*	*%REC*	1	6/28/2013 09:01 PM
Surr: 4-Terphenyl-d14	*90.4*		*40-135*	*%REC*	1	6/28/2013 09:01 PM
Surr: Nitrobenzene-d5	*85.9*		*41-120*	*%REC*	1	6/28/2013 09:01 PM
Surr: Phenol-d6	*78.7*		*20-120*	*%REC*	1	6/28/2013 09:01 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
2-Butanone	ND		0.010	mg/L	1	6/28/2013 10:02 AM
2-Hexanone	ND		0.010	mg/L	1	6/28/2013 10:02 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/28/2013 10:02 AM
Acetone	ND		0.010	mg/L	1	6/28/2013 10:02 AM
Benzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Bromoform	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Bromomethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Carbon disulfide	ND		0.010	mg/L	1	6/28/2013 10:02 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Chloroethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Chloroform	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Chloromethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-16
Lab ID: 1306942-03
Collection Date: 6/21/2013 02:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
m,p-Xylene	ND		0.010	mg/L	1	6/28/2013 10:02 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Methylene chloride	ND		0.010	mg/L	1	6/28/2013 10:02 AM
Naphthalene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
o-Xylene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Styrene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Toluene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Trichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:02 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/28/2013 10:02 AM
Xylenes, Total	ND		0.015	mg/L	1	6/28/2013 10:02 AM
Surr: 1,2-Dichloroethane-d4	*104*		*70-125*	*%REC*	1	6/28/2013 10:02 AM
Surr: 4-Bromofluorobenzene	*99.4*		*72-125*	*%REC*	1	6/28/2013 10:02 AM
Surr: Dibromofluoromethane	*101*		*71-125*	*%REC*	1	6/28/2013 10:02 AM
Surr: Toluene-d8	*98.0*		*75-125*	*%REC*	1	6/28/2013 10:02 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**54.2**		**0.500**	**mg/L**	1	7/1/2013 07:31 AM
Fluoride	**0.923**		**0.100**	**mg/L**	1	7/1/2013 07:31 AM
Sulfate	**81.0**		**0.500**	**mg/L**	1	7/1/2013 07:31 AM
Nitrate/Nitrite (as N)	**4.75**		**2.00**	**mg/L**	10	7/1/2013 12:41 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	7/1/2013 12:41 PM
Surr: Selenate (surr)	*111*		*85-115*	*%REC*	1	7/1/2013 07:31 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	**658**		**1.00**	**µmhos/cm**	1	6/27/2013 08:08 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**444**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-18
Lab ID: 1306942-04
Collection Date: 6/21/2013 02:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:06 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	ND		0.0100	mg/L	1	6/27/2013 11:42 PM
Arsenic	**0.00606**		**0.00500**	**mg/L**	1	6/29/2013 12:55 AM
Barium	**0.0725**		**0.00500**	**mg/L**	1	6/27/2013 11:42 PM
Boron	**0.138**		**0.0200**	**mg/L**	1	6/29/2013 12:55 AM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:42 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:42 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Selenium	**0.00613**		**0.00500**	**mg/L**	1	6/27/2013 11:42 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:42 PM
Zinc	**0.00598**		**0.00500**	**mg/L**	1	6/27/2013 11:42 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1′-Biphenyl	ND		0.20	µg/L	1	6/28/2013 09:20 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 09:20 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:20 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
3,3′-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 09:20 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:20 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-18
Lab ID: 1306942-04
Collection Date: 6/21/2013 02:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:20 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 09:20 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benzaldehyde	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Bis(2-chloroisopropyl)ether	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 09:20 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942
Sample ID: LW-18 **Lab ID:** 1306942-04
Collection Date: 6/21/2013 02:45 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 09:20 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Phenanthrene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 09:20 PM
Surr: 2,4,6-Tribromophenol	*89.8*		*34-129*	*%REC*	1	6/28/2013 09:20 PM
Surr: 2-Fluorobiphenyl	*77.3*		*40-125*	*%REC*	1	6/28/2013 09:20 PM
Surr: 2-Fluorophenol	*67.6*		*20-120*	*%REC*	1	6/28/2013 09:20 PM
Surr: 4-Terphenyl-d14	*94.9*		*40-135*	*%REC*	1	6/28/2013 09:20 PM
Surr: Nitrobenzene-d5	*84.0*		*41-120*	*%REC*	1	6/28/2013 09:20 PM
Surr: Phenol-d6	*81.2*		*20-120*	*%REC*	1	6/28/2013 09:20 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
2-Butanone	ND		0.010	mg/L	1	6/28/2013 10:27 AM
2-Hexanone	ND		0.010	mg/L	1	6/28/2013 10:27 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/28/2013 10:27 AM
Acetone	ND		0.010	mg/L	1	6/28/2013 10:27 AM
Benzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Bromoform	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Bromomethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Carbon disulfide	ND		0.010	mg/L	1	6/28/2013 10:27 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Chloroethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Chloroform	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Chloromethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-18
Lab ID: 1306942-04
Collection Date: 6/21/2013 02:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
m,p-Xylene	ND		0.010	mg/L	1	6/28/2013 10:27 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Methylene chloride	ND		0.010	mg/L	1	6/28/2013 10:27 AM
Naphthalene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
o-Xylene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Styrene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Toluene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Trichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:27 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/28/2013 10:27 AM
Xylenes, Total	ND		0.015	mg/L	1	6/28/2013 10:27 AM
Surr: 1,2-Dichloroethane-d4	*109*		*70-125*	*%REC*	1	6/28/2013 10:27 AM
Surr: 4-Bromofluorobenzene	*96.6*		*72-125*	*%REC*	1	6/28/2013 10:27 AM
Surr: Dibromofluoromethane	*102*		*71-125*	*%REC*	1	6/28/2013 10:27 AM
Surr: Toluene-d8	*91.7*		*75-125*	*%REC*	1	6/28/2013 10:27 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**59.7**		**0.500**	**mg/L**	1	7/1/2013 07:52 AM
Fluoride	**0.922**		**0.100**	**mg/L**	1	7/1/2013 07:52 AM
Sulfate	**70.7**		**0.500**	**mg/L**	1	7/1/2013 07:52 AM
Nitrate/Nitrite (as N)	**3.67**		**2.00**	**mg/L**	10	7/1/2013 12:55 PM
Surr: Selenate (surr)	*109*		*85-115*	*%REC*	10	7/1/2013 12:55 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	1	7/1/2013 07:52 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	**640**		**1.00**	**µmhos/cm**	1	6/27/2013 08:10 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**448**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-14
Lab ID: 1306942-05
Collection Date: 6/21/2013 03:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:08 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	ND		0.0100	mg/L	1	6/27/2013 11:47 PM
Arsenic	**0.00701**		**0.00500**	**mg/L**	1	6/29/2013 01:00 AM
Barium	**0.0931**		**0.00500**	**mg/L**	1	6/27/2013 11:47 PM
Boron	**0.142**		**0.0200**	**mg/L**	1	6/29/2013 01:00 AM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:47 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:47 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Selenium	**0.00638**		**0.00500**	**mg/L**	1	6/27/2013 11:47 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:47 PM
Zinc	**0.00761**		**0.00500**	**mg/L**	1	6/27/2013 11:47 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1'-Biphenyl	ND		0.20	µg/L	1	6/28/2013 09:39 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 09:39 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:39 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
3,3'-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 09:39 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-14
Lab ID: 1306942-05
Collection Date: 6/21/2013 03:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:39 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 09:39 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benzaldehyde	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Bis(2-chloroisopropyl)ether	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 09:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: LW-14
Lab ID: 1306942-05
Collection Date: 6/21/2013 03:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 09:39 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Phenanthrene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 09:39 PM
Surr: 2,4,6-Tribromophenol	*104*		*34-129*	*%REC*	1	6/28/2013 09:39 PM
Surr: 2-Fluorobiphenyl	*80.4*		*40-125*	*%REC*	1	6/28/2013 09:39 PM
Surr: 2-Fluorophenol	*72.6*		*20-120*	*%REC*	1	6/28/2013 09:39 PM
Surr: 4-Terphenyl-d14	*92.1*		*40-135*	*%REC*	1	6/28/2013 09:39 PM
Surr: Nitrobenzene-d5	*82.1*		*41-120*	*%REC*	1	6/28/2013 09:39 PM
Surr: Phenol-d6	*82.6*		*20-120*	*%REC*	1	6/28/2013 09:39 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
2-Butanone	ND		0.010	mg/L	1	6/28/2013 10:52 AM
2-Hexanone	ND		0.010	mg/L	1	6/28/2013 10:52 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/28/2013 10:52 AM
Acetone	ND		0.010	mg/L	1	6/28/2013 10:52 AM
Benzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Bromoform	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Bromomethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Carbon disulfide	ND		0.010	mg/L	1	6/28/2013 10:52 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Chloroethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Chloroform	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Chloromethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942
Sample ID: LW-14 **Lab ID:** 1306942-05
Collection Date: 6/21/2013 03:15 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
m,p-Xylene	ND		0.010	mg/L	1	6/28/2013 10:52 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Methylene chloride	ND		0.010	mg/L	1	6/28/2013 10:52 AM
Naphthalene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
o-Xylene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Styrene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Toluene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Trichloroethene	ND		0.0050	mg/L	1	6/28/2013 10:52 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/28/2013 10:52 AM
Xylenes, Total	ND		0.015	mg/L	1	6/28/2013 10:52 AM
Surr: 1,2-Dichloroethane-d4	*110*		*70-125*	*%REC*	1	6/28/2013 10:52 AM
Surr: 4-Bromofluorobenzene	*101*		*72-125*	*%REC*	1	6/28/2013 10:52 AM
Surr: Dibromofluoromethane	*103*		*71-125*	*%REC*	1	6/28/2013 10:52 AM
Surr: Toluene-d8	*96.6*		*75-125*	*%REC*	1	6/28/2013 10:52 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**36.2**		**0.500**	**mg/L**	1	7/1/2013 08:14 AM
Fluoride	**1.04**		**0.100**	**mg/L**	1	7/1/2013 08:14 AM
Sulfate	**74.8**		**0.500**	**mg/L**	1	7/1/2013 08:14 AM
Nitrate/Nitrite (as N)	**3.69**		**2.00**	**mg/L**	10	7/1/2013 01:10 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	7/1/2013 01:10 PM
Surr: Selenate (surr)	*111*		*85-115*	*%REC*	1	7/1/2013 08:14 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	**576**		**1.00**	**µmhos/cm**	1	6/27/2013 08:11 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**386**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: EB-06-21-13-01
Lab ID: 1306942-06
Collection Date: 6/21/2013 05:05 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:10 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	ND		0.0100	mg/L	1	6/27/2013 11:53 PM
Arsenic	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Barium	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Boron	ND		0.0200	mg/L	1	6/27/2013 11:53 PM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:53 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:53 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Molybdenum	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Selenium	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
Zinc	ND		0.00500	mg/L	1	6/27/2013 11:53 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1'-Biphenyl	ND		0.20	µg/L	1	6/28/2013 09:58 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 09:58 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:58 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
3,3'-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 09:58 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:58 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: EB-06-21-13-01
Lab ID: 1306942-06
Collection Date: 6/21/2013 05:05 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 09:58 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 09:58 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Benzaldehyde	**1.7**		**0.20**	**µg/L**	1	6/28/2013 09:58 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Bis(2-chloroisopropyl)ether	**0.28**		**0.20**	**µg/L**	1	6/28/2013 09:58 PM
Bis(2-ethylhexyl)phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Diethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Di-n-butyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 09:58 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: EB-06-21-13-01
Lab ID: 1306942-06
Collection Date: 6/21/2013 05:05 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 09:58 PM
N-Nitrosodiphenylamine	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Phenanthrene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 09:58 PM
Surr: 2,4,6-Tribromophenol	*98.9*		*34-129*	*%REC*	1	6/28/2013 09:58 PM
Surr: 2-Fluorobiphenyl	*75.2*		*40-125*	*%REC*	1	6/28/2013 09:58 PM
Surr: 2-Fluorophenol	*74.7*		*20-120*	*%REC*	1	6/28/2013 09:58 PM
Surr: 4-Terphenyl-d14	*88.8*		*40-135*	*%REC*	1	6/28/2013 09:58 PM
Surr: Nitrobenzene-d5	*81.9*		*41-120*	*%REC*	1	6/28/2013 09:58 PM
Surr: Phenol-d6	*80.1*		*20-120*	*%REC*	1	6/28/2013 09:58 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
2-Butanone	ND		0.010	mg/L	1	6/28/2013 09:37 AM
2-Hexanone	ND		0.010	mg/L	1	6/28/2013 09:37 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/28/2013 09:37 AM
Acetone	ND		0.010	mg/L	1	6/28/2013 09:37 AM
Benzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Bromoform	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Bromomethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Carbon disulfide	ND		0.010	mg/L	1	6/28/2013 09:37 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Chloroethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Chloroform	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Chloromethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942
Sample ID: EB-06-21-13-01 **Lab ID:** 1306942-06
Collection Date: 6/21/2013 05:05 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
m,p-Xylene	ND		0.010	mg/L	1	6/28/2013 09:37 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Methylene chloride	ND		0.010	mg/L	1	6/28/2013 09:37 AM
Naphthalene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
o-Xylene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Styrene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Toluene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Trichloroethene	ND		0.0050	mg/L	1	6/28/2013 09:37 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/28/2013 09:37 AM
Xylenes, Total	ND		0.015	mg/L	1	6/28/2013 09:37 AM
Surr: 1,2-Dichloroethane-d4	*104*		*70-125*	*%REC*	1	6/28/2013 09:37 AM
Surr: 4-Bromofluorobenzene	*104*		*72-125*	*%REC*	1	6/28/2013 09:37 AM
Surr: Dibromofluoromethane	*101*		*71-125*	*%REC*	1	6/28/2013 09:37 AM
Surr: Toluene-d8	*95.3*		*75-125*	*%REC*	1	6/28/2013 09:37 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	ND		0.500	mg/L	1	7/1/2013 08:36 AM
Fluoride	ND		0.100	mg/L	1	7/1/2013 08:36 AM
Sulfate	ND		0.500	mg/L	1	7/1/2013 08:36 AM
Nitrate/Nitrite (as N)	ND		2.00	mg/L	10	7/1/2013 01:53 PM
Surr: Selenate (surr)	*111*		*85-115*	*%REC*	10	7/1/2013 01:53 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	1	7/1/2013 08:36 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**
Specific Conductivity	ND		1.00	µmhos/cm	1	6/27/2013 08:13 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**10.0**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: MW-30
Lab ID: 1306942-07
Collection Date: 6/21/2013 05:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY-SW7470A			**SW7470**		Prep Date: **6/28/2013**	Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	6/28/2013 02:12 PM
DISSOLVED METALS			**SW6020**		Prep Date: **6/27/2013**	Analyst: **ALR**
Aluminum	**0.0436**		**0.0100**	**mg/L**	1	6/27/2013 11:59 PM
Arsenic	**0.00588**		**0.00500**	**mg/L**	1	6/29/2013 01:06 AM
Barium	**0.0424**		**0.00500**	**mg/L**	1	6/27/2013 11:59 PM
Boron	**0.164**		**0.0200**	**mg/L**	1	6/29/2013 01:06 AM
Cadmium	ND		0.00200	mg/L	1	6/27/2013 11:59 PM
Chromium	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Cobalt	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Copper	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Iron	ND		0.200	mg/L	1	6/27/2013 11:59 PM
Lead	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Manganese	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Molybdenum	**0.00913**		**0.00500**	**mg/L**	1	6/27/2013 11:59 PM
Nickel	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Selenium	**0.00554**		**0.00500**	**mg/L**	1	6/27/2013 11:59 PM
Silver	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Uranium	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
Zinc	ND		0.00500	mg/L	1	6/27/2013 11:59 PM
LOW-LEVEL SEMIVOLATILES			**SW8270**		Prep Date: **6/25/2013**	Analyst: **ACN**
1,1´-Biphenyl	ND		0.20	µg/L	1	6/28/2013 10:17 PM
1-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,4,5-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,4,6-Trichlorophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,4-Dichlorophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,4-Dimethylphenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,4-Dinitrophenol	ND		1.0	µg/L	1	6/28/2013 10:17 PM
2,4-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2,6-Dinitrotoluene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Chloronaphthalene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Chlorophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Methylnaphthalene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Methylphenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 10:17 PM
2-Nitrophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
3&4-Methylphenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
3,3´-Dichlorobenzidine	ND		0.20	µg/L	1	6/28/2013 10:17 PM
3-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 10:17 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: MW-30
Lab ID: 1306942-07
Collection Date: 6/21/2013 05:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
4,6-Dinitro-2-methylphenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Bromophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Chloro-3-methylphenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Chloroaniline	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Chlorophenyl phenyl ether	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Nitroaniline	ND		0.20	µg/L	1	6/28/2013 10:17 PM
4-Nitrophenol	ND		1.0	µg/L	1	6/28/2013 10:17 PM
Acenaphthene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Acenaphthylene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Acetophenone	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Anthracene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Atrazine	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benz(a)anthracene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benzaldehyde	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benzo(a)pyrene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benzo(b)fluoranthene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benzo(g,h,i)perylene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Benzo(k)fluoranthene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Bis(2-chloroethoxy)methane	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Bis(2-chloroethyl)ether	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Bis(2-chloroisopropyl)ether	**0.89**		**0.20**	**µg/L**	1	6/28/2013 10:17 PM
Bis(2-ethylhexyl)phthalate	**0.26**		**0.20**	**µg/L**	1	6/28/2013 10:17 PM
Butyl benzyl phthalate	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Caprolactam	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Carbazole	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Chrysene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Dibenz(a,h)anthracene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Dibenzofuran	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Diethyl phthalate	**0.23**		**0.20**	**µg/L**	1	6/28/2013 10:17 PM
Dimethyl phthalate	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Di-n-butyl phthalate	**25**		**1.0**	**µg/L**	5	7/1/2013 09:19 PM
Di-n-octyl phthalate	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Fluoranthene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Fluorene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Hexachlorobenzene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Hexachlorobutadiene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Hexachlorocyclopentadiene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Hexachloroethane	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Indeno(1,2,3-cd)pyrene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Isophorone	ND		0.20	µg/L	1	6/28/2013 10:17 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942
Sample ID: MW-30 **Lab ID:** 1306942-07
Collection Date: 6/21/2013 05:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Nitrobenzene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
N-Nitrosodi-n-propylamine	ND		0.20	µg/L	1	6/28/2013 10:17 PM
N-Nitrosodiphenylamine	**1.0**		**0.20**	**µg/L**	1	6/28/2013 10:17 PM
Pentachlorophenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Phenanthrene	**0.25**		**0.20**	**µg/L**	1	6/28/2013 10:17 PM
Phenol	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Pyrene	ND		0.20	µg/L	1	6/28/2013 10:17 PM
Surr: 2,4,6-Tribromophenol	*119*		*34-129*	*%REC*	1	6/28/2013 10:17 PM
Surr: 2,4,6-Tribromophenol	*91.1*		*34-129*	*%REC*	5	7/1/2013 09:19 PM
Surr: 2-Fluorobiphenyl	*82.2*		*40-125*	*%REC*	1	6/28/2013 10:17 PM
Surr: 2-Fluorobiphenyl	*90.7*		*40-125*	*%REC*	5	7/1/2013 09:19 PM
Surr: 2-Fluorophenol	*77.4*		*20-120*	*%REC*	1	6/28/2013 10:17 PM
Surr: 2-Fluorophenol	*59.4*		*20-120*	*%REC*	5	7/1/2013 09:19 PM
Surr: 4-Terphenyl-d14	*94.3*		*40-135*	*%REC*	1	6/28/2013 10:17 PM
Surr: 4-Terphenyl-d14	*91.6*		*40-135*	*%REC*	5	7/1/2013 09:19 PM
Surr: Nitrobenzene-d5	*83.6*		*41-120*	*%REC*	1	6/28/2013 10:17 PM
Surr: Nitrobenzene-d5	*90.7*		*41-120*	*%REC*	5	7/1/2013 09:19 PM
Surr: Phenol-d6	*75.8*		*20-120*	*%REC*	5	7/1/2013 09:19 PM
Surr: Phenol-d6	*87.0*		*20-120*	*%REC*	1	6/28/2013 10:17 PM
VOLATILES - SW8260C			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,2-Dibromoethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,2-Dichloropropane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
2-Butanone	**0.040**		**0.010**	**mg/L**	1	6/28/2013 11:17 AM
2-Hexanone	ND		0.010	mg/L	1	6/28/2013 11:17 AM
4-Isopropyltoluene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/28/2013 11:17 AM
Acetone	ND		0.010	mg/L	1	6/28/2013 11:17 AM
Benzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Bromodichloromethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Bromoform	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Bromomethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
Work Order: 1306942
Sample ID: MW-30
Lab ID: 1306942-07
Collection Date: 6/21/2013 05:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Carbon disulfide	ND		0.010	mg/L	1	6/28/2013 11:17 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Chlorobenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Chloroethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Chloroform	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Chloromethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Dibromochloromethane	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Ethylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Isopropylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
m,p-Xylene	ND		0.010	mg/L	1	6/28/2013 11:17 AM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Methylene chloride	ND		0.010	mg/L	1	6/28/2013 11:17 AM
Naphthalene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
n-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
n-Propylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
o-Xylene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
sec-Butylbenzene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Styrene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Tetrachloroethene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Toluene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Trichloroethene	ND		0.0050	mg/L	1	6/28/2013 11:17 AM
Vinyl chloride	ND		0.0020	mg/L	1	6/28/2013 11:17 AM
Xylenes, Total	ND		0.015	mg/L	1	6/28/2013 11:17 AM
Surr: 1,2-Dichloroethane-d4	*117*		*70-125*	*%REC*	1	6/28/2013 11:17 AM
Surr: 4-Bromofluorobenzene	*107*		*72-125*	*%REC*	1	6/28/2013 11:17 AM
Surr: Dibromofluoromethane	*109*		*71-125*	*%REC*	1	6/28/2013 11:17 AM
Surr: Toluene-d8	*97.6*		*75-125*	*%REC*	1	6/28/2013 11:17 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**51.2**		**0.500**	**mg/L**	1	7/1/2013 09:41 AM
Fluoride	**1.87**		**0.100**	**mg/L**	1	7/1/2013 09:41 AM
Sulfate	**96.7**		**0.500**	**mg/L**	1	7/1/2013 09:41 AM
Nitrate/Nitrite (as N)	**3.51**		**2.00**	**mg/L**	10	7/1/2013 02:08 PM
Surr: Selenate (surr)	*112*		*85-115*	*%REC*	1	7/1/2013 09:41 AM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	7/1/2013 02:08 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **KL**

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Jul-13*

Client: Navajo Refining Company

Project: GW Source Investigation and Background Evaluation **Work Order:** 1306942

Sample ID: MW-30 **Lab ID:** 1306942-07

Collection Date: 6/21/2013 05:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Specific Conductivity	**628**		**1.00**	**µmhos/cm**	1	6/27/2013 08:14 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**426**		**10.0**	**mg/L**	1	6/27/2013 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Batch ID: **71114** Instrument ID **ICPMS03** Method: **SW6020** **(Dissolve)**

MBLK Sample ID: **MBLKW4-062713-71114** Units: **mg/L** Analysis Date: **6/27/2013 10:19 PM**

Client ID: Run ID: **ICPMS03_130627A** SeqNo: **3270865** Prep Date: **6/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Uranium	ND	0.0050								
Zinc	ND	0.0050								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71114** Instrument ID **ICPMS03** Method: **SW6020** **(Dissolve)**

LCS Sample ID: **MLCSW4-062713-71114** Units: **mg/L** Analysis Date: **6/27/2013 10:24 PM**

Client ID: Run ID: **ICPMS03_130627A** SeqNo: **3270866** Prep Date: **6/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1123	0.010	0.1	0	112	80-120				
Arsenic	0.04912	0.0050	0.05	0	98.2	80-120				
Barium	0.0467	0.0050	0.05	0	93.4	80-120				
Boron	0.4571	0.050	0.5	0	91.4	80-120				
Cadmium	0.04657	0.0020	0.05	0	93.1	80-120				
Chromium	0.04943	0.0050	0.05	0	98.9	80-120				
Cobalt	0.04914	0.0050	0.05	0	98.3	80-120				
Copper	0.04977	0.0050	0.05	0	99.5	80-120				
Iron	4.924	0.20	5	0	98.5	80-120				
Lead	0.04636	0.0050	0.05	0	92.7	80-120				
Manganese	0.04849	0.0050	0.05	0	97	80-120				
Molybdenum	0.04604	0.0050	0.05	0	92.1	80-120				
Nickel	0.04843	0.0050	0.05	0	96.9	80-120				
Selenium	0.05004	0.0050	0.05	0	100	80-120				
Silver	0.04886	0.0050	0.05	0	97.7	80-120				
Uranium	0.09553	0.0050	0.1	0	95.5	80-120				
Zinc	0.05058	0.0050	0.05	0	101	80-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71114** Instrument ID **ICPMS03** Method: **SW6020** **(Dissolve)**

MS Sample ID: **1306942-01CMS** Units: **mg/L** Analysis Date: **6/27/2013 10:46 PM**

Client ID: **LW-9** Run ID: **ICPMS03_130627A** SeqNo: **3270870** Prep Date: **6/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1162	0.010	0.1	0.01906	97.1	75-125				
Arsenic	0.05625	0.0050	0.05	0.006668	99.2	75-125				
Barium	0.1445	0.0050	0.05	0.09578	97.4	75-125				
Boron	0.6418	0.050	0.5	0.1548	97.4	75-125				
Cadmium	0.04616	0.0020	0.05	0.00006725	92.2	75-125				
Chromium	0.04994	0.0050	0.05	0.002227	95.4	75-125				
Cobalt	0.04768	0.0050	0.05	-3.131E-05	95.4	75-125				
Copper	0.05202	0.0050	0.05	0.003215	97.6	75-125				
Iron	4.837	0.20	5	-0.02723	97.3	75-125				
Lead	0.04724	0.0050	0.05	0.0002549	94	75-125				
Manganese	0.04676	0.0050	0.05	0.0002668	93	75-125				
Molybdenum	0.05025	0.0050	0.05	0.002563	95.4	75-125				
Nickel	0.0465	0.0050	0.05	-0.0006409	94.3	75-125				
Selenium	0.0544	0.0050	0.05	0.005496	97.8	75-125				
Silver	0.04793	0.0050	0.05	-0.0008906	97.6	75-125				
anium	0.09935	0.0050	0.1	0.001738	97.6	75-125				
Zinc	0.05864	0.0050	0.05	0.008878	99.5	75-125				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71114** Instrument ID **ICPMS03** Method: **SW6020** **(Dissolve)**

MSD Sample ID: **1306942-01CMSD** Units: **mg/L** Analysis Date: **6/27/2013 10:52 PM**

Client ID: **LW-9** Run ID: **ICPMS03_130627A** SeqNo: **3270871** Prep Date: **6/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1139	0.010	0.1	0.01906	94.8	75-125	0.1162	2	25	
Arsenic	0.05912	0.0050	0.05	0.006668	105	75-125	0.05625	4.98	25	
Barium	0.1442	0.0050	0.05	0.09578	96.8	75-125	0.1445	0.208	25	
Boron	0.6516	0.050	0.5	0.1548	99.4	75-125	0.6418	1.52	25	
Cadmium	0.04896	0.0020	0.05	0.00006725	97.8	75-125	0.04616	5.89	25	
Chromium	0.05333	0.0050	0.05	0.002227	102	75-125	0.04994	6.57	25	
Cobalt	0.04988	0.0050	0.05	-3.131E-05	99.8	75-125	0.04768	4.51	25	
Copper	0.05383	0.0050	0.05	0.003215	101	75-125	0.05202	3.42	25	
Iron	5.058	0.20	5	-0.02723	102	75-125	4.837	4.47	25	
Lead	0.04862	0.0050	0.05	0.0002549	96.7	75-125	0.04724	2.88	25	
Manganese	0.04963	0.0050	0.05	0.0002668	98.7	75-125	0.04676	5.95	25	
Molybdenum	0.05013	0.0050	0.05	0.002563	95.1	75-125	0.05025	0.239	25	
Nickel	0.04839	0.0050	0.05	-0.0006409	98.1	75-125	0.0465	3.98	25	
Selenium	0.05686	0.0050	0.05	0.005496	103	75-125	0.0544	4.42	25	
Silver	0.04876	0.0050	0.05	-0.0008906	99.3	75-125	0.04793	1.72	25	
Uranium	0.1019	0.0050	0.1	0.001738	100	75-125	0.09935	2.53	25	
Zinc	0.0605	0.0050	0.05	0.008878	103	75-125	0.05864	3.12	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
roject: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71114** Instrument ID **ICPMS03** Method: **SW6020** **(Dissolve)**

DUP Sample ID: **1306942-01CDUP** Units: **mg/L** Analysis Date: **6/27/2013 10:35 PM**

Client ID: **LW-9** Run ID: **ICPMS03_130627A** SeqNo: **3270868** Prep Date: **6/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010					0.01906	0	25	
Arsenic	0.006652	0.0050					0.006668	0.24	25	
Barium	0.09957	0.0050					0.09578	3.88	25	
Boron	0.1552	0.050					0.1548	0.258	25	
Cadmium	ND	0.0020					0.00006725	0	25	
Chromium	ND	0.0050					0.002227	0	25	
Cobalt	ND	0.0050					-3.131E-05	0	25	
Copper	ND	0.0050					0.003215	0	25	
Iron	ND	0.20					-0.02723	0	25	
Lead	ND	0.0050					0.0002549	0	25	
Manganese	ND	0.0050					0.0002668	0	25	
Molybdenum	ND	0.0050					0.002563	0	25	
Nickel	ND	0.0050					-0.0006409	0	25	
Selenium	0.006043	0.0050					0.005496	9.48	25	
Silver	ND	0.0050					-0.0008906	0	25	
anium	ND	0.0050					0.001738	0	25	
Zinc	0.007952	0.0050					0.008878	11	25	

The following samples were analyzed in this batch: 1306942-01C 1306942-02C 1306942-03C 1306942-04C 1306942-05C 1306942-06C 1306942-07C

ote: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71140** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW2-062813-71140** Units: **mg/L** Analysis Date: **6/28/2013 01:22 PM**
Client ID: Run ID: **MERCURY_130628A** SeqNo: **3272273** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW2-062813-71140** Units: **mg/L** Analysis Date: **6/28/2013 01:24 PM**
Client ID: Run ID: **MERCURY_130628A** SeqNo: **3272274** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0053	0.00020	0.005	0	106	85-115				

MS Sample ID: **1306942-01CMS** Units: **mg/L** Analysis Date: **6/28/2013 01:30 PM**
Client ID: **LW-9** Run ID: **MERCURY_130628A** SeqNo: **3272277** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00471	0.00020	0.005	-0.000023	94.7	85-115				

MS Sample ID: **1306951-07EMS** Units: **mg/L** Analysis Date: **6/28/2013 01:52 PM**
Client ID: Run ID: **MERCURY_130628A** SeqNo: **3272281** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00509	0.00020	0.005	-0.000001	102	85-115				

MSD Sample ID: **1306942-01CMSD** Units: **mg/L** Analysis Date: **6/28/2013 01:32 PM**
Client ID: **LW-9** Run ID: **MERCURY_130628A** SeqNo: **3272278** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00456	0.00020	0.005	-0.000023	91.7	85-115	0.00471	3.24	20	

MSD Sample ID: **1306951-07EMSD** Units: **mg/L** Analysis Date: **6/28/2013 01:54 PM**
Client ID: Run ID: **MERCURY_130628A** SeqNo: **3272282** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.00020	0.005	-0.000001	101	85-115	0.00509	0.987	20	

DUP Sample ID: **1306942-01CDUP** Units: **mg/L** Analysis Date: **6/28/2013 01:28 PM**
Client ID: **LW-9** Run ID: **MERCURY_130628A** SeqNo: **3272276** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020					-0.000023	0	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71140** Instrument ID **Mercury** Method: **SW7470**

DUP Sample ID: **1306951-07EDUP** Units: **mg/L** Analysis Date: **6/28/2013 01:36 PM**

Client ID: Run ID: **MERCURY_130628A** SeqNo: **3272280** Prep Date: **6/28/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020					-0.000001	0	20	

The following samples were analyzed in this batch:

1306942-01C	1306942-02C	1306942-03C
1306942-04C	1306942-05C	1306942-06C
1306942-07C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

MBLK Sample ID: **SBLKW2-130625-71019** Units: **µg/L** Analysis Date: **6/27/2013 10:28 PM**

Client ID: Run ID: **SV-4_130627A** SeqNo: **3274019** Prep Date: **6/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1´-Biphenyl	ND	0.20								
1-Methylnaphthalene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
2,4-Dichlorophenol	ND	0.20								
2,4-Dimethylphenol	ND	0.20								
2,4-Dinitrophenol	ND	1.0								
2,4-Dinitrotoluene	ND	0.20								
2,6-Dinitrotoluene	ND	0.20								
2-Chloronaphthalene	ND	0.20								
2-Chlorophenol	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.20								
2-Nitroaniline	ND	0.20								
2-Nitrophenol	ND	0.20								
3&4-Methylphenol	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.20								
3-Nitroaniline	ND	0.20								
4,6-Dinitro-2-methylphenol	ND	0.20								
4-Bromophenyl phenyl ether	ND	0.20								
4-Chloro-3-methylphenol	ND	0.20								
4-Chloroaniline	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
4-Nitroaniline	ND	0.20								
4-Nitrophenol	ND	1.0								
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Acetophenone	ND	0.20								
Anthracene	ND	0.20								
Atrazine	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzaldehyde	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

Bis(2-chloroisopropyl)ether	ND	0.20					
Bis(2-ethylhexyl)phthalate	ND	0.20					
Butyl benzyl phthalate	ND	0.20					
Caprolactam	ND	0.20					
Carbazole	ND	0.20					
Chrysene	ND	0.20					
Dibenz(a,h)anthracene	ND	0.20					
Dibenzofuran	ND	0.20					
Diethyl phthalate	ND	0.20					
Dimethyl phthalate	ND	0.20					
Di-n-butyl phthalate	ND	0.20					
Di-n-octyl phthalate	ND	0.20					
Fluoranthene	ND	0.20					
Fluorene	ND	0.20					
Hexachlorobenzene	ND	0.20					
Hexachlorobutadiene	ND	0.20					
Hexachlorocyclopentadiene	ND	0.20					
Hexachloroethane	ND	0.20					
Indeno(1,2,3-cd)pyrene	ND	0.20					
Isophorone	ND	0.20					
ıphthalene	ND	0.20					
ıNitrobenzene	ND	0.20					
N-Nitrosodi-n-propylamine	ND	0.20					
N-Nitrosodiphenylamine	ND	0.20					
Pentachlorophenol	ND	0.20					
Phenanthrene	ND	0.20					
Phenol	ND	0.20					
Pyrene	ND	0.20					
Surr: 2,4,6-Tribromophenol	3.915	0.20	*5*	*0*	*78.3*	*34-129*	*0*
Surr: 2-Fluorobiphenyl	3.474	0.20	*5*	*0*	*69.5*	*40-125*	*0*
Surr: 2-Fluorophenol	3.534	0.20	*5*	*0*	*70.7*	*20-120*	*0*
Surr: 4-Terphenyl-d14	3.72	0.20	*5*	*0*	*74.4*	*40-135*	*0*
Surr: Nitrobenzene-d5	3.366	0.20	*5*	*0*	*67.3*	*41-120*	*0*
Surr: Phenol-d6	3.807	0.20	*5*	*0*	*76.1*	*20-120*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

LCS Sample ID: **SLCSW2-130625-71019** Units: **µg/L** Analysis Date: **6/27/2013 04:51 PM**

Client ID: Run ID: **SV-4_130627A** SeqNo: **3274021** Prep Date: **6/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1´-Biphenyl	2.895	0.20	5	0	57.9	45-125				
1-Methylnaphthalene	3.646	0.20	5	0	72.9	45-120				
2,4,5-Trichlorophenol	3.625	0.20	5	0	72.5	46-120				
2,4,6-Trichlorophenol	3.16	0.20	5	0	63.2	42-120				
2,4-Dichlorophenol	3.472	0.20	5	0	69.4	49-120				
2,4-Dimethylphenol	3.148	0.20	5	0	63	35-120				
2,4-Dinitrophenol	1.846	1.0	5	0	36.9	15-120				
2,4-Dinitrotoluene	3.289	0.20	5	0	65.8	50-122				
2,6-Dinitrotoluene	3.262	0.20	5	0	65.2	50-120				
2-Chloronaphthalene	3.474	0.20	5	0	69.5	50-120				
2-Chlorophenol	3.284	0.20	5	0	65.7	40-120				
2-Methylnaphthalene	3.392	0.20	5	0	67.8	50-120				
2-Methylphenol	3.161	0.20	5	0	63.2	45-120				
2-Nitroaniline	4.124	0.20	5	0	82.5	28-139				
2-Nitrophenol	3.581	0.20	5	0	71.6	40-120				
3&4-Methylphenol	3.458	0.20	5	0	69.2	35-120				
3,3´-Dichlorobenzidine	3.646	0.20	5	0	72.9	15-120				
3-Nitroaniline	3.351	0.20	5	0	67	30-120				
4,6-Dinitro-2-methylphenol	2.82	0.20	5	0	56.4	25-121				
4-Bromophenyl phenyl ether	3.603	0.20	5	0	72.1	45-120				
4-Chloro-3-methylphenol	3.704	0.20	5	0	74.1	47-120				
4-Chloroaniline	3.411	0.20	5	0	68.2	20-120				
4-Chlorophenyl phenyl ether	3.284	0.20	5	0	65.7	50-120				
4-Nitroaniline	2.972	0.20	5	0	59.4	30-133				
4-Nitrophenol	3.575	1.0	5	0	71.5	30-130				
Acenaphthene	3.049	0.20	5	0	61	45-120				
Acenaphthylene	3.26	0.20	5	0	65.2	47-120				
Acetophenone	3.287	0.20	5	0	65.7	40-120				
Anthracene	3.316	0.20	5	0	66.3	45-120				
Atrazine	3.283	0.20	5	0	65.7	40-130				
Benz(a)anthracene	3.668	0.20	5	0	73.4	40-120				
Benzaldehyde	1.304	0.20	5	0	26.1	15-120				
Benzo(a)pyrene	3.612	0.20	5	0	72.2	45-120				
Benzo(b)fluoranthene	3.681	0.20	5	0	73.6	50-120				
Benzo(g,h,i)perylene	2.813	0.20	5	0	56.3	42-127				
Benzo(k)fluoranthene	3.647	0.20	5	0	72.9	45-127				
Bis(2-chloroethoxy)methane	3.18	0.20	5	0	63.6	45-120				
Bis(2-chloroethyl)ether	3.349	0.20	5	0	67	37-121				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

Bis(2-chloroisopropyl)ether	2.932	0.20	5	0	58.6	40-120	
Bis(2-ethylhexyl)phthalate	3.992	0.20	5	0	79.8	40-139	
Butyl benzyl phthalate	3.825	0.20	5	0	76.5	47-123	
Caprolactam	3.381	0.20	5	0	67.6	35-134	
Carbazole	3.591	0.20	5	0	71.8	42-128	
Chrysene	3.57	0.20	5	0	71.4	43-120	
Dibenz(a,h)anthracene	3.194	0.20	5	0	63.9	45-125	
Dibenzofuran	3.286	0.20	5	0	65.7	50-120	
Diethyl phthalate	3.515	0.20	5	0	70.3	41-120	
Dimethyl phthalate	3.519	0.20	5	0	70.4	40-122	
Di-n-butyl phthalate	3.836	0.20	5	0	76.7	45-123	
Di-n-octyl phthalate	4.218	0.20	5	0	84.4	45-129	
Fluoranthene	3.68	0.20	5	0	73.6	45-125	
Fluorene	3.167	0.20	5	0	63.3	49-120	
Hexachlorobenzene	3.371	0.20	5	0	67.4	48-120	
Hexachlorobutadiene	3.668	0.20	5	0	73.4	40-120	
Hexachlorocyclopentadiene	2.36	0.20	5	0	47.2	34-136	
Hexachloroethane	3.489	0.20	5	0	69.8	40-120	
Indeno(1,2,3-cd)pyrene	3.511	0.20	5	0	70.2	41-128	
Isophorone	3.48	0.20	5	0	69.6	40-121	
ıphthalene	3.548	0.20	5	0	71	45-120	
ıNitrobenzene	3.416	0.20	5	0	68.3	44-120	
N-Nitrosodi-n-propylamine	2.982	0.20	5	0	59.6	40-120	
N-Nitrosodiphenylamine	3.251	0.20	5	0	65	40-125	
Pentachlorophenol	1.739	0.20	5	0	34.8	19-121	
Phenanthrene	3.488	0.20	5	0	69.8	45-121	
Phenol	2.878	0.20	5	0	57.6	20-124	
Pyrene	3.73	0.20	5	0	74.6	40-130	
Surr: 2,4,6-Tribromophenol	3.352	0.20	*5*	*0*	*67*	*34-129*	*0*
Surr: 2-Fluorobiphenyl	3.457	0.20	*5*	*0*	*69.1*	*40-125*	*0*
Surr: 2-Fluorophenol	3.084	0.20	*5*	*0*	*61.7*	*20-120*	*0*
Surr: 4-Terphenyl-d14	4.151	0.20	*5*	*0*	*83*	*40-135*	*0*
Surr: Nitrobenzene-d5	3.715	0.20	*5*	*0*	*74.3*	*41-120*	*0*
Surr: Phenol-d6	3.499	0.20	*5*	*0*	*70*	*20-120*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

MS Sample ID: **1306942-01BMS** Units: **µg/L** Analysis Date: **6/27/2013 11:30 PM**

Client ID: **LW-9** Run ID: **SV-4_130627A** SeqNo: **3273953** Prep Date: **6/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1´-Biphenyl	2.867	0.20	5	0	57.3	45-125				
1-Methylnaphthalene	3.173	0.20	5	0	63.5	45-120				
2,4,5-Trichlorophenol	3.161	0.20	5	0	63.2	46-120				
2,4,6-Trichlorophenol	2.983	0.20	5	0	59.7	42-120				
2,4-Dichlorophenol	3.301	0.20	5	0	66	49-120				
2,4-Dimethylphenol	3.12	0.20	5	0	62.4	35-120				
2,4-Dinitrophenol	2.821	1.0	5	0	56.4	15-120				
2,4-Dinitrotoluene	3.35	0.20	5	0	67	50-122				
2,6-Dinitrotoluene	3.395	0.20	5	0	67.9	50-120				
2-Chloronaphthalene	2.99	0.20	5	0	59.8	50-120				
2-Chlorophenol	2.989	0.20	5	0	59.8	40-120				
2-Methylnaphthalene	3.016	0.20	5	0	60.3	50-120				
2-Methylphenol	3.101	0.20	5	0	62	45-120				
2-Nitroaniline	4.243	0.20	5	0	84.9	28-139				
2-Nitrophenol	2.99	0.20	5	0	59.8	40-120				
3&4-Methylphenol	3.194	0.20	5	0	63.9	35-120				
3,3´-Dichlorobenzidine	3.594	0.20	5	0	71.9	15-120				
3-Nitroaniline	3.236	0.20	5	0	64.7	30-120				
4,6-Dinitro-2-methylphenol	3.406	0.20	5	0	68.1	25-121				
4-Bromophenyl phenyl ether	3.261	0.20	5	0	65.2	45-120				
4-Chloro-3-methylphenol	3.258	0.20	5	0	65.2	47-120				
4-Chloroaniline	3.03	0.20	5	0	60.6	20-120				
4-Chlorophenyl phenyl ether	3.12	0.20	5	0	62.4	50-120				
4-Nitroaniline	3.732	0.20	5	0	74.6	30-133				
4-Nitrophenol	3.451	1.0	5	0	69	30-130				
Acenaphthene	2.837	0.20	5	0	56.7	45-120				
Acenaphthylene	3.052	0.20	5	0	61	47-120				
Acetophenone	2.702	0.20	5	0	54	40-120				
Anthracene	3.263	0.20	5	0	65.3	45-120				
Atrazine	3.728	0.20	5	0	74.6	40-130				
Benz(a)anthracene	3.762	0.20	5	0	75.2	40-120				
Benzaldehyde	0.9847	0.20	5	0	19.7	15-120				
Benzo(a)pyrene	3.696	0.20	5	0	73.9	45-120				
Benzo(b)fluoranthene	4.689	0.20	5	0	93.8	50-120				
Benzo(g,h,i)perylene	3.334	0.20	5	0	66.7	42-127				
Benzo(k)fluoranthene	3.44	0.20	5	0	68.8	45-127				
Bis(2-chloroethoxy)methane	3.087	0.20	5	0	61.7	45-120				
Bis(2-chloroethyl)ether	3.036	0.20	5	0	60.7	37-121				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **71019**	Instrument ID **SV-4**		Method:	**SW8270**			
Bis(2-chloroisopropyl)ether	3.416	0.20	5	0.1678	65	40-120	
Bis(2-ethylhexyl)phthalate	4.029	0.20	5	0.07276	79.1	40-139	
Butyl benzyl phthalate	3.953	0.20	5	0	79.1	47-123	
Caprolactam	3.42	0.20	5	0	68.4	35-134	
Carbazole	3.501	0.20	5	0	70	42-128	
Chrysene	3.54	0.20	5	0	70.8	43-120	
Dibenz(a,h)anthracene	3.567	0.20	5	0	71.3	45-125	
Dibenzofuran	3.036	0.20	5	0	60.7	50-120	
Diethyl phthalate	3.473	0.20	5	0	69.5	41-120	
Dimethyl phthalate	3.221	0.20	5	0	64.4	40-122	
Di-n-butyl phthalate	3.886	0.20	5	0	77.7	45-123	
Di-n-octyl phthalate	4.37	0.20	5	0	87.4	45-129	
Fluoranthene	3.529	0.20	5	0	70.6	45-125	
Fluorene	3.034	0.20	5	0	60.7	49-120	
Hexachlorobenzene	3.074	0.20	5	0	61.5	48-120	
Hexachlorobutadiene	3.147	0.20	5	0	62.9	40-120	
Hexachlorocyclopentadiene	1.884	0.20	5	0	37.7	34-136	
Hexachloroethane	3.351	0.20	5	0	67	40-120	
Indeno(1,2,3-cd)pyrene	4.168	0.20	5	0	83.4	41-128	
Isophorone	3.164	0.20	5	0	63.3	40-121	
ıphthalene	3.14	0.20	5	0	62.8	45-120	
ıitrobenzene	2.975	0.20	5	0	59.5	44-120	
N-Nitrosodi-n-propylamine	3.254	0.20	5	0	65.1	40-120	
N-Nitrosodiphenylamine	3.187	0.20	5	0	63.7	40-125	
Pentachlorophenol	3.205	0.20	5	0	64.1	19-121	
Phenanthrene	3.371	0.20	5	0	67.4	45-121	
Phenol	2.931	0.20	5	0	58.6	20-124	
Pyrene	3.608	0.20	5	0	72.2	40-130	
Surr: 2,4,6-Tribromophenol	3.579	0.20	*5*	*0*	*71.6*	*34-129*	*0*
Surr: 2-Fluorobiphenyl	3.037	0.20	*5*	*0*	*60.7*	*40-125*	*0*
Surr: 2-Fluorophenol	3.025	0.20	*5*	*0*	*60.5*	*20-120*	*0*
Surr: 4-Terphenyl-d14	3.608	0.20	*5*	*0*	*72.2*	*40-135*	*0*
Surr: Nitrobenzene-d5	3.122	0.20	*5*	*0*	*62.4*	*41-120*	*0*
Surr: Phenol-d6	3.163	0.20	*5*	*0*	*63.3*	*20-120*	*0*

ote: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

MSD Sample ID: **1306942-01BMSD** Units: **µg/L** Analysis Date: **6/27/2013 11:50 PM**

Client ID: **LW-9** Run ID: **SV-4_130627A** SeqNo: **3273954** Prep Date: **6/25/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1'-Biphenyl	3.217	0.20	5	0	64.3	45-125	2.867	11.5	20	
1-Methylnaphthalene	3.484	0.20	5	0	69.7	45-120	3.173	9.37	20	
2,4,5-Trichlorophenol	3.403	0.20	5	0	68.1	46-120	3.161	7.38	20	
2,4,6-Trichlorophenol	3.542	0.20	5	0	70.8	42-120	2.983	17.2	20	
2,4-Dichlorophenol	3.295	0.20	5	0	65.9	49-120	3.301	0.18	20	
2,4-Dimethylphenol	3.371	0.20	5	0	67.4	35-120	3.12	7.72	20	
2,4-Dinitrophenol	2.477	1.0	5	0	49.5	15-120	2.821	13	50	
2,4-Dinitrotoluene	3.636	0.20	5	0	72.7	50-122	3.35	8.18	20	
2,6-Dinitrotoluene	3.774	0.20	5	0	75.5	50-120	3.395	10.6	20	
2-Chloronaphthalene	3.278	0.20	5	0	65.6	50-120	2.99	9.2	20	
2-Chlorophenol	3.57	0.20	5	0	71.4	40-120	2.989	17.7	20	
2-Methylnaphthalene	3.189	0.20	5	0	63.8	50-120	3.016	5.56	20	
2-Methylphenol	3.548	0.20	5	0	71	45-120	3.101	13.4	20	
2-Nitroaniline	4.857	0.20	5	0	97.1	28-139	4.243	13.5	20	
2-Nitrophenol	3.256	0.20	5	0	65.1	40-120	2.99	8.52	20	
3&4-Methylphenol	3.703	0.20	5	0	74.1	35-120	3.194	14.7	20	
3,3'-Dichlorobenzidine	3.653	0.20	5	0	73.1	15-120	3.594	1.63	20	
3-Nitroaniline	3.416	0.20	5	0	68.3	30-120	3.236	5.43	20	
4,6-Dinitro-2-methylphenol	3.373	0.20	5	0	67.5	25-121	3.406	0.958	20	
4-Bromophenyl phenyl ether	3.213	0.20	5	0	64.3	45-120	3.261	1.47	20	
4-Chloro-3-methylphenol	3.56	0.20	5	0	71.2	47-120	3.258	8.84	20	
4-Chloroaniline	3.093	0.20	5	0	61.9	20-120	3.03	2.06	20	
4-Chlorophenyl phenyl ether	3.562	0.20	5	0	71.2	50-120	3.12	13.2	20	
4-Nitroaniline	3.491	0.20	5	0	69.8	30-133	3.732	6.67	20	
4-Nitrophenol	4.223	1.0	5	0	84.5	30-130	3.451	20.1	20	R
Acenaphthene	3.21	0.20	5	0	64.2	45-120	2.837	12.3	20	
Acenaphthylene	3.225	0.20	5	0	64.5	47-120	3.052	5.5	20	
Acetophenone	3.033	0.20	5	0	60.7	40-120	2.702	11.5	20	
Anthracene	3.208	0.20	5	0	64.2	45-120	3.263	1.7	20	
Atrazine	3.283	0.20	5	0	65.7	40-130	3.728	12.7	20	
Benz(a)anthracene	3.871	0.20	5	0	77.4	40-120	3.762	2.86	20	
Benzaldehyde	0.9046	0.20	5	0	18.1	15-120	0.9847	8.47	30	
Benzo(a)pyrene	3.732	0.20	5	0	74.6	45-120	3.696	0.973	20	
Benzo(b)fluoranthene	4.339	0.20	5	0	86.8	50-120	4.689	7.76	20	
Benzo(g,h,i)perylene	3.514	0.20	5	0	70.3	42-127	3.334	5.28	20	
Benzo(k)fluoranthene	3.777	0.20	5	0	75.5	45-127	3.44	9.32	20	
Bis(2-chloroethoxy)methane	3.143	0.20	5	0	62.9	45-120	3.087	1.81	20	
Bis(2-chloroethyl)ether	3.593	0.20	5	0	71.9	37-121	3.036	16.8	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **71019** Instrument ID **SV-4** Method: **SW8270**

Bis(2-chloroisopropyl)ether	3.439	0.20	5	0.1678	65.4	40-120	3.416	0.664	20
Bis(2-ethylhexyl)phthalate	4.257	0.20	5	0.07276	83.7	40-139	4.029	5.5	20
Butyl benzyl phthalate	4.06	0.20	5	0	81.2	47-123	3.953	2.66	20
Caprolactam	3.553	0.20	5	0	71.1	35-134	3.42	3.81	20
Carbazole	3.391	0.20	5	0	67.8	42-128	3.501	3.18	20
Chrysene	3.663	0.20	5	0	73.3	43-120	3.54	3.43	20
Dibenz(a,h)anthracene	3.783	0.20	5	0	75.7	45-125	3.567	5.86	20
Dibenzofuran	3.34	0.20	5	0	66.8	50-120	3.036	9.54	20
Diethyl phthalate	3.763	0.20	5	0	75.3	41-120	3.473	8.04	20
Dimethyl phthalate	3.654	0.20	5	0	73.1	40-122	3.221	12.6	20
Di-n-butyl phthalate	3.749	0.20	5	0	75	45-123	3.886	3.58	20
Di-n-octyl phthalate	4.327	0.20	5	0	86.5	45-129	4.37	0.989	20
Fluoranthene	3.409	0.20	5	0	68.2	45-125	3.529	3.46	20
Fluorene	3.405	0.20	5	0	68.1	49-120	3.034	11.5	20
Hexachlorobenzene	3.348	0.20	5	0	67	48-120	3.074	8.52	20
Hexachlorobutadiene	3.09	0.20	5	0	61.8	40-120	3.147	1.83	20
Hexachlorocyclopentadiene	1.886	0.20	5	0	37.7	34-136	1.884	0.067	20
Hexachloroethane	3.445	0.20	5	0	68.9	40-120	3.351	2.74	20
Indeno(1,2,3-cd)pyrene	3.506	0.20	5	0	70.1	41-128	4.168	17.2	20
Isophorone	3.444	0.20	5	0	68.9	40-121	3.164	8.48	20
ıphthalene	3.352	0.20	5	0	67	45-120	3.14	6.54	20
Nitrobenzene	3.301	0.20	5	0	66	44-120	2.975	10.4	20
N-Nitrosodi-n-propylamine	3.725	0.20	5	0	74.5	40-120	3.254	13.5	20
N-Nitrosodiphenylamine	3.222	0.20	5	0	64.4	40-125	3.187	1.1	20
Pentachlorophenol	2.965	0.20	5	0	59.3	19-121	3.205	7.78	20
Phenanthrene	3.23	0.20	5	0	64.6	45-121	3.371	4.26	20
Phenol	3.417	0.20	5	0	68.3	20-124	2.931	15.3	20
Pyrene	3.672	0.20	5	0	73.4	40-130	3.608	1.74	20
Surr: 2,4,6-Tribromophenol	4.041	0.20	*5*	*0*	*80.8*	*34-129*	*3.579*	*12.1*	*0*
Surr: 2-Fluorobiphenyl	3.366	0.20	*5*	*0*	*67.3*	*40-125*	*3.037*	*10.3*	*0*
Surr: 2-Fluorophenol	3.481	0.20	*5*	*0*	*69.6*	*20-120*	*3.025*	*14*	*0*
Surr: 4-Terphenyl-d14	3.894	0.20	*5*	*0*	*77.9*	*40-135*	*3.608*	*7.62*	*0*
Surr: Nitrobenzene-d5	3.281	0.20	*5*	*0*	*65.6*	*41-120*	*3.122*	*4.97*	*0*
Surr: Phenol-d6	3.768	0.20	*5*	*0*	*75.4*	*20-120*	*3.163*	*17.5*	*0*

The following samples were analyzed in this batch: 1306942-01B, 1306942-02B, 1306942-03B, 1306942-04B, 1306942-05B, 1306942-06B, 1306942-07B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149704** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-130627-R149704** Units: **µg/L** Analysis Date: **6/28/2013 03:00 AM**

Client ID: Run ID: **VOA1_130627C** SeqNo: **3271284** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
2-Hexanone	ND	10								
4-Isopropyltoluene	ND	5.0								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methyl tert-butyl ether	ND	5.0								
Methylene chloride	ND	10								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
o-Xylene	ND	5.0								
sec-Butylbenzene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149704**	Instrument ID **VOA1**		Method: **SW8260**				
Styrene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	15					
Surr: 1,2-Dichloroethane-d4	52.21	5.0	*50*	*0*	*104*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	51.4	5.0	*50*	*0*	*103*	*72-125*	*0*
Surr: Dibromofluoromethane	51.06	5.0	*50*	*0*	*102*	*71-125*	*0*
Surr: Toluene-d8	50.72	5.0	*50*	*0*	*101*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149704** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-130627-R149704** Units: **µg/L** Analysis Date: **6/28/2013 02:10 AM**

Client ID: Run ID: **VOA1_130627C** SeqNo: **3271283** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	51.81	5.0	50	0	104	80-120				
1,1,2,2-Tetrachloroethane	48.66	5.0	50	0	97.3	72-120				
1,1,2-Trichloroethane	50.47	5.0	50	0	101	80-120				
1,1-Dichloroethane	49.25	5.0	50	0	98.5	76-120				
1,1-Dichloroethene	49.46	5.0	50	0	98.9	73-124				
1,2,4-Trimethylbenzene	49.51	5.0	50	0	99	68-123				
1,2-Dibromoethane	50.68	5.0	50	0	101	80-120				
1,2-Dichloroethane	51.04	5.0	50	0	102	78-120				
1,2-Dichloropropane	48.3	5.0	50	0	96.6	80-120				
1,3,5-Trimethylbenzene	49.36	5.0	50	0	98.7	80-120				
2-Butanone	82.67	10	100	0	82.7	58-132				
2-Hexanone	82.67	10	100	0	82.7	61-130				
4-Isopropyltoluene	47.42	5.0	50	0	94.8	79-120				
4-Methyl-2-pentanone	91.39	10	100	0	91.4	65-127				
Acetone	90.23	10	100	0	90.2	59-137				
Benzene	48.81	5.0	50	0	97.6	73-121				
Bromodichloromethane	56.96	5.0	50	0	114	75-125				
Bromoform	52.11	5.0	50	0	104	70-130				
Bromomethane	54.69	5.0	50	0	109	60-145				
Carbon disulfide	93.91	10	100	0	93.9	68-141				
Carbon tetrachloride	48.88	5.0	50	0	97.8	75-125				
Chlorobenzene	48.45	5.0	50	0	96.9	80-120				
Chloroethane	52.3	5.0	50	0	105	70-130				
Chloroform	50.73	5.0	50	0	101	70-130				
Chloromethane	40.99	5.0	50	0	82	67-123				
cis-1,2-Dichloroethene	51.53	5.0	50	0	103	78-120				
cis-1,3-Dichloropropene	49.37	5.0	50	0	98.7	80-120				
Dibromochloromethane	56.12	5.0	50	0	112	80-120				
Ethylbenzene	49.9	5.0	50	0	99.8	80-120				
Isopropylbenzene	49.74	5.0	50	0	99.5	75-130				
m,p-Xylene	101.4	10	100	0	101	78-121				
Methyl tert-butyl ether	47.11	5.0	50	0	94.2	73-121				
Methylene chloride	48.26	10	50	0	96.5	65-133				
Naphthalene	50.58	5.0	50	0	101	65-135				
n-Butylbenzene	46.83	5.0	50	0	93.7	77-120				
n-Propylbenzene	48	5.0	50	0	96	78-120				
o-Xylene	49.01	5.0	50	0	98	80-120				
sec-Butylbenzene	47.77	5.0	50	0	95.5	78-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149704**	Instrument ID **VOA1**		Method: **SW8260**				
Styrene	49.92	5.0	50	0	99.8	80-120	
Tetrachloroethene	50.52	5.0	50	0	101	79-120	
Toluene	45.11	5.0	50	0	90.2	80-120	
trans-1,2-Dichloroethene	49.2	5.0	50	0	98.4	78-120	
trans-1,3-Dichloropropene	56.29	5.0	50	0	113	80-120	
Trichloroethene	54.52	5.0	50	0	109	80-120	
Vinyl chloride	50.49	2.0	50	0	101	70-127	
Xylenes, Total	150.4	15	150	0	100	80-120	
Surr: 1,2-Dichloroethane-d4	50.85	5.0	*50*	*0*	*102*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	52.89	5.0	*50*	*0*	*106*	*72-125*	*0*
Surr: Dibromofluoromethane	50.95	5.0	*50*	*0*	*102*	*71-125*	*0*
Surr: Toluene-d8	45.66	5.0	*50*	*0*	*91.3*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149704** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1306949-03AMS** Units: **µg/L** Analysis Date: **6/28/2013 03:49 AM**

Client ID: Run ID: **VOA1_130627C** SeqNo: **3271286** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	225	25	250	0	90	80-120				
1,1,2,2-Tetrachloroethane	243.7	25	250	0	97.5	72-120				
1,1,2-Trichloroethane	242.2	25	250	0	96.9	80-120				
1,1-Dichloroethane	218.2	25	250	0	87.3	76-120				
1,1-Dichloroethene	192.3	25	250	0	76.9	73-124				
1,2,4-Trimethylbenzene	241.2	25	250	0	96.5	68-123				
1,2-Dibromoethane	254.4	25	250	0	102	80-120				
1,2-Dichloroethane	258.1	25	250	0	103	78-120				
1,2-Dichloropropane	221	25	250	0	88.4	80-120				
1,3,5-Trimethylbenzene	220.4	25	250	0	88.1	80-120				
2-Butanone	394.2	50	500	0	78.8	58-132				
2-Hexanone	387.3	50	500	0	77.5	61-130				
4-Isopropyltoluene	219.7	25	250	0	87.9	79-120				
4-Methyl-2-pentanone	443.8	50	500	0	88.8	65-127				
Acetone	394	50	500	0	78.8	59-137				
Benzene	232	25	250	0	92.8	73-121				
Bromodichloromethane	280	25	250	0	112	75-125				
Bromoform	255.6	25	250	0	102	70-130				
Bromomethane	230.1	25	250	0	92	60-145				
Carbon disulfide	420.8	50	500	0	84.2	68-141				
Carbon tetrachloride	223.8	25	250	0	89.5	75-125				
Chlorobenzene	227	25	250	0	90.8	80-120				
Chloroethane	235.5	25	250	0	94.2	70-130				
Chloroform	240.7	25	250	0	96.3	70-130				
Chloromethane	164.1	25	250	0	65.6	67-123				S
cis-1,2-Dichloroethene	500.9	25	250	290.6	84.1	78-120				
cis-1,3-Dichloropropene	243.2	25	250	0	97.3	80-120				
Dibromochloromethane	286.6	25	250	0	115	80-120				
Ethylbenzene	235.1	25	250	0	94	80-120				
Isopropylbenzene	200.9	25	250	0	80.4	75-130				
m,p-Xylene	455.8	50	500	0	91.2	78-121				
Methyl tert-butyl ether	211	25	250	0	84.4	73-121				
Methylene chloride	207.7	50	250	0	83.1	65-133				
Naphthalene	253	25	250	0	101	65-135				
n-Butylbenzene	199.9	25	250	0	80	77-120				
n-Propylbenzene	207.1	25	250	0	82.8	78-120				
o-Xylene	234.4	25	250	0	93.8	80-120				
sec-Butylbenzene	216.9	25	250	0	86.7	78-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149704**	Instrument ID **VOA1**		Method: **SW8260**				
Styrene	249.4	25	250	0	99.8	80-120	
Tetrachloroethene	247.2	25	250	37.82	83.8	79-120	
Toluene	215.1	25	250	0	86.1	80-120	
trans-1,2-Dichloroethene	209.6	25	250	9.911	79.9	78-120	
trans-1,3-Dichloropropene	267.7	25	250	0	107	80-120	
Trichloroethene	258.5	25	250	14.73	97.5	80-120	
Vinyl chloride	220.7	10	250	0	88.3	70-127	
Xylenes, Total	690.2	75	750	0	92	80-120	
Surr: 1,2-Dichloroethane-d4	263.9	25	*250*	*0*	*106*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	249	25	*250*	*0*	*99.6*	*72-125*	*0*
Surr: Dibromofluoromethane	249.4	25	*250*	*0*	*99.8*	*71-125*	*0*
Surr: Toluene-d8	236.3	25	*250*	*0*	*94.5*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149704** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1306949-03AMSD** Units: **µg/L** Analysis Date: **6/28/2013 04:14 AM**

Client ID: Run ID: **VOA1_130627C** SeqNo: **3271287** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	219.5	25	250	0	87.8	80-120	225	2.49	20	
1,1,2,2-Tetrachloroethane	279.5	25	250	0	112	72-120	243.7	13.7	20	
1,1,2-Trichloroethane	251.9	25	250	0	101	80-120	242.2	3.92	20	
1,1-Dichloroethane	227.3	25	250	0	90.9	76-120	218.2	4.06	20	
1,1-Dichloroethene	211.2	25	250	0	84.5	73-124	192.3	9.34	20	
1,2,4-Trimethylbenzene	260.7	25	250	0	104	68-123	241.2	7.79	20	
1,2-Dibromoethane	249.7	25	250	0	99.9	80-120	254.4	1.83	20	
1,2-Dichloroethane	248	25	250	0	99.2	78-120	258.1	4	20	
1,2-Dichloropropane	237.4	25	250	0	95	80-120	221	7.17	20	
1,3,5-Trimethylbenzene	255.3	25	250	0	102	80-120	220.4	14.7	20	
2-Butanone	414.9	50	500	0	83	58-132	394.2	5.12	20	
2-Hexanone	420.1	50	500	0	84	61-130	387.3	8.13	20	
4-Isopropyltoluene	225.2	25	250	0	90.1	79-120	219.7	2.45	20	
4-Methyl-2-pentanone	481.3	50	500	0	96.3	65-127	443.8	8.09	20	
Acetone	410.7	50	500	0	82.1	59-137	394	4.14	20	
Benzene	229.3	25	250	0	91.7	73-121	232	1.18	20	
Bromodichloromethane	265.2	25	250	0	106	75-125	280	5.4	20	
Bromoform	267.3	25	250	0	107	70-130	255.6	4.45	20	
Bromomethane	251.9	25	250	0	101	60-145	230.1	9.04	20	
Carbon disulfide	431.5	50	500	0	86.3	68-141	420.8	2.51	20	
Carbon tetrachloride	220.1	25	250	0	88.1	75-125	223.8	1.67	20	
Chlorobenzene	227.7	25	250	0	91.1	80-120	227	0.286	20	
Chloroethane	232.9	25	250	0	93.1	76-121	235.5	1.13	20	
Chloroform	234.1	25	250	0	93.6	70-130	240.7	2.8	20	
Chloromethane	173	25	250	0	69.2	67-123	164.1	5.3	20	
cis-1,2-Dichloroethene	520.2	25	250	290.6	91.8	78-120	500.9	3.78	20	
cis-1,3-Dichloropropene	236	25	250	0	94.4	80-120	243.2	2.98	20	
Dibromochloromethane	282.5	25	250	0	113	80-120	286.6	1.45	20	
Ethylbenzene	233.6	25	250	0	93.4	80-120	235.1	0.645	20	
Isopropylbenzene	201.5	25	250	0	80.6	75-130	200.9	0.278	20	
m,p-Xylene	457.7	50	500	0	91.5	78-121	455.8	0.413	20	
Methyl tert-butyl ether	234	25	250	0	93.6	73-121	211	10.3	20	
Methylene chloride	218.1	50	250	0	87.2	65-133	207.7	4.9	20	
Naphthalene	287.9	25	250	0	115	65-135	253	12.9	20	
n-Butylbenzene	220.2	25	250	0	88.1	77-120	199.9	9.62	20	
n-Propylbenzene	226.1	25	250	0	90.4	78-120	207.1	8.75	20	
o-Xylene	239	25	250	0	95.6	80-120	234.4	1.94	20	
sec-Butylbenzene	241.6	25	250	0	96.6	78-120	216.9	10.8	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company

Work Order: 1306942

Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149704**	Instrument ID **VOA1**		Method: **SW8260**						
Styrene	256	25	250	0	102	80-120	249.4	2.59	20
Tetrachloroethene	244.3	25	250	37.82	82.6	79-120	247.2	1.22	20
Toluene	214	25	250	0	85.6	80-120	215.1	0.524	20
trans-1,2-Dichloroethene	224.8	25	250	9.911	85.9	78-120	209.6	7	20
trans-1,3-Dichloropropene	249.8	25	250	0	99.9	80-120	267.7	6.93	20
Trichloroethene	260.3	25	250	14.73	98.2	80-120	258.5	0.699	20
Vinyl chloride	211.4	10	250	0	84.6	70-127	220.7	4.31	20
Xylenes, Total	696.7	75	750	0	92.9	78-121	690.2	0.934	20
Surr: 1,2-Dichloroethane-d4	252.7	25	*250*	*0*	*101*	*70-125*	*263.9*	*4.31*	*20*
Surr: 4-Bromofluorobenzene	241.3	25	*250*	*0*	*96.5*	*72-125*	*249*	*3.17*	*20*
Surr: Dibromofluoromethane	247.6	25	*250*	*0*	*99.1*	*71-125*	*249.4*	*0.706*	*20*
Surr: Toluene-d8	225.6	25	*250*	*0*	*90.2*	*75-125*	*236.3*	*4.62*	*20*

The following samples were analyzed in this batch: 1306942-03A 1306942-04A 1306942-05A 1306942-06A 1306942-07A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149796** Instrument ID **VOA6** Method: **SW8260**

MBLK Sample ID: **VBLKW-130628-R149796** Units: **µg/L** Analysis Date: **6/29/2013 12:27 AM**

Client ID: Run ID: **VOA6_130628B** SeqNo: **3273612** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
2-Hexanone	ND	10								
4-Isopropyltoluene	ND	5.0								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methyl tert-butyl ether	ND	5.0								
Methylene chloride	ND	10								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
o-Xylene	ND	5.0								
sec-Butylbenzene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149796**	Instrument ID **VOA6**		Method: **SW8260**				
Styrene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	15					
Surr: 1,2-Dichloroethane-d4	51.81	5.0	*50*	*0*	*104*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	50.27	5.0	*50*	*0*	*101*	*72-125*	*0*
Surr: Dibromofluoromethane	49.44	5.0	*50*	*0*	*98.9*	*71-125*	*0*
Surr: Toluene-d8	49.53	5.0	*50*	*0*	*99.1*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149796** Instrument ID **VOA6** Method: **SW8260**

LCS Sample ID: **VLCSW-130628-R149796** Units: **µg/L** Analysis Date: **6/28/2013 11:35 PM**

Client ID: Run ID: **VOA6_130628B** SeqNo: **3273611** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.56	5.0	50	0	93.1	80-120				
1,1,2,2-Tetrachloroethane	46.38	5.0	50	0	92.8	72-120				
1,1,2-Trichloroethane	45.81	5.0	50	0	91.6	80-120				
1,1-Dichloroethane	46.13	5.0	50	0	92.3	76-120				
1,1-Dichloroethene	48.53	5.0	50	0	97.1	73-124				
1,2,4-Trimethylbenzene	44.91	5.0	50	0	89.8	68-123				
1,2-Dibromoethane	47.66	5.0	50	0	95.3	80-120				
1,2-Dichloroethane	44.01	5.0	50	0	88	78-120				
1,2-Dichloropropane	46.55	5.0	50	0	93.1	80-120				
1,3,5-Trimethylbenzene	45.82	5.0	50	0	91.6	80-120				
2-Butanone	93.78	10	100	0	93.8	58-132				
2-Hexanone	96.06	10	100	0	96.1	61-130				
4-Isopropyltoluene	45.99	5.0	50	0	92	79-120				
4-Methyl-2-pentanone	92.52	10	100	0	92.5	65-127				
Acetone	104.4	10	100	0	104	59-137				
Benzene	46.2	5.0	50	0	92.4	73-121				
Bromodichloromethane	47.44	5.0	50	0	94.9	75-125				
Bromoform	47.33	5.0	50	0	94.7	70-130				
Bromomethane	47.6	5.0	50	0	95.2	60-145				
Carbon disulfide	92.8	10	100	0	92.8	68-141				
Carbon tetrachloride	44.15	5.0	50	0	88.3	75-125				
Chlorobenzene	45.6	5.0	50	0	91.2	80-120				
Chloroethane	46.12	5.0	50	0	92.2	70-130				
Chloroform	45.9	5.0	50	0	91.8	70-130				
Chloromethane	47.26	5.0	50	0	94.5	67-123				
cis-1,2-Dichloroethene	47.18	5.0	50	0	94.4	78-120				
cis-1,3-Dichloropropene	47.42	5.0	50	0	94.8	80-120				
Dibromochloromethane	48.34	5.0	50	0	96.7	80-120				
Ethylbenzene	45.69	5.0	50	0	91.4	80-120				
Isopropylbenzene	45.38	5.0	50	0	90.8	75-130				
m,p-Xylene	90.46	10	100	0	90.5	78-121				
Methyl tert-butyl ether	47.26	5.0	50	0	94.5	73-121				
Methylene chloride	50.15	10	50	0	100	65-133				
Naphthalene	53.54	5.0	50	0	107	65-135				
n-Butylbenzene	45.9	5.0	50	0	91.8	77-120				
n-Propylbenzene	45.44	5.0	50	0	90.9	78-120				
o-Xylene	45.96	5.0	50	0	91.9	80-120				
sec-Butylbenzene	45.92	5.0	50	0	91.8	78-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149796**	Instrument ID **VOA6**		Method: **SW8260**				
Styrene	47.71	5.0	50	0	95.4	80-120	
Tetrachloroethene	45.21	5.0	50	0	90.4	79-120	
Toluene	44.99	5.0	50	0	90	80-120	
trans-1,2-Dichloroethene	46.77	5.0	50	0	93.5	78-120	
trans-1,3-Dichloropropene	47.94	5.0	50	0	95.9	80-120	
Trichloroethene	47.08	5.0	50	0	94.2	80-120	
Vinyl chloride	45.38	2.0	50	0	90.8	70-127	
Xylenes, Total	136.4	15	150	0	91	80-120	
Surr: 1,2-Dichloroethane-d4	50.21	5.0	*50*	*0*	*100*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	49.7	5.0	*50*	*0*	*99.4*	*72-125*	*0*
Surr: Dibromofluoromethane	49.77	5.0	*50*	*0*	*99.5*	*71-125*	*0*
Surr: Toluene-d8	49.77	5.0	*50*	*0*	*99.5*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149796** Instrument ID **VOA6** Method: **SW8260**

MS Sample ID: **1306942-01AMS** Units: **µg/L** Analysis Date: **6/29/2013 01:45 AM**

Client ID: **LW-9** Run ID: **VOA6_130628B** SeqNo: **3273615** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	41.93	5.0	50	0	83.9	80-120				
1,1,2,2-Tetrachloroethane	49.93	5.0	50	0	99.9	72-120				
1,1,2-Trichloroethane	47.97	5.0	50	0	95.9	80-120				
1,1-Dichloroethane	42.66	5.0	50	0	85.3	76-120				
1,1-Dichloroethene	40.12	5.0	50	0	80.2	73-124				
1,2,4-Trimethylbenzene	43.14	5.0	50	0	86.3	68-123				
1,2-Dibromoethane	48.89	5.0	50	0	97.8	80-120				
1,2-Dichloroethane	44.66	5.0	50	0	89.3	78-120				
1,2-Dichloropropane	45.26	5.0	50	0	90.5	80-120				
1,3,5-Trimethylbenzene	43.52	5.0	50	0	87	80-120				
2-Butanone	89.87	10	100	0	89.9	58-132				
2-Hexanone	90.33	10	100	0	90.3	61-130				
4-Isopropyltoluene	43.82	5.0	50	0	87.6	79-120				
4-Methyl-2-pentanone	94.82	10	100	0	94.8	65-127				
Acetone	86.65	10	100	0	86.6	59-137				
Benzene	42.9	5.0	50	0	85.8	73-121				
Bromodichloromethane	46.16	5.0	50	0	92.3	75-125				
Bromoform	49.1	5.0	50	0	98.2	70-130				
Bromomethane	40.45	5.0	50	0	80.9	60-145				
Carbon disulfide	81.02	10	100	0	81	68-141				
Carbon tetrachloride	39.27	5.0	50	0	78.5	75-125				
Chlorobenzene	43.45	5.0	50	0	86.9	80-120				
Chloroethane	44.35	5.0	50	0	88.7	70-130				
Chloroform	44.22	5.0	50	0	88.4	70-130				
Chloromethane	38.4	5.0	50	0	76.8	67-123				
cis-1,2-Dichloroethene	44.89	5.0	50	0	89.8	78-120				
cis-1,3-Dichloropropene	43.97	5.0	50	0	87.9	80-120				
Dibromochloromethane	48.94	5.0	50	0	97.9	80-120				
Ethylbenzene	43.2	5.0	50	0	86.4	80-120				
Isopropylbenzene	37.21	5.0	50	0	74.4	75-130				S
m,p-Xylene	84.12	10	100	0	84.1	78-121				
Methyl tert-butyl ether	44.4	5.0	50	0	88.8	73-121				
Methylene chloride	48.96	10	50	0	97.9	65-133				
Naphthalene	52.08	5.0	50	0	104	65-135				
n-Butylbenzene	41.92	5.0	50	0	83.8	77-120				
n-Propylbenzene	40.93	5.0	50	0	81.9	78-120				
o-Xylene	43.13	5.0	50	0	86.3	80-120				
sec-Butylbenzene	40.92	5.0	50	0	81.8	78-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R149796**	Instrument ID **VOA6**		Method: **SW8260**				
Styrene	46.56	5.0	50	0	93.1	80-120	
Tetrachloroethene	40.96	5.0	50	0	81.9	79-120	
Toluene	42.44	5.0	50	0	84.9	80-120	
trans-1,2-Dichloroethene	41.45	5.0	50	0	82.9	78-120	
trans-1,3-Dichloropropene	45.67	5.0	50	0	91.3	80-120	
Trichloroethene	42.32	5.0	50	0	84.6	80-120	
Vinyl chloride	38.32	2.0	50	0	76.6	70-127	
Xylenes, Total	127.2	15	150	0	84.8	80-120	
Surr: 1,2-Dichloroethane-d4	50.67	5.0	*50*	*0*	*101*	*70-125*	*0*
Surr: 4-Bromofluorobenzene	49.93	5.0	*50*	*0*	*99.9*	*72-125*	*0*
Surr: Dibromofluoromethane	50.42	5.0	*50*	*0*	*101*	*71-125*	*0*
Surr: Toluene-d8	49.91	5.0	*50*	*0*	*99.8*	*75-125*	*0*

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149796** Instrument ID **VOA6** Method: **SW8260**

MSD Sample ID: **1306942-01AMSD** Units: **µg/L** Analysis Date: **6/29/2013 02:11 AM**

Client ID: **LW-9** Run ID: **VOA6_130628B** SeqNo: **3273616** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	39.95	5.0	50	0	79.9	80-120	41.93	4.85	20	S
1,1,2,2-Tetrachloroethane	49.74	5.0	50	0	99.5	72-120	49.93	0.373	20	
1,1,2-Trichloroethane	47.56	5.0	50	0	95.1	80-120	47.97	0.859	20	
1,1-Dichloroethane	41.82	5.0	50	0	83.6	76-120	42.66	2	20	
1,1-Dichloroethene	38.89	5.0	50	0	77.8	73-124	40.12	3.12	20	
1,2,4-Trimethylbenzene	41.83	5.0	50	0	83.7	68-123	43.14	3.1	20	
1,2-Dibromoethane	47.54	5.0	50	0	95.1	80-120	48.89	2.79	20	
1,2-Dichloroethane	44.94	5.0	50	0	89.9	78-120	44.66	0.618	20	
1,2-Dichloropropane	44.21	5.0	50	0	88.4	80-120	45.26	2.34	20	
1,3,5-Trimethylbenzene	41.65	5.0	50	0	83.3	80-120	43.52	4.38	20	
2-Butanone	89.06	10	100	0	89.1	58-132	89.87	0.899	20	
2-Hexanone	91.71	10	100	0	91.7	61-130	90.33	1.51	20	
4-Isopropyltoluene	41.89	5.0	50	0	83.8	79-120	43.82	4.52	20	
4-Methyl-2-pentanone	94.65	10	100	0	94.7	65-127	94.82	0.173	20	
Acetone	87.36	10	100	0	87.4	59-137	86.65	0.815	20	
Benzene	41.82	5.0	50	0	83.6	73-121	42.9	2.56	20	
Bromodichloromethane	45.25	5.0	50	0	90.5	75-125	46.16	1.98	20	
Bromoform	48.85	5.0	50	0	97.7	70-130	49.1	0.495	20	
Bromomethane	40.73	5.0	50	0	81.5	60-145	40.45	0.704	20	
Carbon disulfide	79.32	10	100	0	79.3	68-141	81.02	2.12	20	
Carbon tetrachloride	37.62	5.0	50	0	75.2	75-125	39.27	4.28	20	
Chlorobenzene	42.82	5.0	50	0	85.6	80-120	43.45	1.45	20	
Chloroethane	40.89	5.0	50	0	81.8	76-121	44.35	8.1	20	
Chloroform	43.25	5.0	50	0	86.5	70-130	44.22	2.21	20	
Chloromethane	38.04	5.0	50	0	76.1	67-123	38.4	0.939	20	
cis-1,2-Dichloroethene	43.49	5.0	50	0	87	78-120	44.89	3.16	20	
cis-1,3-Dichloropropene	42.73	5.0	50	0	85.5	80-120	43.97	2.87	20	
Dibromochloromethane	48.16	5.0	50	0	96.3	80-120	48.94	1.6	20	
Ethylbenzene	42.22	5.0	50	0	84.4	80-120	43.2	2.29	20	
Isopropylbenzene	35.75	5.0	50	0	71.5	75-130	37.21	4.02	20	S
m,p-Xylene	82.05	10	100	0	82	78-121	84.12	2.49	20	
Methyl tert-butyl ether	44.36	5.0	50	0	88.7	73-121	44.4	0.104	20	
Methylene chloride	47.98	10	50	0	96	65-133	48.96	2.03	20	
Naphthalene	53.12	5.0	50	0	106	65-135	52.08	1.99	20	
n-Butylbenzene	38.94	5.0	50	0	77.9	77-120	41.92	7.39	20	
n-Propylbenzene	39.56	5.0	50	0	79.1	78-120	40.93	3.41	20	
o-Xylene	42.18	5.0	50	0	84.4	80-120	43.13	2.24	20	
sec-Butylbenzene	39.31	5.0	50	0	78.6	78-120	40.92	4.02	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149796**	Instrument ID **VOA6**		Method: **SW8260**							
Styrene	45.92	5.0	50	0	91.8	80-120	46.56	1.38	20	
Tetrachloroethene	39.03	5.0	50	0	78.1	79-120	40.96	4.82	20	S
Toluene	42.13	5.0	50	0	84.3	80-120	42.44	0.727	20	
trans-1,2-Dichloroethene	39.82	5.0	50	0	79.6	78-120	41.45	4.02	20	
trans-1,3-Dichloropropene	44.53	5.0	50	0	89.1	80-120	45.67	2.54	20	
Trichloroethene	41.24	5.0	50	0	82.5	80-120	42.32	2.57	20	
Vinyl chloride	38.04	2.0	50	0	76.1	70-127	38.32	0.728	20	
Xylenes, Total	124.2	15	150	0	82.8	78-121	127.2	2.41	20	
Surr: 1,2-Dichloroethane-d4	50.12	5.0	*50*	*0*	*100*	*70-125*	*50.67*	*1.11*	*20*	
Surr: 4-Bromofluorobenzene	50.06	5.0	*50*	*0*	*100*	*72-125*	*49.93*	*0.244*	*20*	
Surr: Dibromofluoromethane	49.18	5.0	*50*	*0*	*98.4*	*71-125*	*50.42*	*2.5*	*20*	
Surr: Toluene-d8	50.81	5.0	*50*	*0*	*102*	*75-125*	*49.91*	*1.8*	*20*	

The following samples were analyzed in this batch: 1306942-01A 1306942-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149692** Instrument ID **ManTech01** Method: **M2510 B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130627-R149692** Units: **µmhos/cm** Analysis Date: **6/27/2013 08:01 PM**
Client ID: Run ID: **MANTECH01_130627A** SeqNo: **3270827** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **LCS-COND-R149692** Units: **µmhos/cm** Analysis Date: **6/27/2013 08:03 PM**
Client ID: Run ID: **MANTECH01_130627A** SeqNo: **3270828** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1407	1.0	1413	0	99.6	80-120				

DUP Sample ID: **1306942-01EDUP** Units: **µmhos/cm** Analysis Date: **6/27/2013 08:05 PM**
Client ID: **LW-9** Run ID: **MANTECH01_130627A** SeqNo: **3270830** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	703.2	1.0					702.1	0.144	20	

The following samples were analyzed in this batch: 1306942-01E 1306942-02E 1306942-03E 1306942-04E 1306942-05E 1306942-06E 1306942-07E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149728** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-062713-R149728** Units: **mg/L** Analysis Date: **6/27/2013 09:00 AM**
Client ID: Run ID: **BALANCE1_130627C** SeqNo: **3271786** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **WLCS-062713-R149728** Units: **mg/L** Analysis Date: **6/27/2013 09:00 AM**
Client ID: Run ID: **BALANCE1_130627C** SeqNo: **3271787** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1022	10	1000	0	102	85-115				

DUP Sample ID: **1306941-01ADUP** Units: **mg/L** Analysis Date: **6/27/2013 09:00 AM**
Client ID: Run ID: **BALANCE1_130627C** SeqNo: **3271777** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1322	10					1324	0.151	20	

DUP Sample ID: **1306942-01EDUP** Units: **mg/L** Analysis Date: **6/27/2013 09:00 AM**
Client ID: **LW-9** Run ID: **BALANCE1_130627C** SeqNo: **3271779** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	470	10					466	0.855	20	

The following samples were analyzed in this batch:

1306942-01E	1306942-02E	1306942-03E
1306942-04E	1306942-05E	1306942-06E
1306942-07E		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
Project: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149828** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R149828** Units: **mg/L** Analysis Date: **7/1/2013 10:27 AM**
Client ID: Run ID: **ICS2100_130701B** SeqNo: **3274199** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	ND	0.20								
Surr: Selenate (surr)	5.579	0.10	*5*	*0*	*112*	*85-115*	*0*			

LCS Sample ID: **WLCSW1-R149828** Units: **mg/L** Analysis Date: **7/1/2013 10:12 AM**
Client ID: Run ID: **ICS2100_130701B** SeqNo: **3274198** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.236	0.20	8	0	103	90-110				
Surr: Selenate (surr)	5.115	0.10	*5*	*0*	*102*	*85-115*	*0*			

MS Sample ID: **1306942-01DMS** Units: **mg/L** Analysis Date: **7/1/2013 11:57 AM**
Client ID: **LW-9** Run ID: **ICS2100_130701B** SeqNo: **3274202** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	49.68	2.0	40	3.954	114	80-120				
Surr: Selenate (surr)	53.48	1.0	*50*	*0*	*107*	*85-115*	*0*			

MSD Sample ID: **1306942-01DMSD** Units: **mg/L** Analysis Date: **7/1/2013 12:11 PM**
Client ID: **LW-9** Run ID: **ICS2100_130701B** SeqNo: **3274203** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	46.74	2.0	40	3.954	107	80-120	49.68	6.1	20	
Surr: Selenate (surr)	52.82	1.0	*50*	*0*	*106*	*85-115*	*53.48*	*1.24*	*20*	

The following samples were analyzed in this batch: 1306942-01D, 1306942-02D, 1306942-03D, 1306942-04D, 1306942-05D, 1306942-06D, 1306942-07D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1306942
oject: GW Source Investigation and Background Evaluati

QC BATCH REPORT

Batch ID: **R149850** Instrument ID **ICS3K2** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R149850** Units: **mg/L** Analysis Date: **7/1/2013 01:00 AM**
Client ID: Run ID: **ICS3K2_130701A** SeqNo: **3274710** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.50								
Fluoride	ND	0.10								
Sulfate	ND	0.50								
Surr: Selenate (surr)	5.37	0.10	*5*	*0*	*107*	*85-115*	*0*			

LCS Sample ID: **WLCSW1-R149850** Units: **mg/L** Analysis Date: **7/1/2013 01:22 AM**
Client ID: Run ID: **ICS3K2_130701A** SeqNo: **3274711** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.33	0.50	20	0	107	90-110				
Fluoride	4.24	0.10	4	0	106	90-110				
Sulfate	21.65	0.50	20	0	108	90-110				
Surr: Selenate (surr)	5.081	0.10	*5*	*0*	*102*	*85-115*	*0*			

MS Sample ID: **1306942-07EMS** Units: **mg/L** Analysis Date: **7/1/2013 10:06 AM**
'ient ID: **MW-30** Run ID: **ICS3K2_130701A** SeqNo: **3274735** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	60.71	0.50	10	51.25	94.6	80-120				O
Fluoride	3.954	0.10	2	1.868	104	80-120				
Sulfate	104.5	0.50	10	96.66	77.9	80-120				SEO
Surr: Selenate (surr)	5.062	0.10	*5*	*0*	*101*	*85-115*	*0*			

MSD Sample ID: **1306942-07EMSD** Units: **mg/L** Analysis Date: **7/1/2013 10:28 AM**
Client ID: **MW-30** Run ID: **ICS3K2_130701A** SeqNo: **3274736** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	61.64	0.50	10	51.25	104	80-120	60.71	1.53	20	O
Fluoride	4.011	0.10	2	1.868	107	80-120	3.954	1.43	20	
Sulfate	105.8	0.50	10	96.66	91.2	80-120	104.5	1.27	20	EO
Surr: Selenate (surr)	5.128	0.10	*5*	*0*	*103*	*85-115*	*5.062*	*1.3*	*20*	

The following samples were analyzed in this batch:

1306942-01E	1306942-02E	1306942-03E
1306942-04E	1306942-05E	1306942-06E
1306942-07E		

.ote: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: GW Source Investigation and Background Evaluation
WorkOrder: 1306942

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
µg/L	Micrograms per Liter
µmhos/cm	
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **22-Jun-13 09:45**

Work Order: **1306942** Received by: **RDH**

Checklist completed by Johnnie B. Allen (eSignature) 24-Jun-13 (Date) Reviewed by: Sonia West (eSignature) 25-Jun-13 (Date)

Matrices: water
Carrier name: FedEx Priority Overnight

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3 C/2.3 C;1.9 C/1.9 C;2.7 C/2.7 C;3.2 C/3.2 C2.8 C/2.8 C u/c	IR 1	
Cooler(s)/Kit(s):	4696/4096/3172/3036		
Date/Time sample(s) sent to storage:	69/24/13 15:33		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

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Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 82296

1306942

NAVAJO REFINING: Navajo Refining Company

Project: Navajo Lea Refinery Semi-Annual 196364.0001.0000

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	
Work Order		Project Number	196364.0001.0000
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company
Send Report To	Robert Combs	Invoice Attn	Robert Combs
Address	501 East Main	Address	501 East Main
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211
Phone	(505) 748-3311	Phone	(575) 746-6733
Fax	(505) 746-5421	Fax	(575) 746-5421
e-Mail Address		e-Mail Address	

A	VOC (8260) SA Compounds
B	LL SVOC (8270) SA Compounds
C	Dissolved Metals (6020/7000) Al,As,Ba,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,
D	Mo,Ni,Se,Ag,U,Zn,Hg
E	Anions (300) Cl, F, SO4
F	TDS
G	Specific Conductance
H	Nitrate/Nitrite (300)
I	LW MS, MSD on LW-9
J	Dissolved metals not filtered, please filter in lab

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	LW-9	6-21-13	1330	Water	8,1,3	8	X	X	X		X	X	X	X	X		
2	LW-9D		1330														
3	LW-16		1420														
4	LW-18		1445														
5	LW-14		1515														
6	EB-06-21-13-01		1705														
7	MW-30		1720													X	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Robert Wood

Shipment Method:

Required Turnaround Time: (Check Box) ☑ Std 10 W/K Days ☐ 5 W/K Days ☐ 2 W/K Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 6/21/13	Time: 1805	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory):	6/22/13 0845
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: 10 Day TAT. CC report to Bryan Gilbert & Julie Spear. bgilbert@geoscientific.com, jspear@trcsolutions.com

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☑ Level I Std QC ☐ TRRP Checklist
☐ Level II Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ORIGIN ID:HOBA (512) 329-6080
T R C ENVIRONMENTAL CORP
505 E HUNTLAND DR STE 250
AUSTIN, TX 787523740
UNITED STATES US

SHIP DATE: 21JUN13
ACTWGT: 66.9 LB
CAD: /POS1400
DIMS: 24x14x15 IN
BILL RECIPIENT

ALS LABORATORY SERVICES
10450 STANCLIFF RD
STE 210
HOUSTON TX 77099
(281) 530-5656 REF:
INV:
PO: DEPT:

FedEx Express

5 of 5
MPS# 7957 9201 4462
0681
Mstr# 8020 3307 4443
0215

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US IAH

4696

ORIGIN ID:HOBA (512) 329-6080
T R C ENVIRONMENTAL CORP
505 E HUNTLAND DR STE 250
AUSTIN, TX 787523740
UNITED STATES US

SHIP DATE: 21JUN13
ACTWGT: 66.9 LB
CAD: /POS1400
DIMS: 24x14x15 IN
BILL RECIPIENT

TO
ALS LABORATORY SERVICES
10450 STANCLIFF RD
STE 210
HOUSTON TX 77099
(281) 530-5656 REF:
INV:
PO: DEPT:

FedEx Express

4 of 5
MPS# 7957 9201 4451
0681
Mstr# 8020 3307 4443
0215

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US IAH

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onmental
Suite 210
99
Date: 6/21
Name:
Company:

CUSTODY SEAL
Time:
Seal Broken By:
Date: 6/22/13

Sa

ALS Environmental
Huntland Dr., Suite 210
Fax +1 281 530 5887
Date:
Name:
Company:

CUSTODY SEAL
Time:
Seal Broken By:
Date: 6/22/13

APPENDIX D

RISKED-BASED REMEDIATION GOALS – SUPPORTING CALCULATIONS AND INPUTS

Appendix D-1 Summary of Exposure Assumptions for the Refinery Worker
Navajo Refining Company, Lovington Refinery

General Assumptions		Value	Reference
TRL	Target Risk Level	1.00E-05	NMED, 2012; Equation 12
THQ	Averaging time (years):	1	NMED, 2012; Equation 12
BW	Mean Body Weight (Kg):	70	NMED, 2012; Table 2-4
AT	Averaging time (years):		
	Carcinogenic	70	NMED, 2012; Table 2-4
	Noncarcinogenic		
	Days/year	365	Unit conversion
	Years	25	NMED, 2012; Table 2-4
ADAF	USEPA MUTAGENIC ADAF (10, 3, or 1) 0 to < 2 yr old = 10; 2 to < 16 yr old = 3; > 16 yr old = 1.	1	Adult ADAF = 1
Groundwater Ingestion			
IR	Ingestion Rate (L-H2O/day):	0.168	USEPA, 2011; Table 3-5 (Recommended values for water ingestion while swimming, mean value of 0.021 L/hr x 8 hr/d = 0.168 L/d)
EF	Exposure Frequency (days/year)	250	NMED, 2012; Table 2-4 [a]
ED	Exposure Duration (years)	25	NNED 2012; Table 2-4
Groundwater Dermal Contact			
BSAE	Body Surface Area Exposed (cm^2):	4980	USEPA, 2011; Table 7-2 (Recommended values for surface area of body parts, mean value averaged for adult male and female for head, hands and arms)
EV	Event Frequency (events/day)	1	Professional Judgement
t_{event}	Event Duration (hours/event)	0.5	Assumes that worker uses restroom and washes up for 30 minutes at the end of his/her shift
EF	Exposure Frequency (days/year):	250	NMED, 2012; Table 2-4 [a]
ED	Exposure Duration (years):	25	NNED 2012; Table 2-4
CF	Conversion Factor (L/cm^3)	1.00E-03	Unit conversion
Inhalation of Groundwater Vapors to Indoor Air			
ET	Exposure Time (hours/day):	0.50	Assumes worker is exposed to volatiles from indoor use of water (e.g., washing up in restroom, using restroom)
EF	Exposure Frequency (days/year)	250	NMED, 2012; Table 2-4 [a]
ED	Exposure Duration (years)	25	NNED 2012; Table 2-4
VF	Household Water Use Volatilization Factor (L/m3)	0.5	NMED, 2012; Equation 16 [b]

Notes:

[a] Although guidance is designed for soil contact with industrial worker, as groundwater/tap water is only evaluated for resident. It is assumed that a refinery worker would come into contact with water while working indoors or using the restroom on a daily basis (250 days per year).

[a] Although guidance does not evaluation groundwater contact with industrial workers, it does evaluate tap water use by a resident, including inhalation of volatiles from household water use, which would apply to the refinery worker.

Reference:

NMED, 2012. Risk Assessment Guidance for Site Investigations and Remediation. June 2012 Update.

USEPA, 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development, Washington, D.C. National Center for Environmental Assessment. EPA/600/R-090/052F. September.

Appendix D-2 Summary of Chemical-Specific Information for Constituents of Concern
Navajo Refining Company, Lovington Refinery

Constituents of Concern	Toxicity and Chemical-Specific Values [USEPA, 2013]							
	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Oral)	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Dermal) = Oral CSF / GI_{ABS}	Unit Risk $(ug/m^3)^{-1}$ (Inhalation)	Reference Dose (mg/kg/d) (Oral)	Reference Dose (mg/kg/d) (Dermal) = Oral CSF / GI_{ABS}	Reference Concentration (mg/m^3) (Inhalation)	Volatile?	GI_{ABS}
1,1,1-Trichloroethane	NA	NA	NA	2.00E+00	2.00E+00	5.00E+00	V	1
1,1-Dichloroethane	5.70E-03	5.70E-03	1.60E-06	2.00E-01	2.00E-01	NA	V	1
1,2-Dichlorobenzene	NA	NA	NA	9.00E-02	9.00E-02	2.00E-01	V	1
1,2-Dichloroethane	9.10E-02	9.10E-02	2.60E-05	6.00E-03	6.00E-03	7.00E-03	V	1
1,2-Dibromoethane	2.00E+00	2.00E+00	6.00E-04	9.00E-03	9.00E-03	9.00E-03	V	1
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	N	1
1,4-Dichlorobenzene	5.40E-03	5.40E-03	1.10E-05	7.00E-02	7.00E-02	8.00E-01	V	1
1,4-Dioxane	1.00E-01	1.00E-01	7.70E-06	3.00E-02	3.00E-02	1.10E-01	N	1
2,4-Dimethylphenol	NA	NA	NA	2.00E-02	2.00E-02	NA	N	1
2,4-Dinitrophenol	NA	NA	NA	2.00E-03	2.00E-03	NA	N	1
1-Methylnaphthalene	2.90E-02	2.90E-02	NA	7.00E-02	7.00E-02	NA	V	1
2-Methylnaphthalene	NA	NA	NA	4.00E-03	4.00E-03	NA	V	1
Methyl Ethyl Ketone (2-Butanone)	NA	NA	NA	6.00E-01	6.00E-01	5.00E+00	V	1
2-Methylphenol	NA	NA	NA	5.00E-02	5.00E-02	6.00E-01	N	1
3&4-Methylphenol	NA	NA	NA	5.00E-02	5.00E-02	6.00E-01	N	1
4-Nitrophenol	NA	NA	NA	NA	NA	NA	N	1
Acenaphthylene	NA	NA	NA	NA	NA	NA	N	1
Aluminum	NA	NA	NA	1.00E+00	1.00E+00	5.00E-03	N	1
Anthracene	NA	NA	NA	3.00E-01	3.00E-01	NA	V	1
Antimony	NA	NA	NA	4.00E-04	4.00E-04	NA	N	1
Arsenic	1.50E+00	1.50E+00	4.30E-03	3.00E-04	3.00E-04	1.50E-05	N	1
Benzene	5.50E-02	5.50E-02	7.80E-06	4.00E-03	4.00E-03	3.00E-02	V	1
Benzo(a)anthracene	7.30E-01	7.30E-01	1.10E-04	NA	NA	NA	N	1
Benzo(a)pyrene	7.30E+00	7.30E+00	1.10E-03	NA	NA	NA	N	1
Benzo(b)fluoranthene	7.30E-01	7.30E-01	1.10E-04	NA	NA	NA	N	1
Benzo(k)fluoranthene	7.30E-02	7.30E-02	1.10E-04	NA	NA	NA	N	1
Barium	NA	NA	NA	2.00E-01	2.00E-01	5.00E-04	N	1
Benzenethiol	NA	NA	NA	1.00E-03	1.00E-03	NA	V	1
bis(2-Ethylhexyl)phthalate	1.40E-02	1.40E-02	2.40E-06	2.00E-02	2.00E-02	NA	N	1
Beryllium and compounds	NA	NA	2.40E-03	2.00E-03	2.00E-03	2.00E-05	N	1
Boron	NA	NA	NA	2.00E-01	2.00E-01	2.00E-02	N	1

Appendix D-2 Summary of Chemical-Specific Information for Constituents of Concern
Navajo Refining Company, Lovington Refinery

Constituents of Concern	Toxicity and Chemical-Specific Values [USEPA, 2013]							
	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Oral)	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Dermal) = Oral CSF / GI_{ABS}	Unit Risk $(ug/m^3)^{-1}$ (Inhalation)	Reference Dose (mg/kg/d) (Oral)	Reference Dose (mg/kg/d) (Dermal) = Oral CSF / GI_{ABS}	Reference Concentration (mg/m^3) (Inhalation)	Volatile?	GI_{ABS}
Cadmium	NA	NA	1.80E-03	1.00E-03	1.00E-03	1.00E-05	N	1
Carbon disulfide	NA	NA	NA	1.00E-01	1.00E-01	7.00E-01	V	1
Chlorobenzene	NA	NA	NA	2.00E-02	2.00E-02	5.00E-02	V	1
Chloroform	3.10E-02	3.10E-02	2.30E-05	1.00E-02	1.00E-02	9.80E-02	V	1
Chloride	NA	NA	NA	NA	NA	NA	N	1
Chromium	NA	NA	NA	1.50E+00	NA	NA	N	1
Chrysene	7.30E-03	7.30E-03	1.10E-05	NA	NA	NA	N	1
Cobalt	NA	NA	9.00E-03	3.00E-04	3.00E-04	6.00E-06	N	1
Copper	NA	NA	NA	4.00E-02	4.00E-02	NA	N	1
Cyanide	NA	NA	NA	6.00E-04	6.00E-04	8.00E-04	V	1
Dibenz(a,h)anthracene	7.30E+00	7.30E+00	1.20E-03	NA	NA	NA	N	1
Dibenz(a,h)acridine	NA	NA	NA	NA	NA	NA	N	1
Diethyl phthalate	NA	NA	NA	8.00E-01	8.00E-01	NA	N	1
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	N	1
Dibutyl Phthalate	NA	NA	NA	1.00E-01	1.00E-01	NA	N	1
Ethylbenzene	1.10E-02	1.10E-02	2.50E-06	1.00E-01	1.00E-01	1.00E+00	V	1
Fluoranthene	NA	NA	NA	4.00E-02	4.00E-02	NA	N	1
Fluorene	NA	NA	NA	4.00E-02	4.00E-02	NA	V	1
Fluoride	NA	NA	NA	4.00E-02	4.00E-02	1.30E-02	N	1
Indene	NA	NA	NA	NA	NA	NA	N	1
Indeno(1,2,3-cd)pyrene	7.30E-01	7.30E-01	1.10E-04	NA	NA	NA	N	1
Vanadium	NA	NA	NA	5.00E-03	5.00E-03	1.00E-04	N	1
Iron	NA	NA	NA	7.00E-01	7.00E-01	NA	N	1
Lead	NA	NA	NA	NA	NA	NA	N	1
Manganese	NA	NA	NA	1.40E-01	1.40E-01	5.00E-05	N	1
Mercury	NA	NA	NA	NA	NA	3.00E-04	V	1
Methyl tert-butyl ether	1.80E-03	1.80E-03	2.60E-07	NA	NA	3.00E+00	V	1
Molybdenum	NA	NA	NA	5.00E-03	5.00E-03	NA	N	1
Uranium (Soluble Salts)	NA	NA	NA	3.00E-03	3.00E-03	4.00E-05	N	1
Naphthalene	NA	NA	3.40E-05	2.00E-02	2.00E-02	3.00E-03	V	1
Nickel	NA	NA	2.40E-04	1.10E-02	1.10E-02	1.40E-05	N	1
Nitrate + Nitrite (as N)	NA	NA	NA	NA	NA	NA	N	1
Phenanthrene	NA	NA	NA	NA	NA	NA	N	1

Appendix D-2 Summary of Chemical-Specific Information for Constituents of Concern
Navajo Refining Company, Lovington Refinery

Constituents of Concern	Toxicity and Chemical-Specific Values [USEPA, 2013]							
	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Oral)	Cancer Slope Factor $(mg/kg/d)^{-1}$ (Dermal) = Oral CSF / GI_{ABS}	Unit Risk $(ug/m^3)^{-1}$ (Inhalation)	Reference Dose (mg/kg/d) (Oral)	Reference Dose (mg/kg/d) (Dermal) = Oral CSF / GI_{ABS}	Reference Concentration (mg/m^3) (Inhalation)	Volatile?	GI_{ABS}
Phenol	NA	NA	NA	3.00E-01	3.00E-01	2.00E-01	N	1
Pyrene	NA	NA	NA	3.00E-02	3.00E-02	NA	V	1
Selenium	NA	NA	NA	5.00E-03	5.00E-03	2.00E-02	N	1
Tetrachloroethene	2.10E-03	2.10E-03	2.60E-07	6.00E-03	6.00E-03	4.00E-02	V	1
Toluene	NA	NA	NA	8.00E-02	8.00E-02	5.00E+00	V	1
Pyridine	NA	NA	NA	1.00E-03	1.00E-03	NA	V	1
Trichloroethene	4.60E-02	4.60E-02	4.10E-06	5.00E-04	5.00E-04	2.00E-03	V	1
Quinoline	3.00E+00	3.00E+00	NA	NA	NA	NA	N	1
Silver	NA	NA	NA	5.00E-03	5.00E-03	NA	N	1
Styrene	NA	NA	NA	2.00E-01	2.00E-01	1.00E+00	V	1
Sulfate	NA	NA	NA	NA	NA	NA	N	1
Xylenes, total	NA	NA	NA	2.00E-01	2.00E-01	1.00E-01	V	1
Zinc	NA	NA	NA	3.00E-01	3.00E-01	NA	N	1

Notes:

Glabs = Gastrointestinal absorption factor
N = non-volatile
NA = not available
V = Volatile

Reference:

USEPA, 2013. Regional Screening Level (RSL) Table, Udated May 2013. Available online at: http://www.epa.gov/region9/superfund/prg/

Appendix D-3 Summary of USEPA Inputs to Calculate DA_{event} for the Refinery Worker
Navajo Refining Company, Lovington Refinery

Constituents of Concern	t_{event} hr/event	B unitless	Tevent hr/event	t* hr	FA	Kp used in DAevent Calc cm/hr	DAevent [a] mg/cm^2-event
Organics							
Benzene	0.50	5.1E-02	0.29	0.70	1.0	1.5E-02	1.57E-05
Benzo(a)anthracene	0.50	2.8	2.03	8.53	1.0	4.7E-01	1.32E-03
Benzo(a)pyrene	0.50	4.3	2.69	11.67	1.0	7.0E-01	2.25E-03
Benzo(b)fluoranthene	0.50	4.3	2.77	12.03	1.0	7.0E-01	2.28E-03
Carbon disulfide	0.50	0.1	0.30	0.72	1.0	1.7E-02	1.83E-05
Chlorobenzene	0.50	0.1	0.46	1.09	1.0	2.8E-02	3.72E-05
Chloroform	0.50	0.0	0.50	1.19	1.0	6.8E-03	9.41E-06
Chrysene	0.50	2.8	2.03	8.53	1.0	4.7E-01	1.32E-03
3&4-Methylphenol	0.50	*0.0*	*0.43*	*1.03*	*1.0*	*7.8E-03*	9.97E-06
2-Methylphenol	0.50	*0.0*	*0.43*	*1.03*	*1.0*	*7.7E-03*	9.82E-06
Dibenz(a,h)anthracene	0.50	9.7	3.88	17.57	0.6	1.5E+00	3.48E-03
Dibutyl phthalate	0.50	0.2	3.86	9.27	0.9	2.4E-02	8.29E-05
1,2-Dichlorobenzene	0.50	0.2	0.71	1.71	1.0	4.1E-02	6.81E-05
1,3-Dichlorobenzene	0.50	0.3	0.71	1.71	1.0	5.8E-02	9.54E-05
1,4-Dichlorobenzene	0.50	0.2	0.71	1.71	1.0	4.2E-02	6.92E-05
1,1-Dichloroethane	0.50	0.0	0.38	0.92	1.0	6.7E-03	8.15E-06
1,2-Dichloroethane	0.50	0.0	0.38	0.92	1.0	4.2E-03	5.07E-06
Diethyl phthalate	0.50	0.0	1.87	4.50	1.0	3.9E-03	1.04E-05
Dimethyl phthalate	0.50	0.0	1.30	3.13	1.0	1.4E-03	3.10E-06
2,4-Dimethylphenol	0.50	0.0	0.52	1.24	1.0	1.1E-02	1.53E-05
2,4-Dinitrophenol	0.50	0.0	1.15	2.76	1.0	1.5E-03	3.21E-06
1,4-Dioxane	0.50	0.0	0.33	0.80	1.0	3.3E-04	3.74E-07
Ethylbenzene	0.50	0.2	0.42	1.01	1.0	4.9E-02	6.24E-05
1,2-Dibromoethane	0.50	0.0	1.21	2.90	1.0	2.8E-03	5.95E-06
Fluoranthene	0.50	1.2	1.45	5.68	1.0	2.2E-01	5.27E-04
Indeno(1,2,3-cd)pyrene	0.50	6.7	3.78	16.83	0.6	1.0E+00	2.37E-03
Methyl Ethyl Ketone (2-Butanone)	0.50	0.0	0.27	0.65	1.0	9.6E-04	9.77E-07
Naphthalene	0.50	0.2	0.56	1.34	1.0	4.7E-02	6.80E-05
4-Nitrophenol	0.50	*0.0*	*0.64*	*1.54*	*1.0*	*4.8E-03*	7.56E-06
Phenanthrene	0.50	0.7	1.06	4.11	1.0	1.4E-01	2.91E-04
Phenol	0.50	*0.0*	*0.36*	*0.86*	*1.0*	*4.3E-03*	5.08E-06
Styrene	0.50	0.1	0.41	0.98	1.0	3.7E-02	4.65E-05
Tetrachloroethene	0.50	0.2	0.91	2.18	1.0	3.3E-02	6.22E-05
Toluene	0.50	0.1	0.35	0.84	1.0	3.1E-02	3.59E-05
1,1,1-Trichloroethane	0.50	0.1	0.60	1.43	1.0	1.3E-02	1.91E-05
Trichloroethene	0.50	0.1	0.58	1.39	1.0	1.2E-02	1.73E-05
4-Nitrophenol	0.50	0.0	0.64	1.54	96.0	4.8E-03	7.26E-04
Phenol	0.50	0.0	0.36	0.86	103.0	4.3E-03	5.23E-04
Methyl tert-butyl ether	0.50	0.0	0.33	0.80	1.0	2.1E-03	2.38E-06
Xylenes, total	0.50	0.2	0.42	1.00	1.0	4.7E-02	5.96E-05
bis(2-Ethylhexyl)phthalate	0.50	8.6	16.64	74.93	1.0	1.1E+00	8.98E-03
1-Methylnaphthalene	0.50	0.4	0.67	1.60	1.0	9.3E-02	1.49E-04
2-Methylnaphthalene	0.50	0.4	0.67	1.60	1.0	9.2E-02	1.47E-04
Benzenethiol	0.50	0.1	0.44	1.06	1.0	1.8E-02	2.31E-05
Pyridine	0.50	0.0	0.30	0.71	1.0	1.5E-03	1.62E-06
Anthracene	0.50	0.7	1.06	4.12	1.0	1.4E-01	2.86E-04
Fluorene	0.50	0.5	0.91	2.19	1.0	1.1E-01	2.05E-04
Pyrene	0.50	1.1	1.45	5.63	1.0	2.0E-01	4.73E-04
Quinoline	0.50	0.0	0.56	1.36	1.0	6.6E-03	9.68E-06
Benzo(k)fluoranthene	0.50	4.2	2.76	11.97	1.0	6.9E-01	2.25E-03

Appendix D-3 Summary of USEPA Inputs to Calculate DA_{event} for the Refinery Worker
Navajo Refining Company, Lovington Refinery

Constituents of Concern	t_{event} hr/event	B unitless	Tevent hr/event	t* hr	FA	Kp used in DAevent Calc cm/hr	DAevent [a] mg/cm^2-event
Inorganics							
Aluminum	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Antimony	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Arsenic	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Cadmium	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Chromium	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Barium	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Beryllium and Compounds	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Boron	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Cobalt	0.50	NA	NA	NA	NA	4.E-04	2.00E-07
Copper	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Cyanide	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Fluoride	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Iron	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Lead	0.50	NA	NA	NA	NA	1.E-04	5.00E-08
Manganese	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Mercury	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Molybdenum	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Nickel	0.50	NA	NA	NA	NA	2.E-04	1.00E-07
Selenium	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Silver	0.50	NA	NA	NA	NA	6.E-04	3.00E-07
Uranium (Soluble Salts)	0.50	NA	NA	NA	NA	2.E-03	1.00E-06
Vanadium	0.50	NA	NA	NA	NA	1.E-03	5.00E-07
Zinc	0.50	NA	NA	NA	NA	6.E-04	3.00E-07

Note:

[a] DAevent calculated using inputs and equations found in USEPA's RAGS Part E Spreadsheets for Organics and Inorganic Chemicals in Water (USEPA, 2004).

Reference:

USEPA, 2004. Risk Assessment Guidance for Superfund: Volume I Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Part E Spreadsheets for Organic and Inorganic Chemicals in Water. Available online at: http://www.epa.gov/oswer/riskassessment/ragse/

Appendix D-4 Summary of Risk-Based Remediation Goals (RBRGs) for the Refinery Worker
Navajo Refining Company, Lovington Refinery

Constituents of Concern	Chemical to be Assessed Dermally? (Yes if Dermal IF/Oral IF >10%; N if Dermal IF/Oral IF < 10%)	NON CANCER INTAKES			CANCER INTAKES			Cleanup Goals: Noncancer Effects (HI=1)				Cleanup Goals: Cancer Effects (TRL = $1x10^{-5}$)				Minimum RBRG (mg/L)
		Ingestion Groundwater Intake (L/kg-day)	DAD (dermal absorbed dose) (mg/kg-day)	Indoor Air Inhalation Groundwater Intake (L/m^3)	Ingestion Groundwater Intake (L/Kg-day)	DAD (dermal absorbed dose) (mg/kg-day)	Indoor Air Inhalation Groundwater Intake (L/m^3)	Ingestion (mg/L)	Dermal (mg/L)	Indoor Air Inhalation (mg/L)	Combined (mg/L)	Ingestion (mg/L)	Dermal (mg/L)	Indoor Air Inhalation (mg/L)	Combined (mg/L)	
1,1,1-Trichloroethane	Y	1.64E-03	9.28E-04	7.13E-03	5.87E-04	3.32E-04	2.55E-03	1.22E+03	2.15E+03	7.01E+02	3.69E+02	NA	NA	NA	NA	**3.69E+02**
1,1-Dichloroethane	Y	1.64E-03	3.97E-04	7.13E-03	5.87E-04	1.42E-04	2.55E-03	1.22E+02	5.04E+02	NA	9.80E+01	2.99E+00	1.24E+01	2.45E+00	1.21E+00	**1.21E+00**
1,2-Dichlorobenzene	Y	1.64E-03	3.32E-03	7.13E-03	5.87E-04	1.19E-03	2.55E-03	5.48E+01	2.71E+01	2.80E+01	1.10E+01	NA	NA	NA	NA	**1.10E+01**
1,2-Dichloroethane	Y	1.64E-03	2.47E-04	7.13E-03	5.87E-04	8.83E-05	2.55E-03	3.65E+00	2.43E+01	9.81E-01	7.49E-01	1.87E-01	1.24E+00	1.51E-01	7.83E-02	**7.83E-02**
1,2-Dibromoethane	Y	1.64E-03	2.90E-04	7.13E-03	5.87E-04	1.04E-04	2.55E-03	5.48E+00	3.10E+01	1.26E+00	9.92E-01	8.52E-03	4.63E-02	6.54E-03	3.44E-03	**3.44E-03**
1,3-Dichlorobenzene	Y	1.64E-03	4.65E-03	NA	5.87E-04	1.66E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
1,4-Dichlorobenzene	Y	1.64E-03	3.37E-03	7.13E-03	5.87E-04	1.20E-03	2.55E-03	4.26E+01	2.08E+01	1.12E+02	1.24E+01	3.15E+00	1.54E+00	3.57E-01	2.65E-01	**2.65E-01**
1,4-Dioxane	N	1.64E-03	1.82E-05	NA	5.87E-04	6.51E-06	NA	1.83E+01	NA	NA	1.83E+01	1.70E-01	NA	NA	1.70E-01	**1.70E-01**
2,4-Dimethylphenol	Y	1.64E-03	7.46E-04	NA	5.87E-04	2.66E-04	NA	1.22E+01	2.68E+01	NA	8.37E+00	NA	NA	NA	NA	**8.37E+00**
2,4-Dinitrophenol	N	1.64E-03	1.56E-04	NA	5.87E-04	5.58E-05	NA	1.22E+00	NA	NA	1.22E+00	NA	NA	NA	NA	**1.22E+00**
1-Methylnaphthalene	Y	1.64E-03	7.25E-03	7.13E-03	5.87E-04	2.59E-03	2.55E-03	4.26E+01	9.66E+00	NA	7.87E+00	5.87E-01	1.33E-01	NA	1.09E-01	**1.09E-01**
2-Methylnaphthalene	Y	1.64E-03	7.14E-03	7.13E-03	5.87E-04	2.55E-03	2.55E-03	2.43E+00	5.60E-01	NA	4.55E-01	NA	NA	NA	NA	**4.55E-01**
Methyl Ethyl Ketone (2-Butanone)	N	1.64E-03	4.76E-05	7.13E-03	5.87E-04	1.70E-05	2.55E-03	3.65E+02	NA	7.01E+02	2.40E+02	NA	NA	NA	NA	**2.40E+02**
2-Methylphenol	Y	1.64E-03	4.78E-04	NA	5.87E-04	1.71E-04	NA	3.04E+01	1.05E+02	NA	2.36E+01	NA	NA	NA	NA	**2.36E+01**
3&4-Methylphenol	Y	1.64E-03	4.86E-04	NA	5.87E-04	1.73E-04	NA	3.04E+01	1.03E+02	NA	2.35E+01	NA	NA	NA	NA	**2.35E+01**
4-Nitrophenol	Y	1.64E-03	3.68E-04	NA	5.87E-04	1.32E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Acenaphthylene	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Aluminum	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	6.08E+02	NA	NA	6.08E+02	NA	NA	NA	NA	**6.08E+02**
Anthracene	Y	1.64E-03	1.40E-02	7.13E-03	5.87E-04	4.98E-03	2.55E-03	1.83E+02	2.15E+01	NA	1.92E+01	NA	NA	NA	NA	**1.92E+01**
Antimony	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	2.43E-01	NA	NA	2.43E-01	NA	NA	NA	NA	**2.43E-01**
Arsenic	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	1.83E-01	NA	NA	1.83E-01	1.14E-02	NA	NA	1.14E-02	**1.14E-02**
Benzene	Y	1.64E-03	7.65E-04	7.13E-03	5.87E-04	2.73E-04	2.55E-03	2.43E+00	5.23E+00	4.20E+00	1.19E+00	3.10E-01	6.66E-01	5.03E-01	1.49E-01	**1.49E-01**
Benzo(a)anthracene	Y	1.64E-03	6.43E-02	NA	5.87E-04	2.30E-02	NA	NA	NA	NA	NA	2.33E-02	5.97E-04	NA	5.82E-04	**5.82E-04**
Benzo(a)pyrene	Y	1.64E-03	1.10E-01	NA	5.87E-04	3.91E-02	NA	NA	NA	NA	NA	2.33E-03	3.50E-05	NA	3.45E-05	**3.45E-05**
Benzo(b)fluoranthene	Y	1.64E-03	1.11E-01	NA	5.87E-04	3.98E-02	NA	NA	NA	NA	NA	2.33E-02	3.45E-04	NA	3.40E-04	**3.40E-04**
Benzo(k)fluoranthene	Y	1.64E-03	1.10E-01	NA	5.87E-04	3.92E-02	NA	NA	NA	NA	NA	2.33E-01	3.49E-03	NA	3.44E-03	**3.44E-03**
Barium	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	1.22E+02	NA	NA	1.22E+02	NA	NA	NA	NA	**1.22E+02**
Benzenethiol	Y	1.64E-03	1.13E-03	7.13E-03	5.87E-04	4.02E-04	2.55E-03	6.08E-01	8.88E-01	NA	3.61E-01	NA	NA	NA	NA	**3.61E-01**
bis(2-Ethylhexyl)phthalate	Y	1.64E-03	4.37E-01	NA	5.87E-04	1.56E-01	NA	1.22E+01	4.57E-02	NA	4.55E-02	1.22E+00	4.57E-03	NA	4.55E-03	**4.55E-03**
Beryllium and compounds	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	1.22E+00	NA	NA	1.22E+00	NA	NA	NA	NA	**1.22E+00**
Boron	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	1.22E+02	NA	NA	1.22E+02	NA	NA	NA	NA	**1.22E+02**
Cadmium	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	6.08E-01	NA	NA	6.08E-01	NA	NA	NA	NA	**6.08E-01**
Carbon disulfide	Y	1.64E-03	8.94E-04	7.13E-03	5.87E-04	3.19E-04	2.55E-03	6.08E+01	1.12E+02	9.81E+01	2.81E+01	NA	NA	NA	NA	**2.81E+01**
Chlorobenzene	Y	1.64E-03	1.81E-03	7.13E-03	5.87E-04	6.48E-04	2.55E-03	1.22E+01	1.10E+01	7.01E+00	3.17E+00	NA	NA	NA	NA	**3.17E+00**
Chloroform	Y	1.64E-03	4.59E-04	7.13E-03	5.87E-04	1.64E-04	2.55E-03	6.08E+00	2.18E+01	1.37E+01	3.53E+00	5.49E-01	1.97E+00	1.71E-01	1.22E-01	**1.22E-01**
Chloride	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Chromium	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	9.13E+02	NA	NA	9.13E+02	NA	NA	NA	NA	**9.13E+02**
Chrysene	Y	1.64E-03	6.43E-02	NA	5.87E-04	2.30E-02	NA	NA	NA	NA	NA	2.33E+00	5.97E-02	NA	5.82E-02	**5.82E-02**
Cobalt	N	1.64E-03	9.75E-06	NA	5.87E-04	3.48E-06	NA	1.83E-01	NA	NA	1.83E-01	NA	NA	NA	NA	**1.83E-01**
Copper	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	2.43E+01	NA	NA	2.43E+01	NA	NA	NA	NA	**2.43E+01**
Cyanide	N	1.64E-03	2.44E-05	7.13E-03	5.87E-04	8.70E-06	2.55E-03	3.65E-01	NA	1.12E-01	8.58E-02	NA	NA	NA	NA	**8.58E-02**
Dibenz(a,h)anthracene	Y	1.64E-03	1.70E-01	NA	5.87E-04	6.06E-02	NA	NA	NA	NA	NA	2.33E-03	2.26E-05	NA	2.24E-05	**2.24E-05**
Dibenz(a,h)acridine	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Diethyl phthalate	Y	1.64E-03	5.08E-04	NA	5.87E-04	1.81E-04	NA	4.87E+02	1.58E+03	NA	3.72E+02	NA	NA	NA	NA	**3.72E+02**
Dimethyl phthalate	N	1.64E-03	1.51E-04	NA	5.87E-04	5.40E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Dibutyl Phthalate	Y	1.64E-03	4.04E-03	NA	5.87E-04	1.44E-03	NA	6.08E+01	2.48E+01	NA	1.76E+01	NA	NA	NA	NA	**1.76E+01**
Ethylbenzene	Y	1.64E-03	3.04E-03	7.13E-03	5.87E-04	1.09E-03	2.55E-03	6.08E+01	3.29E+01	1.40E+02	1.85E+01	1.55E+00	8.38E-01	1.57E+00	4.04E-01	**4.04E-01**
Fluoranthene	Y	1.64E-03	2.57E-02	NA	5.87E-04	9.16E-03	NA	2.43E+01	1.56E+00	NA	1.46E+00	NA	NA	NA	NA	**1.46E+00**
Fluorene	Y	1.64E-03	1.00E-02	7.13E-03	5.87E-04	3.57E-03	2.55E-03	2.43E+01	4.00E+00	NA	3.44E+00	NA	NA	NA	NA	**3.44E+00**
Fluoride	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	2.43E+01	NA	NA	2.43E+01	NA	NA	NA	NA	**2.43E+01**
Indene	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Indeno(1,2,3-cd)pyrene	Y	1.64E-03	1.16E-01	NA	5.87E-04	4.13E-02	NA	NA	NA	NA	NA	2.33E-02	3.32E-04	NA	3.27E-04	**3.27E-04**
Vanadium	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	3.04E+00	NA	NA	3.04E+00	NA	NA	NA	NA	**3.04E+00**
Iron	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	4.26E+02	NA	NA	4.26E+02	NA	NA	NA	NA	**4.26E+02**
Lead	N	1.64E-03	2.44E-06	NA	5.87E-04	8.70E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Manganese	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	8.52E+01	NA	NA	8.52E+01	NA	NA	NA	NA	**8.52E+01**
Mercury	N	1.64E-03	2.44E-05	7.13E-03	5.87E-04	8.70E-06	2.55E-03	NA	NA	4.20E-02	4.20E-02	NA	NA	NA	NA	**4.20E-02**
Methyl tert-butyl ether	N	1.64E-03	1.16E-04	7.13E-03	5.87E-04	4.14E-05	2.55E-03	NA	NA	4.20E+02	4.20E+02	9.46E+00	NA	1.51E+01	5.82E+00	**5.82E+00**
Molybdenum	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	3.04E+00	NA	NA	3.04E+00	NA	NA	NA	NA	**3.04E+00**
Uranium (Soluble Salts)	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	1.83E+00	NA	NA	1.83E+00	NA	NA	NA	NA	**1.83E+00**
Naphthalene	Y	1.64E-03	3.32E-03	7.13E-03	5.87E-04	1.18E-03	2.55E-03	1.22E+01	6.03E+00	4.20E-01	3.81E-01	NA	NA	1.15E-01	1.15E-01	**1.15E-01**
Nickel	N	1.64E-03	4.87E-06	NA	5.87E-04	1.74E-06	NA	6.69E+00	NA	NA	6.69E+00	NA	NA	NA	NA	**6.69E+00**
Nitrate + Nitrite (as N)	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Phenanthrene	Y	1.64E-03	1.42E-02	NA	5.87E-04	5.06E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Phenol	Y	1.64E-03	2.47E-04	NA	5.87E-04	8.84E-05	NA	1.83E+02	1.21E+03	NA	1.59E+02	NA	NA	NA	NA	**1.59E+02**
Pyrene	Y	1.64E-03	2.31E-02	7.13E-03	5.87E-04	8.24E-03	2.55E-03	1.83E+01	1.30E+00	NA	1.21E+00	NA	NA	NA	NA	**1.21E+00**
Selenium	N	1.64E-03	2.44E-05	NA	5.87E-04	8.70E-06	NA	3.04E+00	NA	NA	3.04E+00	NA	NA	NA	NA	**3.04E+00**
Tetrachloroethene	Y	1.64E-03	3.03E-03	7.13E-03	5.87E-04	1.08E-03	2.55E-03	3.65E+00	1.98E+00	5.61E+00	1.04E+00	8.11E+00	4.40E+00	1.51E+01	2.40E+00	**1.04E+00**
Toluene	Y	1.64E-03	1.75E-03	7.13E-03	5.87E-04	6.25E-04	2.55E-03	4.87E+01	4.57E+01	7.01E+02	2.28E+01	NA	NA	NA	NA	**2.28E+01**
Pyridine	N	1.64E-03	7.87E-05	7.13E-03	5.87E-04	2.81E-05	2.55E-03	6.08E-01	NA	NA	6.08E-01	NA	NA	NA	NA	**6.08E-01**
Trichloroethene	Y	1.64E-03	8.45E-04	7.13E-03	5.87E-04	3.02E-04	2.55E-03	3.04E-01	5.92E-01	2.80E-01	1.17E-01	3.70E-01	7.20E-01	9.57E-01	1.95E-01	**1.17E-01**
Quinoline	Y	1.64E-03	4.72E-04	NA	5.87E-04	1.68E-04	NA	NA	NA	NA	NA	5.68E-03	1.98E-02	NA	4.41E-03	**4.41E-03**
Silver	N	1.64E-03	1.46E-05	NA	5.87E-04	5.22E-06	NA	3.04E+00	NA	NA	3.04E+00	NA	NA	NA	NA	**3.04E+00**
Styrene	Y	1.64E-03	2.27E-03	7.13E-03	5.87E-04	8.10E-04	2.55E-03	1.22E+02	8.82E+01	1.40E+02	3.75E+01	NA	NA	NA	NA	**3.75E+01**
Sulfate	N	1.64E-03	4.87E-05	NA	5.87E-04	1.74E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Xylenes, total	Y	1.64E-03	2.91E-03	7.13E-03	5.87E-04	1.04E-03	2.55E-03	1.22E+02	6.88E+01	1.40E+01	1.06E+01	NA	NA	NA	NA	**1.06E+01**
Zinc	N	1.64E-03	1.46E-05	NA	5.87E-04	5.22E-06	NA	1.83E+02	NA	NA	1.83E+02	NA	NA	NA	NA	**1.83E+02**