

GW-028

**Reverse Osmosis Reject
Water
Discharge Fields
Investigation
Final Report – Revised (1)**

December 2015



Navajo Refining Company, L.L.C.
Artesia Refinery

**Reverse Osmosis Reject Water
Discharge Fields Investigation
Final Report - Revised**

OCD Discharge Permit GW-028

December 2015



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Pamela R. Krueger
Senior Project Manager, ARCADIS

**Reverse Osmosis Reject Water
Discharge Fields Investigation
Final Report - Revised**

OCD Discharge Permit GW-028

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**Reverse Osmosis Reject
Water Discharge Fields
Investigation Final Report**

Navajo Refining – Artesia,
New Mexico

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Scott Denton
Environmental Manager, Navajo Refining Company, L.L.C.

List of Acronyms and Abbreviations

bgs	Below Ground Surface
CGWSL	Critical Groundwater Screening Level
COC	Constituent of Concern
DAF	Dilution Attenuation Factor
DRO	Diesel Range Organics
ft	Feet
ft amsl	Feet Above Mean Sea Level
GRO	Gasoline Range Organics
GW-028	Discharge Permit GW-028
HFC	Holly Frontier Corporation
HWB	Hazardous Waste Bureau
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilograms
mg/L	milligrams per liter
NA	Not Analyzed
Navajo	Navajo Refining Company
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
OCD	Oil Conservation Division
ORO	Oil Range Organics
ORP	Oxygen-Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbons
pci/g	picocuries per gram
PID	Photoionization Detector
PPE	Personal Protective Equipment
PSH	Phase-separated hydrocarbon
PVC	Polyvinyl Chloride
Refinery	Artesia Refinery
RL	Reporting Limit
RO	Reverse Osmosis
SSL	Soil Screening Level
SVOC	Semivolatile Organic Compounds
TDS	Total Dissolved Solids
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons



**Reverse Osmosis Reject
Water Discharge Fields
Investigation Final Report**
Navajo Refining – Artesia,
New Mexico

USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WQCC	Water Quality Control Commission

Executive Summary

The Navajo Refining Company, L.L.C. (NRC) is a subsidiary of the Holly Frontier Corporation. NRC owns and operates the Artesia Refinery (Refinery), which is located in Artesia, New Mexico. The Refinery has been in operation since the 1920's and processes crude oil into asphalt, fuel oil, gasoline, diesel, jet fuel and liquefied petroleum gas.

NRC operates a reverse osmosis (RO) unit that processes fresh water as a means to remove contaminants such as minerals and salts. The fresh water is a blend of fresh groundwater and publicly supplied water from the City of Artesia. This unit is a pretreatment step in the production of cooling tower makeup water and boiler grade feedwater. The RO unit produces two effluent streams: the RO permeate stream, which is the purified water, and the RO reject water stream, which contains the concentrated salts and minerals that cannot pass through the RO membranes. The RO reject water stream is discharged to the surface of two vacant fields located northeast of the Refinery operations areas to irrigate native grass in those fields. This discharge occurs in accordance with the approved Discharge Permit GW-028 (GW-028), issued by the State of New Mexico Energy, Minerals and Natural Resource Department Oil Conservation Division [(OCD), OCD 2012].

Section 6.D of GW-028 requires NRC to perform a site investigation of the two RO reject water discharge fields. The *Reverse Osmosis Reject Water Discharge Fields Site Investigation Work Plan* (RO fields work plan) was initially submitted to OCD on November 20, 2012 and was revised December 20, 2012 in response to comments received from OCD via email (ARCADIS 2012b). The investigation was conducted throughout 2013 according to the RO fields work plan to determine if the RO reject water poses a risk to sensitive receptors at the RO reject water discharge fields. This document comprises the final report of the site investigation required by Section 6.D.3 of GW-028.

Scope of Services Performed

The approved RO fields work plan included the following scope of services:

- Installation of three groundwater monitoring wells in each of the two discharge fields, with one well located as close as possible to each discharge point and the remaining two wells located in the downgradient direction of the discharge point;

- Collection and analysis of soil samples from each well location;
- Gauging of all six wells on a quarterly basis for a minimum of one year;
- Collection and analysis of groundwater samples from each of the six wells on a quarterly basis for a minimum of one year;
- Collection and analysis of the RO reject stream during each quarterly groundwater monitoring event;
- Preparation and submittal of quarterly progress reports;
- Preparation and submittal of a final site investigation report; and
- At the request of the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB), an additional soil boring, RO-SB-1, was drilled in the northwestern portion of the northern discharge field to provide background moisture content values for soil in an unsaturated area near the discharge fields.

The procedures followed to complete the scope of services have been described in the interim monitoring reports and are described in detail in the body of this report.

Sample Analysis and Screening

Samples collected were analyzed for various constituents of concern (COCs), as per the approved RO fields work plan. Details of the sample collection procedures and analyses requested are provided in the body of this report. The results of the laboratory analyses were compared to screening levels to evaluate whether further action is required within each area.

The discharge fields investigated are located within the Refinery fenceline and access to these areas is limited to personnel approved to enter the Refinery. The purpose of this investigation is to determine whether there is a current risk of exposure to sensitive receptors at the RO reject water discharge fields. Thus, the screening levels were selected based on exposure pathways including soil to groundwater leaching as well as direct exposure to industrial and construction workers. The soil screening levels (SSLs) were obtained from the updated Table A-1 (NMED, 2012b) of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012a) for the initial report. The SSLs were updated as part of this revised report using the July 2015

update to the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2015). Critical SSLs were selected according to the following hierarchy:

- The lower (i.e., more conservative) value of the Industrial/Occupational Exposure or Construction Worker Exposure SSLs were used to screen shallow soil samples (0 to 1 foot below ground surface [ft bgs]);
- Construction Worker Exposure SSLs were used to screen soil samples from greater than 1 ft bgs to 10 ft bgs; and
- Dilution Attenuation Factor (DAF) 20 SSLs were used to screen soil samples from greater than 10 ft bgs.

Total petroleum hydrocarbon (TPH), Diesel Range Organics (DRO), and Motor Oil Range Organics (ORO) were compared to the screening level values for “unknown oil” obtained from Table 6-2 of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2015). The critical SSL for each COC is provided in the soil data summary table discussed in the body of this report.

Groundwater data collected during RO investigation activities were evaluated using screening levels established for the facility-wide groundwater monitoring program. Regulatory standards used to evaluate analytical results are based on the presumption that the shallow groundwater might be used as a source of drinking water. The screening level value used for each COC is the lower value of either the New Mexico Water Quality Control Commission (WQCC) standards from 20.6.2.3103 New Mexico Administrative Code (NMAC) or the Maximum Contaminant Level (MCL) from the National Primary Drinking Water Standards. For COCs where neither a WQCC standard or MCL exists, the screening level value used is the NMED Tap Water Standard listed in the updated Table A-1 (NMED, 2015) of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2015). For TPH, the TPH Screening Guidelines for Potable Groundwater for unknown oil included in Table 6-2 of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012a) were used, as corrected by subsequent correspondence from the NMED. The 2012 TPH screening level for groundwater was used because the 2015 version of the guidance document does not have a screening level for TPH in groundwater.

Subsequent to the RO fields investigation, a separate evaluation of background groundwater concentrations was performed to evaluate background groundwater conditions and determine if alternate groundwater screening standards should be used for select COCs. The *Background Groundwater Evaluation Work Plan* (BG GW work plan) was developed that outlined procedures to be performed to complete the evaluation of background groundwater concentrations, and to potentially establish alternative standards for select COCs, as appropriate. The BG GW work plan was submitted to NMED and OCD on July 3, 2014 (ARCADIS 2014a). Both OCD and NMED approved the BG GW work plan with modifications on July 25, 2014 (OCD 2014 and NMED 2014a).

The approved BG GW work plan included installation of two additional monitoring wells and collection of groundwater samples from a total of 11 monitoring wells monthly over a 12 month period. The 11 monitoring wells included the two new monitoring wells and nine existing monitoring wells, all located in areas either hydraulically upgradient or crossgradient to Refinery operations (including the active Refinery process area, the RO reject fields, and the former evaporation ponds), in areas where impacts from Refinery operations are not expected.

Following completion of the 12 month background groundwater monitoring period, a statistical evaluation was performed to determine the expected concentrations in unimpacted, or “background”, groundwater, and to determine if alternate screening standards for select COCs would be appropriate or applicable. COCs that appear to be elevated in groundwater beneath the RO reject fields as well as other COCs associated with the facility-wide groundwater monitoring program were evaluated. Thus, the scope of the investigation was designed to assess background conditions for the Refinery, the RO reject fields, and the evaporation ponds.

A report describing the procedures used during the background groundwater evaluation and the results of the evaluation were submitted to both OCD and NMED in September 2015 (Arcadis. 2015). The background groundwater investigation report concluded that, for the purpose of evaluating the potential need for abatement of groundwater beneath the RO reject fields beyond the Stage 1 investigation, background upper tolerance limits (UTLs) should be used for the following COCs:

- Boron
- Chloride

- Fluoride
- Manganese
- Mercury
- Nitrate / Nitrite
- Sulfate
- Total Dissolved Solids (TDS)
- Uranium

The abatement standard comparison criteria for the remaining COCs should consist of the WQCC standards in 20.6.2.3103 NMAC. These proposed abatement standards are consistent with 20.6.2.4101B NMAC (abatement to background), 20.6.2.4103B NMAC (incorporating the WQCC standards), and Condition 6.D.3 of GW-028.

The Critical Groundwater Screening Level (CGWSL) for each COC and the source of the CGWSL is provided in the groundwater data summary table discussed in the body of this revised report.

Conclusions

The investigation of the RO reject discharge fields has been completed according to the approved RO fields work plan. The data collected during the soil and groundwater investigation indicate the following:

- Groundwater elevations were measured and used to construct potentiometric surface maps for the area surrounding and encompassing the RO reject water discharge fields. The data obtained throughout 2013 indicate that groundwater mounding occurs beneath the southern RO reject water discharge field, which receives the majority of the discharge. Slight mounding was noted in the northern RO reject water discharge field.
- The reported concentrations of organic constituents in soil samples were below reporting limits or the CSSLs in all soil samples collected. Concentrations of organic constituents in groundwater samples were below reporting limits or the

CGWSLs in all groundwater samples collected during all four quarterly monitoring events. These results confirm that no impacts from hydrocarbons have occurred as a result of discharge of the RO reject stream to the two fields.

- The reported concentrations of arsenic were detected above soil leachate screening levels in all subsurface soil samples collected. However, the reported concentrations of arsenic in groundwater from five of the six wells were below the groundwater screening level during all four quarterly monitoring events. The reported concentrations of arsenic in groundwater from the sixth well (MW-118) ranged from 0.011 mg/L to 0.0156 mg/L, only slightly above the screening level of 0.01 mg/L. The reported concentrations of arsenic in the RO reject water discharge sample were below the screening level during all four quarterly monitoring events. These results indicate that the RO reject water discharge is not a significant source of dissolved arsenic in groundwater.
- The reported concentrations of cyanide were detected above the soil leachate screening levels in three soil samples collected from the soil boring (RO-SB-1) located northwest of the north RO reject water discharge field. The detection limit for the subsurface soil samples from all locations was below the 2012 soil leaching screening level, but above the 2015 soil leaching screening level. Cyanide was not detected above the groundwater screening level in any of the samples collected from the monitoring wells or from the RO discharge water during this investigation. The detection limits for the groundwater samples were typically one order of magnitude below the groundwater screening value. Therefore, cyanide does not appear to be leaching from soil to the groundwater.
- The reported concentrations of iron were above the soil leachate screening level in at least one subsurface soil sample from each of the monitoring wells installed in the RO reject water discharge fields. However, iron was not detected in any of the groundwater samples collected from the monitoring wells installed in the RO reject water discharge fields at concentrations above the screening level during this investigation. Thus, iron does not appear to be leaching from the soil to the groundwater.
- The reported concentrations of manganese in all soil samples were below the applicable screening levels. The reported concentrations of manganese in two groundwater samples from MW-114 were above the screening level of 1.13 mg/L. The reported concentrations of manganese in the remaining groundwater samples from the monitoring wells and from all four of the RO reject water

discharge samples were below the screening level. These results indicate that the RO reject water discharge is not a significant source of dissolved manganese in groundwater.

- The reported concentrations of fluoride in all soil samples were below the applicable screening levels. The reported concentrations of fluoride in groundwater samples from the monitoring wells located in the South RO reject discharge field were all below the CGWSL. The reported concentrations of fluoride in groundwater samples from MW-118 in the North RO reject field collected during 2013 were all above the CGWSL, while the reported concentrations of fluoride were below the CGWSL in three of the four samples collected during 2013 (first three quarters) from both MW-117 and MW-119. The reported concentration of fluoride in the RO reject water sample collected during the first quarter of 2013 was above the CGWSL while the concentrations in the remaining three quarterly samples were below the CGWSL. These results indicated that the RO reject water discharge is not a significant source of dissolved fluoride in groundwater.
- Potassium does not have a soil screening level; thus, there were no “exceedances” of potassium in soil. One of groundwater samples collected from MW-117 during 2013 contained potassium at a concentration above the screening value. All other reported concentrations of potassium in samples collected from the other wells within the RO reject discharge fields and the samples collected from the RO reject water were below the CGWSL. These results indicated that the RO reject water discharge is not a significant source of dissolved potassium in groundwater.

Based on the investigation performed and the evaluation of both soil and groundwater data, it does not appear that discharge of the RO reject water to the fields has impacted the underlying groundwater.

Recommendations

The investigation of the RO reject water discharge fields confirmed that discharge of this stream has caused mounding of groundwater in the immediate vicinity of the fields. However, the mounding is localized and limited in extent. The OCD has required NRC to cease discharge to the fields by October 21, 2016. The localized mounding effect of the discharge is expected to disperse within a short period of time following the

cessation of discharge. Therefore, no further action is recommended regarding the hydrogeology at this time.

The investigation of the RO reject water discharge fields has confirmed that no impact to groundwater immediately beneath the fields has occurred for organic compounds. The investigation has also confirmed that the majority of the inorganic compounds for which water quality standards exist are not present above either the water quality standards or the background concentrations. The only compounds present above the groundwater screening values in any of the monitoring wells installed within the RO reject water discharge fields are arsenic, manganese, potassium, and fluoride. However, the elevated concentrations are not present in all of the monitoring wells installed within the fields or consistently present in the RO reject discharge water. These results indicate that the RO reject discharge water is not a significant source of these dissolved phase constituents.

It is recommended that the six monitoring wells installed in the RO reject water discharge fields continue to be monitored on a semiannual basis. It is recommended that the groundwater samples be analyzed for the following parameters:

- TPH DRO;
- Cations/anions, to include chloride, fluoride, sulfate, calcium, potassium, and sodium;
- Nitrate/nitrite; and
- Metals, to include arsenic, barium, chromium, iron, lead, manganese, and selenium.

This list of parameters overlaps with the parameters analyzed for the routine groundwater monitoring program and encompasses the compounds that may have been affected by discharge of the RO reject stream. The groundwater samples will be analyzed for both total and dissolved metals during the first semiannual sampling event and for total metals only during the second semiannual sampling event, as per the routine groundwater monitoring program. The results of the routine monitoring and evaluation of concentration trends will be reported in the annual groundwater monitoring reports.

1. Introduction

The Navajo Refining Company, L.L.C. (NRC) is a subsidiary of the Holly Frontier Corporation (HFC). NRC owns and operates the Artesia Refinery (Refinery), which is located in Artesia, New Mexico. Figure 1 shows the location of the Refinery. The Refinery has been in operation since the 1920's and processes crude oil into asphalt, fuel oil, gasoline, diesel, jet fuel and liquefied petroleum gas.

NRC operates a RO unit that processes fresh water as a means to remove contaminants such as minerals and salts. The fresh water is a blend of fresh groundwater and publicly supplied water from the City of Artesia. This unit is a pretreatment step in the production of cooling tower makeup water and boiler grade feedwater. The RO unit produces two effluent streams: the RO permeate stream, which is the purified water, and the RO reject water stream, which contains the concentrated salts and minerals that cannot pass through the RO membranes. The RO reject water stream is discharged to the surface of one of two vacant fields located northeast of the Refinery operations areas to water native grass in those fields. This discharge occurs in accordance with the approved Discharge Permit GW-028 (GW-028), issued by the State of New Mexico Energy, Minerals and Natural Resource Department Oil Conservation Division ([OCD], OCD 2012).

Section 6.D of GW-028 requires NRC to perform a site investigation of the two RO reject water discharge fields. The *Reverse Osmosis Reject Water Discharge Fields Site Investigation Work Plan* (RO fields work plan) was initially submitted to OCD on November 20, 2012 and was revised December 20, 2012 in response to comments received from OCD via email (ARCADIS 2012b). The investigation was conducted according to the RO fields work plan throughout 2013.

This document comprises the final report of the site investigation required by Section 6.D.3 of GW-028. The report generally follows the format for an investigation report defined in the Post-Closure Care Permit issued by the HWB, as required in Section 6.D.3 of GW-028.

This revision to this report incorporates the results of the background groundwater evaluation performed subsequent to the initial investigation of the RO reject fields.

2. Background

2.1 Site Description

NRC operates a petroleum Refinery located at 501 East Main Street in the city of Artesia, Eddy County, New Mexico. The facility has been in operation since the 1920's and processes crude oil into asphalt, fuel oil, gasoline, diesel, jet fuel, and liquefied petroleum gas. The Refinery is an active, growing industrial facility. There are no plans to close the facility or reduce the size of the operation.

Figure 1 shows the location of the Refinery in relation to the town of Artesia, New Mexico. As can be seen in Figure 1, the Refinery is located on the eastern side of Artesia, New Mexico. The area to the north, south, and east of the Refinery is used primarily for agricultural and ranching purposes, while the area to the west, southwest, and northwest of the Refinery consists of business and residential districts.

Figure 2 depicts the boundaries of the active Refinery, the boundary of property owned by NRC, and nearby features. Figure 2 also depicts the boundary of property owned by Montana Refining Company, which is also a subsidiary of HFC.

As shown in Figure 2, the two RO reject fields are located to the northeast of the Refinery process areas, within the boundary of property owned by NRC. The south RO reject field is located adjacent to and south of Eagle Creek, an arroyo that drains stormwater from the City of Artesia. The north RO reject field is located adjacent to and north of Eagle Creek. RO water discharge points and surface distribution trenches for the two RO reject fields are shown in Figure 3.

2.2 Previous Investigations

Section 2.4 of the RO fields work plan (Arcadis, 2012b) provided a summary of previous investigations and analyses. The previous investigations throughout the Refinery have provided information regarding the lithology and hydrology in the area. Information obtained as part of this investigation has been combined with information obtained from those previous investigations and is discussed in Section 4 of this report.

2.3 Background Groundwater Evaluation

A background groundwater evaluation was performed to determine if alternate screening standards for select constituents of concern (COCs) would be appropriate

or applicable (Arcadis, 2015). The background groundwater evaluation consisted of sampling 11 designated monitoring wells monthly for a period of 12 months. The samples were analyzed for the full WQCC list of parameters, plus COCs that are analyzed as part of the facility-wide groundwater monitoring program.

The conclusions of the background groundwater evaluation were that, for the purpose of evaluating the potential need for abatement of groundwater beneath the RO reject fields beyond the Stage 1 investigation, the abatement standard comparison criteria should consist of the background upper tolerance limits (UTLs) for the following COCs:

- Boron
- Chloride
- Fluoride
- Manganese
- Mercury
- Nitrate / Nitrite
- Sulfate
- Total Dissolved Solids (TDS)
- Uranium

The abatement standard comparison criteria for the remaining COCs should consist of the WQCC standards in 20.6.2.3103 NMAC. These proposed abatement standards are consistent with 20.6.2.4101B NMAC (abatement to background), 20.6.2.4103B. NMAC (incorporating the WQCC standards), and Condition 6.D.3 of GW-028.

3. Scope of Services

The RO fields work plan (ARCADIS 2012) provided a detailed description of activities to be conducted within the RO reject discharge fields. This section provides a summary of activities actually performed during 2013 and describes the procedures used.

3.1 Health and Safety Considerations

Sampling activities were conducted in Level D personal protective equipment (PPE). Members of the field team were required to view a 30-minute safety video and undergo facility-specific safety orientation prior to beginning work within the Refinery.

Prior to initiating drilling operations, ARCADIS and NRC personnel inspected and cleared the proposed boring locations of all potential hazards and subsurface utilities. Additionally, ARCADIS notified public utilities and the Refinery safety coordinator to obtain clearance and determine site-specific health and safety protocols.

Overhead utility lines are present throughout both of the two fields. All of the locations for the soil borings were selected to provide a safe minimum distance of 45 feet between the drill rig mast and the overhead utility lines.

Subsurface clearing procedures included marking the desired boring location, then marking approximate locations of known underground utilities in the vicinity. Boring locations were adjusted to be located a minimum of 18 to 24 inches from known underground utilities. Each location was then manually cleared using a hand auger to a depth of 5 ft bgs in the south RO reject field and to a depth of 10 ft bgs in the north RO reject field.

3.2 Investigation Activities Performed

Between January 28 and February 4, 2013, six soil borings were drilled and completed as permanent monitoring wells within the two RO reject fields, as required in Section 6.D.2 of the GW-028 permit. Monitoring wells MW-117 and MW-114 were drilled in the vicinity of the point of discharge in the northern and southern discharge fields, respectively, as requested by OCD on December 4, 2012. Monitoring wells MW-115 and MW-116 were installed near the northwestern and northeastern corners of the south RO reject field, respectively. Monitoring wells MW-118 and MW-119 were installed along the northern side of the north RO reject field.

At the request of NMED HWB, an additional soil boring, RO-SB-1, was drilled in the northwestern portion of the northern discharge field to provide background moisture content values for soil in an unsaturated area near the discharge fields.

Figure 3 depicts the locations of the soil boring, the monitoring wells, the discharge points, surface distribution trenches, and the boundaries of the RO reject discharge fields. Soil boring logs and well construction details are included in Appendix A.

Drilling and sampling equipment was decontaminated between each use to prevent cross-contamination at boring locations. Augers and drilling tools were washed in a bath of non-phosphate soap (Alconox™) and water then rinsed with distilled water.

3.3 Investigation Methods

Methods and procedures used during this investigation are described in the following subsections.

3.3.1 Soil Sample Collection and Analysis

Shallow soil samples were collected from each location from the hand auger bucket during the subsurface clearance. Additional subsurface samples were collected continuously ahead of the drill rig auger flight using a split spoon sampler. Total volatile organic compound (VOC) concentrations were measured at discrete depths along the collected soil core using a photo-ionization detector (PID) and were noted in field boring logs and well completion diagrams included as Appendix A.

Boreholes were drilled to a maximum depth of 25 ft bgs at locations MW-115 through MW-119 and to a depth of 35 ft bgs at MW-114. The soil boring, RO-SB-1, was drilled to a depth of 35 ft bgs for characterization and sample collection but was not converted to a monitoring well. Well construction details are presented in Table 1.

Soil samples were selected from discrete intervals at each boring location for laboratory analysis based on the following guidelines:

- **Surface soil:** A surface sample was collected from 0 to 1 ft bgs at each location and analyzed for all parameters listed in Table 2.
- **2-Foot Intervals:** Soil samples were collected at every 2-foot interval throughout the boring depth and submitted for analysis of moisture content.

- **5-Foot Intervals:** Soil samples were collected at every 5-foot interval throughout the boring depth and analyzed for inorganic parameters listed in Table 2. Soil samples from the shallowest and deepest intervals, and any intervals where field screening indicated the potential presence of hydrocarbon impacts, were also analyzed for the organic parameters listed in Table 2.

Soil samples selected for laboratory analyses were labeled and placed in ice-packed coolers for submittal to the analytical laboratory. All laboratory analysis was conducted in accordance with the laboratory analytical methods referenced in Table 2. Trip blank samples were included with each shipping container that contained samples to be analyzed for VOCs, as required by the RO fields work plan. Analytical reports for the soil samples are provided in Appendix B.

3.3.2 Monitoring Well Construction

Following drilling operations, all boreholes were converted to permanent monitoring wells with the exception of boring RO-SB-1. Monitoring wells were constructed with 2-inch Polyvinyl Chloride (PVC) well casings with 15 feet of 0.010-inch slotted PVC screens. Wells were constructed with 20/40 silica sand filter pack within the annular space to 2 feet above the screened interval, sealed with a 4-foot bentonite seal, and grouted to the surface using a tremie pipe. Well construction details are included in Table 1.

Each well was completed with a stickup riser extending between 2 and 3 feet above the ground surface and a steel outer protective casing. Protective casings were constructed with a surrounding 4-foot by 4-foot by 4-inch thick concrete pad, sloped away from the protective casing.

Each location was surveyed by a registered land surveyor. Survey information is provided in Table 3.

3.3.3 Monitoring Well Development

All wells installed as part of this investigation were developed through bailing to remove fine grained materials accumulated in the well casing until the bottom of the well casing was reached. Field parameters including conductivity, pH, and temperature were monitored throughout the development process to determine groundwater conditions. The development process was ceased at each location when parameters stabilized (i.e., less than 10% variability between readings) or at

least three well casing volumes were removed. All fluids produced during development were collected and disposed of on-site in the process wastewater system, upstream of the oil-water separator.

3.3.4 Groundwater Sample Collection and Analysis

Groundwater samples were collected from monitoring wells MW-114 through MW-119 during four quarterly monitoring events. The depth to water was measured within each well prior to sample collection. Field logs for the purging and sample collection from each well are provided in Appendix C for each monitoring event. Water level measurements are provided in Table 4 for each well for each monitoring event in 2013.

Prior to collection of samples, each monitoring well was purged using low-flow procedures with a peristaltic pump and newly installed dedicated tubing. During the well purging process, water quality parameters, including pH, conductivity, temperature, and turbidity, were measured at regular intervals using an YSI multiparameter water quality meter with a flow-through cell. Purging continued until water quality parameters stabilized for at least four consecutive readings, indicating that collected water was characteristic of the surrounding formation. The final water quality measurements are provided in Table 5 for each well for each monitoring event in 2013.

Groundwater samples were placed into clean sample containers provided by the laboratory. Groundwater samples collected for metals analysis were field-filtered using a 0.45 micron disposable in-line filter. Groundwater samples collected for all other sample analyses were not field-filtered. Collected samples were placed in padded packing sleeves to prevent breakage and packed with ice in shipping containers. Samples were submitted to ALS Laboratory in Houston, Texas with chain-of-custody documentation and analyzed in accordance with the laboratory analytical methods referenced in Table 2. Copies of the chain-of-custody forms are included in Appendix D with the analytical data reports.

3.4 Quality Control Samples and Review

Field duplicates, field blanks, equipment rinsate blanks and trip blanks were planned to be obtained at a minimum at the following rates for soil and groundwater samples submitted to the laboratory for analysis:

- Field Duplicates – 10%
- Equipment Rinsate Blanks – 5% for soil samples (minimum of one per day)
- Trip Blanks – one per shipping container with samples intended for VOC analyses

Field duplicate samples were not collected during the well installation or during the first quarterly monitoring event. Field duplicate samples were collected during the second, third, and fourth quarterly monitoring events.

During well installation, equipment blanks were collected at the rate of one sample for every 20 soil samples; however, an equipment blank was not collected on every day.

Trip blanks were included in each shipping container that contained samples intended for VOC analyses during the well installation and all four monitoring events.

ARCADIS performed data validation on approximately 10 percent of the soil and groundwater analytical results in accordance with United States Environmental Protection Agency (USEPA) guidance (USEPA 1999; 2002). Data validation reports are included with the laboratory reports in Appendices B and D. Data qualifier flags have been appended to laboratory results based on data evaluation and are incorporated into the respective data tables discussed later in this report.

The overall assessment of analytical results indicates that the data are acceptable and usable. The sample collected at 25 ft bgs from boring MW-115 was qualified as non-detected at the reporting limit for fluoride due to method blank contamination; however, no systemic field or laboratory QC issues were identified during validation, thus all data are considered usable for the purpose intended.

Groundwater samples for nitrate/nitrite were collected in unpreserved containers during the first and third quarterly monitoring events due to miscommunication with the laboratory. As a result, the nitrate/nitrite samples are flagged as being analyzed outside of hold time. The data are presented in Section 6 and are generally considered usable for the purpose of this evaluation.

3.5 Investigation Derived Waste

During the well installation sampling activities, all soil cuttings were collected temporarily in a roll-off bin for disposal pending waste characterization results. The solid waste was subsequently disposed of off-site as nonhazardous waste. Waste disposal records are maintained at the Refinery.

Gloves, paper towels and other solid waste generated during well installation and subsequent monitoring events were collected and disposed of in the Refinery trash.

All collected water from equipment decontamination, well development, and purging was collected and subsequently disposed of within the Refinery process wastewater system, upstream of the oil-water separator.

4. Field Investigation Results

This section provides a description of the site conditions, updated with information obtained during the field investigation.

4.1 Surface Conditions

4.1.1 Area Land Uses

The area north, south, and east of the facility is sparsely populated and used primarily for agricultural and ranching purposes. The primary business and residential areas of the City of Artesia are located to west, southwest, and northwest of the Refinery. There are a few commercial businesses south of the Refinery along Highway 82, including an oil field pipe company located at the southeast corner of the plant. Much of the property for a half mile north to East Richey Avenue and east toward Bolton Road is owned by NRC. Much of the area east and northeast to Haldeman Road is a cultivated pecan orchard or used for other agricultural and ranching purposes.

The active Refinery and some of the surrounding property owned by NRC is fenced and guarded with only a few controlled entry points. The agricultural fields directly east and northeast of the Refinery that are owned by NRC are not fenced.

Immediately to the north of the north RO reject discharge field is an open field and an electrical substation. A small residential area is located to the northwest and a trucking company is located to the west of the north RO reject discharge field. The Refinery is located across Eagle Creek and to the south of the north RO reject discharge field. The south RO reject field is bounded by Eagle Creek and the north RO reject discharge field to the north, the Refinery to the west and south, and the agricultural field owned by NRC to the east.

4.1.2 Topography

The Refinery facility is located on the east side of the city of Artesia in the broad Pecos River Valley of eastern New Mexico. The topography of the site and surrounding areas is shown in Figure 1. The average elevation of the city is 3,380 feet above mean sea level. The plain, on which Artesia is located, slopes eastward at about 30 feet per mile.

4.1.3 Surface Water Drainage Features

Surface drainage in the area is dominated by small ephemeral creeks and arroyos that flow eastward to the Pecos River, located three miles east of the city.

Natural surface drainage at the facility is to the north and east. The major drainage in the immediate area of the Refinery is Eagle Creek (or Eagle Draw), an ephemeral watercourse normally flowing only following rain events, that runs southwest to northeast through the process area of the Refinery and then eastward to the Pecos River. Upstream of the Refinery, Eagle Draw functions as a major stormwater conveyance for the community. It also drains outlying areas west of the city and is periodically scoured by intense rain events.

The elevation of Eagle Draw is 3,360 feet at its entrance to the Refinery and decreases to approximately 3,305 feet at its confluence with the Pecos River. A large portion of the Refinery is within the 100-year floodplain of Eagle Draw. However, Eagle Draw has been channelized from west of Artesia to the Pecos River to help control and minimize flood events. In the vicinity of the Refinery, the Eagle Draw channel has been lined with concrete to provide further protection during flood events. A check dam was also constructed west of Artesia along Eagle Draw. At this time, most of the city and the Refinery have been effectively removed from the floodplain.

RO reject water discharge points and surface distribution trenches for the two RO reject fields are shown in Figure 3. In the north RO field, RO reject water is discharged at the southwest corner of the field and conveyed east and north via surface distribution trenches that are present in the eastern half of the field (Figure 3). In the south RO field, RO reject water is discharged at the southwest corner of the field and conveyed through a distribution trench network laid out in a grid pattern. As shown in Figure 3, the south RO field distribution network has primary trenches that trend north of the discharge point and secondary trenches that trend east of the discharge point. Earthen berms surround the perimeter of both the north and south RO fields, preventing surface water flow from each field from entering Eagle Creek and surrounding areas.

4.2 Exploratory Drilling Investigations

The methods used to complete the installation of the six monitoring wells and one soil boring were described in Section 3 of this report. Lithologic observations were recorded on the boring/well completion log contained in Appendix A. These observations are incorporated into the subsurface conditions description provided in Section 4.3.

4.3 Subsurface Conditions

Based on previous and current soil borings in the Refinery, permeable near-surface sediments to depths of 25 to 35 feet generally consist of thin discontinuous interbedded zones of clayey sands and gravels bounded by thicker zones of fine grained silts, clays, and indurated caliche. Groundwater flows through the sand and gravel deposits in braided channel flow. These sand and gravel channels likely create preferential groundwater flow pathways. The overlying clays and clayey silts undulate at the site, creating intermittent confined and unconfined groundwater conditions.

Lithologic observations from monitoring wells installed in the north RO field (RO-SB-01, MW-117, MW-118, and MW-119) indicate that shallow subsurface soils are predominantly silty clay with deeper discontinuous units of silty/clayey sands and gravels observed at depth intervals ranging from 16 to 18 ft and 24 to 25 ft bgs in RO-SB-1, from 20 to 20.5 ft bgs in MW-117, and from 23 to 25 ft bgs in MW-118. Subsurface soils were similar in the south RO field with upper silty clay soils underlain by units of silty/clayey sands and gravels observed at depth intervals ranging from approximately 21 to 24 feet in MW-114 and from 7 to 24 feet in MW-116.

4.4 Monitoring Well Construction

The monitoring well construction details were provided in Section 3 of this report.

4.5 Groundwater Conditions

The principal aquifers in the Artesia area are within the San Andres Formation and the valley fill alluvium. In the vicinity of the Refinery process area is a near-surface water-bearing zone, apparently limited in vertical extent that is shallow with respect to the surface yet exhibits artesian properties at some monitoring wells. Lithologic logs from monitor wells installed previously in the Refinery process area document a near-

surface saturated zone overlying the main valley fill alluvium and containing water of variable quality in fractured caliche and sand and gravel lenses at depths of 15 to 30 feet. This water is under artesian pressure for at least some or most of the year with static water levels 3 to 5 feet above the saturated zones. The general direction of groundwater flow in the near-surface saturated zone is to the east. Figures 4 and 5 depict the potentiometric surface for the shallow saturated zone for the Refinery and surrounding areas based on semi-annual groundwater measurements made in March 2013 and October 2013.

In wells completed in the RO fields, water levels were measured during each quarterly monitoring event. The depth to water from the established measuring point, the northern side of the well casing, was measured using a battery-powered water level indicator. Water level measurements for all four quarterly monitoring events are provided in Table 4. In general, confined groundwater conditions are observed in both RO fields based on depth to water measurements (Table 4) that are consistently above the more permeable sand and gravel units observed during RO field well installations.

Figures 6 and 7 depict the shallow potentiometric surface from March 2013 and October 2013, respectively, for use on the RO reject water discharge fields and nearby areas. As shown in Figures 6 and 7, groundwater flow is generally to the east, which is consistent with potentiometric surface data obtained as part of the facility wide groundwater monitoring program. The interpreted potentiometric surface for both 2013 semi-annual monitoring events indicates minimal groundwater mounding of approximately one foot in the north reject water application field. In the south RO reject water discharge field, groundwater mounding of approximately 5 ft is observed in the March 2013 potentiometric surface (Figure 6) and approximately 4 ft in the October 2013 potentiometric surface (Figure 7) in the vicinity of the discharge point and monitoring wells MW-114 and MW-115. The groundwater mounding observed in the south reject water application area generally extends north-south from the discharge point. This orientation matches the direction of the primary distribution trenches in the south RO field, suggesting recharge from the primary trenches influences groundwater conditions in this area.

The magnitude of groundwater mounding observed in the southern RO reject water discharge field generally correlates with previous water balance data that was included in the RO fields work plan (ARCADIS 2012b). In that water balance, it was assumed that the RO reject water is discharged to the southern RO reject water area only and is concentrated within the vegetated portions of the field. The area of

discharge was calculated to be approximately 32 acres. Annual evapotranspiration was calculated to be 80 inches. Calculated evapotranspiration was combined with long term average monthly precipitation totals to yield an annual water balance deficit of 68 inches. An average RO reject water production rate of 246 gallons per minute was calculated using production records from October 2007 to June 2012. It was conservatively assumed that RO reject water was continuously produced, and all reject water was sent to the south field as described above. This volume of water applied to the approximately 32 acres resulted in 147 inches of water application. Combined with the natural deficit of 68 inches, the annual water surplus after RO reject water input is 79 inches. The annual surplus of 79 inches or 6.6 feet for the 32 acre southern reject water area is of similar magnitude to the 4 to 5 feet of groundwater mounding observed in the 2013 potentiometric surfaces. This correlation further supports that RO reject water application is primarily responsible for groundwater mounding in the vicinity of the RO application areas.

Assuming future RO reject water production rates are consistent with past production rates, no additional groundwater mounding is expected in the northern and southern reject areas. There is potential for the application of RO reject water to influence hydraulic gradients and subsequent groundwater or site COC movement and distribution in the immediate vicinity of the RO fields. However, as described in the conceptual site model outlined in the *2012 Contaminant Migration Evaluation Work Plan* (ARCADIS 2012a), highly conductive sand and gravel channels create preferential groundwater flow pathways which are the primary mechanism controlling groundwater and COC movement at the Refinery.

During this investigation, soil samples were collected at every 2-foot interval throughout the boring depth and submitted for analysis of moisture content. Soil moisture profiles are presented in Figures 8 through 14. In these figures, the approximate ground surface at each boring location is depicted as a brown solid line and a dashed blue line indicates the measured groundwater elevation at a date shortly after soil sample collection and well installation. In all seven soil moisture profiles, an apparent wetting front, defined as a region of rapid downward decrease in water content in the vadose zone, is absent. Rather the range of soil moisture values in the soil samples collected in the vadose zone and below the measured depth to water are generally the same, suggesting that the infiltration rate is less than or equal to the infiltration capacity of RO area soils and significant saturation or ponding is not present in the vadose zone.

In the north RO reject water discharge field, beginning at the boring location closest to the discharge point, soil moisture values ranged from approximately 19 to 36 percent in MW-117 soil samples, from approximately 16 to 33 percent in RO-SB-1 soil samples, from approximately 18 to 39 percent in MW-118 soil samples, and from approximately 15 to 26 percent in MW-119 soil samples. In general, the range of soil moisture decreases with distance from the discharge point.

In the south RO reject water discharge field, beginning at the boring location closest to the discharge point, soil moisture values ranged from approximately 17 to 34 percent in MW-114 soil samples, from approximately 19 to 27 percent in MW-115 soil samples, and from approximately 15 to 26 percent in MW-118 soil samples. Similar to the north RO reject water discharge field, soil moisture decreases with distance from the discharge point.

Hydrographs displaying 2013 groundwater elevations for the RO reject field wells are presented in Figures 15 through 20. Precipitation data from the Artesia Municipal Airport for 2013 is also shown in Figures 15 through 20. In the south RO reject water discharge field (Figures 15 through 17), similar groundwater elevation trends are observed in the hydrographs with higher elevations in the spring followed by a decrease through the summer. An increasing trend in groundwater elevation is observed in the later part of 2013 and appears to correlate with a significant rainfall event in September 2013. The similar groundwater trends observed in all three south RO reject field wells (MW-114, MW-115, and MW-116) are likely influenced by the gridded distribution trench network that distributes reject water somewhat evenly throughout the field resulting in similar infiltration rates across the field.

The north RO reject field monitoring well hydrographs are presented in Figures 18 through 20. In contrast to the south field, the north field hydrographs display differing seasonal trends in groundwater elevation. In MW-117 (adjacent to the RO reject discharge point), a gradual increasing groundwater trend is observed from spring throughout the summer, with groundwater elevations staying elevated after the October 2013 rainfall event, and then sharply declining by November. The hydrograph for MW-119 has similarities to MW-117, however a decreasing groundwater elevation trend is observed in summer. The MW-118 hydrograph (Figure 19) displays significantly different groundwater trends than those observed in MW-117 and MW-119. A sharp increase groundwater elevation is observed early in 2013, through May 2013. The groundwater elevation remains elevated through the summer, followed by a decreasing trend from October through November.

The differences observed in the north RO reject field hydrographs suggest more variability in infiltration in the north field compared to the south field, possibly due to distribution trench orientation differences. Furthermore, the RO reject discharge is typically directed to the south field throughout the year, with limited periods of discharge to the north field. As shown in Figure 3, the north RO reject water discharge field surface distribution trench network is concentrated near the center of the field without the more extensive trench pattern seen in the south RO reject water discharge field. This likely results in more random dispersion of infiltrating surface water in the north RO reject water discharge field.

5. Regulatory Criteria

This section presents the sources of screening levels used to evaluate investigation analytical results.

5.1 New Mexico Soil Screening Levels

NRC has followed guidance provided by NMED to develop SSLs to determine the nature and extent of potential COCs within the RO discharge fields. The primary source of soil screening levels is the NMED risk-based soil screening guidance document *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012a). Soil screening values are presented in Table A-1 of that document, and were updated in July 2015 (NMED, 2015) for the following scenarios:

- Residential Exposure;
- Industrial/Occupational Exposure;
- Construction Worker Exposure; and
- DAF20 for protection of groundwater from soil to groundwater leaching.

To adequately characterize the risk to various receptors anticipated within the RO reject water discharge fields, separate screening levels were developed for surface (0 to 1 ft bgs) and subsurface (>1 ft bgs) soil samples. The RO reject water discharge fields are within the Refinery area, which is limited to personnel approved to enter the Refinery, which includes employees and contractors who have met the safety requirements for entry into the Refinery. Additionally, no land use change is anticipated from the current industrial use; therefore, the surface soil SSL for each analyte was determined to be the lowest value from the following sources:

- Table A-1, Industrial/Occupational Exposure; or
- Table A-1, Construction Worker Exposure.

The SSL for subsurface soils up to a depth of 10 feet was set to the Construction Worker Exposure SSL. If no NMED SSL has been published for a specific compound, the EPA Industrial RSL was used, if available, to screen shallow soil samples (0 to 10 ft bgs).

The SSL for subsurface soils at a depth of greater than 10 feet was set to the DAF-20 SSL. If no NMED DAF 20 SSL has been published for a specific compound, the EPA Tap Water RSL was used to calculate a DAF 20 SSL, referred to as an RSL-based DAF.

TPH DRO and ORO were compared to the screening level values for “unknown oil” obtained from Table 6-2 of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2015).

Soil screening levels are presented in Table 6 along with soil analytical results.

5.2 New Mexico Groundwater Standards

Groundwater data collected during RO investigation activities were evaluated using screening levels established for the facility-wide groundwater monitoring program. Regulatory standards used to evaluate analytical results are based on the presumption that the shallow groundwater might be used as a source of drinking water. The screening level value used for each COC is the lower value of either the WQCC standards from 20.6.2.3103 NMAC or the MCL from the National Primary Drinking Water Standards. For COCs where neither a WQCC standard or MCL exists, the screening level value used is the NMED Tap Water Standard listed in the updated Table A-1 of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2015) for the EPA Tap Water from Regional Screening Levels was used.. For TPH, the TPH Screening Guidelines for Potable Groundwater for unknown oil included in Table 6-2 of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012a) were used, as corrected by subsequent correspondence from the NMED. The 2012 TPH screening level for groundwater was used because the 2015 version of the guidance document does not have a screening level for TPH in groundwater.

The critical groundwater screening level (CGWSL) for each COC is provided in Table 7 along with the groundwater analytical results.

6. Sampling Results (Site Contamination)

This section presents the sampling results from the investigation performed within the two RO reject water discharge fields, including the four quarterly groundwater monitoring events.

6.1 Soil Sampling Results

This section presents the results for laboratory analysis of the soil sampling, which was also presented in the first interim monitoring report submitted in April 2013 (ARCADIS 2013a). Soil samples were analyzed for site COCs and percent moisture to delineate the extent of RO discharge seepage from the discharge fields.

Analytical results from soil samples collected are included in Table 6. Reported concentrations that are above the associated SSL for each analyte are shown in bold italic font with yellow highlighting.

Concentrations of TPH, VOCs, and polycyclic aromatic hydrocarbons (PAHs) were either not detected above laboratory reporting limits or were below screening levels for all soil samples collected during well installation. Exceedances of screening levels at the sampled locations are discussed by analytical group in detail in the following subsections.

6.1.1 Total Metals

Concentrations of metals above SSLs were detected in subsurface soil samples collected from all soil boring locations. Exceedances were limited to arsenic detections above the DAF 20 SSL. Exceedances of SSLs observed for arsenic were as follows:

- Arsenic was detected above the DAF 20 SSL of 0.299 milligrams per kilogram (mg/kg) in subsurface soil samples at all soil boring locations. No exceedances of the construction worker soil SSL (57.4 mg/kg) and/or the industrial/occupational SSL (21.5 mg/kg) were observed in the surface or subsurface soil samples collected during the investigation. The concentrations of arsenic detected above reporting limits ranged from 0.526 mg/kg (MW-117 25 ft bgs) to 7.29 mg/kg (MW-117 15 ft bgs).

Iron was detected above the DAF 20 SSL of 6,960 mg/kg in 10 of the 32 subsurface soil samples, with at least one exceedance observed at each location. No exceedances of the construction worker SSL (248,000 mg/kg) and/or the industrial/occupational SSL (908,000 mg/kg) were observed in the surface or subsurface soil samples collected during the investigation. The concentrations of iron detected above reporting limits ranged from 1,620 mg/kg (MW-118 15 ft bgs) to 10,800 mg/kg (MW-117 1 ft bgs). Concentrations of the remaining metals were not detected above the applicable SSLs in subsurface soils. No exceedances of SSLs were observed for metals in surface soil.

6.1.2 Anions

Concentrations of fluoride, nitrate and nitrite were all below the applicable SSLs in all surface and subsurface soil samples collected during the investigation.

Cyanide was not detected in any of the soil samples collected from the monitoring well soil borings and was only detected in three of the subsurface soil samples collected from RO-SB-1. The detected cyanide concentrations were above the DAF 20 SSL (0.00522 mg/kg) in subsurface soil samples collected from RO-SB-1 in the 20, 25, and 35 ft bgs intervals. The method detection limits in the surface soil samples were below both the industrial/occupational and construction worker SSLs. However, the method detection limits were above the DAF 20 SSL in the subsurface soil samples. It should be noted that the method detection limits are all below the DAF 20 SSL published in 2012 (4.41 mg/kg), which was current at the time of the investigation.

No SSLs are available for chloride and sulfate; however, these two compounds are of interest to OCD. The concentrations of these two compounds were as follows:

- Chloride was detected above laboratory reporting limits in all soil samples collected during the investigation. Concentrations of chloride ranged from 6.56 mg/kg (RO-SB-1, 1 ft bgs) to 247 mg/kg (RO-SB-1, 5 ft bgs).
- Sulfate was detected above laboratory reporting limits in all soil samples collected during the investigation. Concentrations of sulfate ranged from 204 mg/kg (RO-SB-1, 1 ft bgs) to 10,700 mg/kg (MW-118, 5 ft bgs).

Concentrations of the remaining anions were not detected above SSLs. No exceedances of SSLs were observed for anions in surface soil.

6.1.3 Radium

No SSLs have been developed for radium, which was present in soil samples, as follows:

- Radium-226 was detected in soil samples collected at all soil boring locations. Concentrations of radium-226 ranged from 0.5 picocuries per gram (pci/g; MW-117, 5 ft bgs) to 1.9 pci/g (MW-114, 5 ft bgs).
- Radium-228 was detected in soil samples collected at all soil boring locations. Concentrations of radium-228 ranged from 0.75 pci/g (MW-115, 25 ft bgs) to 1.4 pci/g (MW-116, 10 ft bgs).

6.2 Groundwater Sampling Results

This section presents the results for laboratory analysis of the four quarterly groundwater monitoring events.

6.2.1 Groundwater General Chemistry Results

General chemistry parameters were measured during purging of the wells prior to sample collection, including temperature, conductivity, pH, and turbidity. The purge parameters were recorded on the sample collection field forms. The final readings for these parameters recorded for each well are summarized in Table 5.

6.2.2 Groundwater Sample Chemical Analytical Results

Analytical results for the four quarterly groundwater monitoring events conducted in 2013 are summarized in Table 7. An electronic copy of the analytical data reports for groundwater samples is provided in Appendix D. The following subsections provide a brief summary of the groundwater analytical results.

Concentrations of radium, TPH, VOCs, and semivolatile organic compounds (SVOCs) were either not detected above laboratory reporting limits or were below screening levels for all groundwater samples collected in each of the four quarterly monitoring events of 2013. Exceedances of screening levels at the sampled locations are discussed by analytical group in detail in the following subsections.

6.2.2.1 Dissolved Metals

Concentrations of the following metals above CGWSLs were detected in groundwater samples collected from monitoring wells and the RO reject discharge water:

- The reported concentrations of arsenic in groundwater samples collected from monitoring well MW-118 ranged from 0.011 milligrams per liter (mg/L) to 0.0156 mg/L, all above the CGWSL of 0.01 mg/L. The concentrations of arsenic from all other groundwater samples collected from the other five monitoring wells within the RO reject fields were below the CGWSL for arsenic. The arsenic concentrations in the RO reject water discharge samples ranged from 0.00125 mg/L to 0.00494 mg/L, also below the CGWSL.
- The reported concentrations of manganese in the groundwater samples collected from monitoring well MW-114 in February and September 2013 (1.51 mg/L and 1.42 mg/L, respectively) were above the CGWSL of 1.13 mg/L. The concentrations of manganese from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for manganese. The manganese concentrations in the RO reject water discharge samples ranged from <0.005 mg/L to 0.0111 mg/L, also below the CGWSL.
- The reported concentration of potassium in the groundwater sample collected from monitoring well MW-117 in September 2013 (8.92 mg/L) was above the CGWSL of 8.75 mg/L. The concentrations of potassium from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for potassium. The potassium concentrations in the RO reject water discharge samples ranged from 2.72 mg/L to 4.41 mg/L, also below the CGWSL.

Concentrations of the remaining metals in water samples were either not detected above laboratory reporting limits or were below the respective CGWSLs.

6.2.2.2 Anions

Concentrations of anions were below the CGWSLs in all samples collected during the monitoring event from monitoring wells and from the RO reject discharge water, with the exception of fluoride, as follows:

- The reported concentrations of fluoride in the groundwater samples collected from monitoring well MW-117 in November 2013 (3.95 mg/L), from monitoring well MW-118 in all four quarterly events (5.16 mg/L, 5.39 mg/L, 4.48 mg/L, and 6.78 mg/L), and from monitoring well MW-119 in November 2013 (3.17 mg/L) were above the CGWSL of 2.95 mg/L. The concentrations of fluoride from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for fluoride. The fluoride concentrations in the RO reject water discharge samples ranged from 2.15 mg/L to 3.32 mg/L, with only the concentration in the sample collected in February 2013 (3.32 mg/L) above the CGWSL.

7. Conclusions

The site investigation of the RO reject discharge fields has been completed according to the approved RO fields work plan. The data collected during the soil and groundwater investigation of the RO reject water discharge fields indicate the following:

- Groundwater elevations were measured and used to construct potentiometric surface maps for the area surrounding and encompassing the RO reject water discharge fields. The data obtained throughout 2013 indicate that groundwater mounding occurs beneath the southern RO reject water discharge field, which receives the majority of the discharge. Slight mounding was noted in the northern RO reject water discharge field; however, it was not as significant.
- The reported concentrations of organic constituents in soil samples were below reporting limits or screening levels in all soil samples collected. Concentrations of organic constituents in groundwater samples were below reporting limits or screening levels in all groundwater samples collected during all four quarterly monitoring events. These results confirm that no impacts from hydrocarbons have occurred as a result of discharge of the RO reject stream to the two fields.
- The reported concentrations of arsenic were detected above soil leachate screening levels in all subsurface soil samples collected. However, the reported concentrations of arsenic in groundwater from five of the six wells were below the groundwater screening level during all four quarterly monitoring events. The reported concentrations of arsenic in groundwater from the sixth well (MW-118) ranged from 0.011 mg/L to 0.0156 mg/L, only slightly above the screening level of 0.01 mg/L. The reported concentrations of arsenic in the RO reject water discharge sample were below the screening level during all four quarterly monitoring events. These results indicate that the RO reject water discharge is not a significant source of dissolved arsenic in groundwater.
- The reported concentrations of cyanide were detected above the soil leachate screening levels in three samples collected from the soil boring RO-SB-1 located northwest of the north RO reject water discharge field. The detection limit for the subsurface soil samples from all locations was below the 2012 soil leaching screening level, but above the 2015 soil leaching screening level. Cyanide was not detected above the groundwater screening level in any of the samples collected from the monitoring wells or from the RO discharge water during this

investigation. The detection limits for the groundwater samples were typically one order of magnitude below the groundwater screening value. Therefore, cyanide does not appear to be leaching from soil into the groundwater.

- The reported concentrations of iron were above the soil leachate screening level in at least one subsurface sample from each of the monitoring wells installed in the RO reject water discharge fields. However, iron was not detected in any of the groundwater samples collected from the monitoring wells installed in the RO reject water discharge fields at concentrations above the screening level during this investigation. Thus, iron does not appear to be leaching from the soil to the groundwater in this area.
- The reported concentrations of manganese in all soil samples were below the applicable screening levels. The reported concentrations of manganese in two groundwater samples from MW-114 were above the screening level of 1.13 mg/L. The reported concentrations of manganese in the remaining groundwater samples from the monitoring wells and from all four of the RO reject water discharge samples were below the screening level. These results indicated that the RO reject water discharge is not a significant source of dissolved manganese in groundwater.
- The reported concentrations of fluoride in all soil samples were below the applicable screening levels. The reported concentrations of fluoride in groundwater samples from the monitoring wells located in the South RO reject discharge field were all below the CGWSL. The reported concentrations of fluoride in groundwater samples from MW-118 in the North RO reject field collected during 2013 were all above the CGWSL, while the reported concentrations of fluoride were below the CGWSL in three of the four samples collected during 2013 (first three quarters) from both MW-117 and MW-119. The reported concentration of fluoride in the RO reject water sample collected during the first quarter of 2013 was above the CGWSL while the concentrations in the remaining three quarterly samples were below the CGWSL. These results indicated that the RO reject water discharge is not a significant source of dissolved fluoride in groundwater.
- Potassium does not have a soil screening level; thus, there were no “exceedances” of potassium in soil. One of groundwater samples collected from MW-117 during 2013 contained potassium at a concentration above the screening value. All other reported concentrations of potassium in samples

collected from the other wells within the RO reject discharge fields and the samples collected from the RO reject water were below the CGWSL. These results indicated that the RO reject water discharge is not a significant source of dissolved potassium in groundwater.

Based on the investigation performed and the evaluation of both soil and groundwater data, it does not appear that discharge of the RO reject water to the fields has impacted the underlying groundwater.

8. Recommendations

The investigation of the RO reject water discharge fields has confirmed that discharge of this stream has caused mounding of groundwater in the immediate vicinity of the fields. However, the mounding is localized and limited in extent. The OCD has required NRC to cease discharge to the fields by October 21, 2016. The localized mounding effect of the discharge is expected to disperse within a short period of time following the cessation of discharge. Therefore, no further action is recommended regarding the hydrogeology at this time.

The investigation of the RO reject water discharge fields has confirmed that no impact to groundwater immediately beneath the fields has occurred for organic compounds. The investigation has also confirmed that the majority of the inorganic compounds for which water quality standards exist are not present above either the water quality standards or the background concentrations. The only compounds present above the groundwater screening values in any of the monitoring wells installed within the RO reject water discharge fields are arsenic, manganese, potassium, and fluoride. However, the elevated concentrations are not present in all of the monitoring wells installed within the fields or consistently present in the RO reject discharge water. These results indicate that the RO reject discharge water is not a significant source of these dissolved phase constituents.

It is recommended that the six monitoring wells installed in the RO reject water discharge fields continue to be monitored on a semiannual basis. It is recommended that the groundwater samples be analyzed for the following parameters:

- TPH DRO;
- Cations/anions, to include chloride, fluoride, sulfate, calcium, potassium, and sodium;
- Nitrate/nitrite; and
- Metals, to include arsenic, barium, chromium, iron, lead, manganese, and selenium.

This list of parameters overlaps with the parameters analyzed for the routine groundwater monitoring program and encompasses the compounds that may have been affected by discharge of the RO reject stream. The groundwater samples will be

analyzed for both total and dissolved metals during the first semiannual sampling event and for total metals only during the second semiannual sampling event, as per the routine groundwater monitoring program. The results of the routine monitoring and evaluation of concentration trends will be reported in the annual groundwater monitoring reports.

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Tables

Table 1 - Well Construction Details
RO Reject Water Discharge Fields Investigation - Final Report
Navajo Refining Company, Artesia Refinery, New Mexico

Well ID	Date Installed	Drilling Method	Borehole Depth (feet bgs)	Screen Interval (feet bgs)	Screen Material	Screen Slot Size (inches)	Filter Pack Depth (feet bgs)	Bentonite Depth (feet bgs)	Casing Diameter (inches)	Casing Material	Surface Completion
MW-114	1/28/2013	hollow-stem	35	20-35	slotted PVC	0.010	18-35	14-18	2	PVC	Stick up
MW-115	1/29/2013	hollow-stem	25	10-25	slotted PVC	0.010	8-25	4-8	2	PVC	Stick up
MW-116	1/30/2013	hollow-stem	25	10-25	slotted PVC	0.010	8-25	4-8	2	PVC	Stick up
MW-117	1/31/2013	hollow-stem	25	10-25	slotted PVC	0.010	8-25	4-8	2	PVC	Stick up
MW-118	2/4/2013	hollow-stem	25	10-25	slotted PVC	0.010	8-25	4-8	2	PVC	Stick up
MW-119	2/4/2013	hollow-stem	25	10-25	slotted PVC	0.010	8-25	4-8	2	PVC	Stick up

Notes:

bgs = below ground surface

hollow-stem = hollow-stem auger

MW = monitoring well

RO = Reverse Osmosis

PVC = Polyvinyl chloride

Table 2 - Laboratory Analytical Methods for Soil and Groundwater Samples
RO Reject Water Discharge Fields Investigation - Final Report
Navajo Refining Company, Artesia Refinery, New Mexico

Sample Matrix	Method	Analyte Group	Specific Compounds
Soil / Groundwater / RO Reject Water	8015 Mod	Total Petroleum Hydrocarbons	Gasoline Range Organics Diesel Range Organics Oil Range Organics
Soil / Groundwater / RO Reject Water	6020 and 7470/7471	Metals (Dissolved Metals for Groundwater and RO Reject Water Samples)	Aluminum Arsenic Barium Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead Manganese Mercury Molybdenum Nickel Potassium Selenium Silver Sodium Uranium Zinc
Soil / Groundwater / RO Reject Water	8260	Volatile Organic Compounds	Target Compound List to include specific compounds listed in 20.6.2.7(WW), 20.6.2.3103.A, 20.6.2.3103.B, and 20.6.2.3103.C
Soil / Groundwater / RO Reject Water	8270	Semivolatile Organic Compounds	Target Compound List to include specific compounds listed in 20.6.2.7(WW), 20.6.2.3103.A, 20.6.2.3103.B, and 20.6.2.3103.C
Soil / Groundwater / RO Reject Water	9014	Cyanide	Cyanide
Soil / Groundwater / RO Reject Water	300	Anions/Cations	Chloride Fluoride Sulfate Nitrite/Nitrate
Soil / Groundwater / RO Reject Water	903.1	Radioactive Parameters	Radioactivity (combined Radium-226 and Radium-228)
Soil	2540	Moisture	Percent Moisture
Soil / Groundwater / RO Reject Water	2540C	Water Quality	Total Dissolved Solids
Soil / Groundwater / RO Reject Water	Field instrument	Water Quality	pH

Note:

RO = reverse osmosis

Table 3 - Survey Information
RO Reject Water Discharge Fields Investigation - Final Report
Navajo Refining Company, Artesia Refinery, New Mexico

Well	Northing (ft)	Easting (ft)	Top of Casing Elevation (ft amsl)	Land Surface Elevation (ft)
MW-114	673082.16	523818.86	3361.68	3358.60
MW-115	673997.34	523932.93	3359.31	3356.50
MW-116	673966.06	525339.63	3353.77	3351.00
MW-117	674301.52	522979.73	3363.01	3360.10
MW-118	674819.18	523375.94	3361.95	3359.60
MW-119	674860.11	524575.80	3356.11	3353.80
RO-SB-1	674883.53	522713.68	--	--

Notes:

1. Northing and easting are New Mexico State Plane Coordinate System, Grid Zone East, NAD 83
Per O.P.U.S solution of static G.P.S observation
2. Elevations are NAVD 88 datum, Per N.G.S Benchmark G 416,
Elevation = 3368.79 feet.

ft = feet

-- = not measured

RO = Reverse osmosis

MW = monitoring well

amsl = above mean sea level

Table 4 - 2013 Water Level Measurements
RO Reject Water Discharge Fields Investigation - Final Report
 Navajo Refining Company, Artesia Refinery, New Mexico

Well ID	Screen Interval (ft bgs)	Top of Casing Elevation (ft amsl)	Date Measured	Depth to Water (ft below toc)	Water Elevation (ft amsl)
MW-114	20-35	3361.68	2/3/2013	8.59	3353.09
			3/21/2013	5.56	3356.12
			5/15/2013	7.75	3353.93
			9/5/2013	9.44	3352.24
			10/8/2013	6.99	3354.69
			11/18/2013	5.48	3356.20
MW-115	10-25	3359.31	2/3/2013	7.49	3351.82
			3/21/2013	3.20	3356.11
			5/15/2013	8.10	3351.21
			9/4/2013	8.23	3351.08
			10/8/2013	7.22	3352.09
			11/18/2013	5.47	3353.84
MW-116	10-25	3353.77	2/3/2013	9.91	3343.86
			3/21/2013	5.61	3348.16
			5/16/2013	10.25	3343.52
			9/4/2013	12.21	3341.56
			10/8/2013	10.82	3342.95
			11/18/2013	9.90	3343.87
MW-117	10-25	3363.01	2/3/2013	7.07	3355.94
			3/22/2013	9.82	3353.19
			5/15/2013	8.52	3354.49
			9/4/2013	6.09	3356.92
			10/8/2013	6.13	3356.88
			11/18/2013	10.01	3353.00
MW-118	10-25	3361.95	2/5/2013	13.71	3348.24
			3/22/2013	10.16	3351.79
			5/15/2013	4.63	3357.32
			9/4/2013	4.49	3357.46
			10/8/2013	5.15	3356.80
			11/18/2013	10.96	3350.99
MW-119	10-25	3356.11	2/5/2013	6.67	3349.44
			3/22/2013	10.27	3345.84
			5/15/2013	7.65	3348.46
			9/4/2013	10.72	3345.39
			10/8/2013	6.97	3349.14
			11/18/2013	11.48	3344.63

Abbreviations:

amsl = above mean sea level
 bgs = below ground surface
 toc = top of casing
 ft = feet
 RO = reverse osmosis
 MW = monitoring well

Notes:

1. Elevations are NAVD 88 datum, determined with Leitz Engineer level referenced to NGS benchmark designated G-416 with an elevation of 3368.79 feet.
2. Measuring point for all wells is top of casing on the north side.

Table 5 - 2013 Well Purging and Water Quality Measurement Data
RO Reject Water Discharge Fields Investigation - Final Report
Navajo Refining Company, Artesia Refinery, New Mexico

Well	Date	Time	Temperature (°C)	Conductivity (mS/cm)	pH (std units)	DO (mg/L)	ORP (mV)	Turbidity (NTU)
MW-114	02/03/2013	11:15	18.88	4.14	6.49	--	--	37.8
MW-114	05/15/2013	13:35	20.04	4.026	6.51	0.64	37.3	2.93
MW-114	09/05/2013	9:30	23.25	3.432	6.74	0.25	42.5	2.41
MW-114	11/21/2013	9:30	15.61	3.39	6.11	3.8	170.6	--
MW-115	02/03/2013	12:15	16.83	4.53	6.83	--	--	59.0
MW-115	05/15/2013	15:29	20.17	5.293	6.65	0.03	63.1	2.79
MW-115	09/04/2013	17:10	21.33	4.954	6.88	0.19	8.4	0.67
MW-115	11/21/2013	8:20	15.43	3.244	6.27	3.45	151	--
MW-116	02/03/2013	13:05	14.03	4.88	6.69			75.2
MW-116	05/16/2013	10:00	16.09	5.364	6.35	2.64	103.5	162
MW-116	09/04/2013	15:20	21.21	3.833	6.93	0.24	17.4	0.46
MW-116	11/20/2013	16:15	14.56	2.782	6.23	4.27	174.2	--
MW-117	02/03/2013	9:40	18.85	4.29	6.36	--	--	62.0
MW-117	05/15/2013	10:05	19.83	4.228	6.51	0.25	132.5	2.35
MW-117	09/04/2013	9:50	24.41	3.435	6.60	0.43	33.1	0.33
MW-117	11/20/2013	14:00	19.28	2.772	5.90	1.49	173.2	29.6
MW-118	02/05/2013	14:15	16.11	4.93	6.72	--	--	26.8
MW-118	05/15/2013	18:03	19.15	4.954	6.73	5.15	90.6	1.61
MW-118	09/04/2013	12:00	23.35	3.858	6.80	3.41	43.7	0.23
MW-118	11/20/2013	12:50	17.5	2.906	5.91	5.49	113	4.71
MW-119	02/05/2013	13:05	9.42	4.00	6.87	--	--	144
MW-119	05/15/2013	18:05	15.15	4.436	6.50	7.65	88.4	2.77
MW-119	09/04/2013	13:30	19.98	3.248	6.94	1.96	11.1	0.18
MW-119	11/20/2013	9:50	5.86	2.777	5.86	7.06	141.3	4.77

Notes:

°C = degrees Celsius

DO = dissolved oxygen

mg/L = milligrams per liter

mS/cm = milli-Siemens per centimeter

mV = millivolts

NTU = nephelometric turbidity units

ORP = oxidation reduction potential

std units = standard pH units

-- = parameter not collected

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-114						
						1	5	10	15	20	25	29
						1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
Moisture (%)												
Percent Moisture	---	---	---	---	---	17.9	28	25.2	19.9	27	23.6	NA
Metals (mg/kg)												
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	13900	5490	8230	8150	8460	10100	NA
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	4.67	2.19	3.1	3.48	2.97	3.14	NA
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	115	99.2	131	50.7	191	27	NA
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	5.29	5.78 J	6.34	7.64	3.21	5.2 J	NA
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.403 J	0.0884 J	0.126 J	0.149 J	0.186 J	0.279 J	NA
Calcium	---	---	---	---	---	58900	150000	141000	146000	120000	138000	NA
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	14.3	5.44	7.76	9.03	3.77	11.2	NA
Cobalt	---	---	3.50E+02	---	5.40E+00	4.91	1.3	2.14	2.92	2.65	4.08	NA
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	26.4	1.67	2.82	3.34	3.97	3.57	NA
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	9110	3330	4890	5630	5630	9390	NA
Lead	8.00E+02	8.00E+02	---	---	---	37.3	2.59	3.86	4.96	4.37	6.42	NA
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	192	45.8	78	129	137	125	NA
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	0.0199	< 0.00471	0.00371 J	0.00127 J	< 0.00458	0.00738	NA
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.58 J	0.273 J	0.406 J	0.808	0.594 J	0.592 J	NA
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	10.7	3.16	4.48	6.38	5.71	5.62	NA
Potassium	---	---	---	---	---	3520	1060	1650	1240	1610	1660	NA
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	1.12	0.307 J	0.64	0.537	0.453 J	< 1.24	NA
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.584	< 0.584	< 0.564	< 0.499	< 0.6	< 0.618	NA
Sodium	---	---	---	---	---	157	110	136	113	108	181	NA
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 584	< 0.584	< 0.564	< 0.499	< 0.6	< 0.618	NA
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	40	9.61	14.9	16.1	18.2	23	NA
Anions (mg/kg)												
Chloride	---	---	---	---	---	21	24.9	20.6	27.8	24.6	19.8	NA
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	11.1	7.73	5.02	7.12	4.19	4.63	NA
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	< 1.21	< 1.39	< 1.31	< 1.24	< 1.36	< 1.3	NA
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1.21	< 1.39	< 1.31	< 1.24	< 1.36	< 1.3	NA
Sulfate	---	---	---	---	---	1120	796	6970	1270	320	390	NA
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 2.41	< 2.66	< 2.46	< 2.29	< 2.5	< 2.49	NA
Radium (pci/g)												
Radium-226	---	---	---	---	---	1.83 G	1.9 G	1.13 G	0.9 LT,G	0.94 LT,G	0.8 LT,G	NA
Radium-228	---	---	---	---	---	< 0.99 G	1.12 G,NQ	< 0.66 G	< 0.89 G	1.06 G,NQ	< 0.73 G	NA
TPH (mg/kg)												
GRO	---	---	---	---	---	< 0.061	NA	NA	NA	NA	NA	NA
DRO	3.80E+03	---	---	---	---	< 2.1	NA	NA	NA	NA	NA	NA
ORO	3.80E+03	---	---	---	---	0.83 J	NA	NA	NA	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-114						
						1	5	10	15	20	25	29
						1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
VOCs (mg/kg)												
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	0.0032 J	NA	NA	NA	NA	NA	0.0025 J
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	< 0.018	NA	NA	NA	NA	NA	< 0.015
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	< 0.0061	NA	NA	NA	NA	NA	< 0.005
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	< 0.0024	NA	NA	NA	NA	NA	< 0.002
PAHs (mg/kg)												
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	< 0.008	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	< 0.008	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	< 0.008	NA	NA	NA	NA	NA	NA
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	< 0.008	NA	NA	NA	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-114 (continued)		MW -115			
						30	35	1	5	10	15
						1/28/2013	1/28/2013	1/29/2013	1/29/2013	1/29/2013	1/29/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)						
Moisture (%)											
Percent Moisture	---	---	---	---	---	27.4	17.5	19	26.9	19.9	16.3
Metals (mg/kg)											
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	11100	8660	13800	13200	12100	4980
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	1.13 J	1.09	3.6	2.42	2.9	0.893
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	111	75.2	147	79.7	120	458
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	3.95 J	2.39	6.45	9.03	6.04	3.78 J
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.183 J	0.129 J	0.39 J	0.257 J	0.449 J	0.117 J
Calcium	---	---	---	---	---	146000	50400	64700	90500	63400	157000
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	11.4	7.82	12.8	13	14.3	5.84
Cobalt	---	---	3.50E+02	---	5.40E+00	3.6	2.38	4.78	4.55	4.7	1.62
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	5.59	2.71	11.4	7.86	15.5	1.31
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	8870	5410	9060	8880	8210	3200
Lead	8.00E+02	8.00E+02	---	---	---	5.54	4.82	23.7	8.22	44.9	3.28
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	217	88.1	357	211	175	62.9
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	< 0.00479	< 0.00412	0.0182	0.00569	0.0146	< 0.00415
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.289 J	0.187 J	0.742	0.68	0.614	< 0.549
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	6.9	5.19	9.67	8.77	9.68	3.12
Potassium	---	---	---	---	---	1840	1860	3360	2630	3490	860
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	< 1.18	0.258 J	0.949	0.843	1.2	0.348 J
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.592	< 0.442	< 0.591	< 0.599	0.11 J	< 0.549
Sodium	---	---	---	---	---	208	125	327	216	288	122
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 0.592	< 0.442	< 0.591	0.856	< 0.587	< 0.549
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	23.4	14.4	33.8	31.4	37.9	8.52
Anions (mg/kg)											
Chloride	---	---	---	---	---	20.8	19.6	58.8	51.5	55	49.1
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	2.25	3.2	5.2	5.92	7.73	3.85
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	< 1.37	< 1.2	< 1.23	< 1.36	< 1.23	< 1.19
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1.37	< 1.2	< 1.23	< 1.36	< 1.23	< 1.19
Sulfate	---	---	---	---	---	338	259	1160	1070	722	383
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 2.7	< 2.18	< 2.3	< 2.71	< 2.43	< 2.3
Radium (pci/g)											
Radium-226	---	---		---	---	0.73 LT,G,TI	0.82 LT,G	1.62 G	1.29 G	1.39 G	0.57 LT,G
Radium-228	---	---		---	---	0.86 LT,G,TI	0.99 LT,G,TI	1.25 G,TI	0.78 LT,G,TI	1.03 G,NQ	< 0.63 G
TPH (mg/kg)											
GRO	---	---	---	---	---	NA	< 0.061	< 0.062	NA	NA	NA
DRO	3.80E+03	---	---	---	---	NA	< 2.1	< 2.1	NA	NA	NA
ORO	3.80E+03	---	---	---	---	NA	0.63 J	1.4 J	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-114 (continued)		MW -115			
						30	35	1	5	10	15
						1/28/2013	1/28/2013	1/29/2013	1/29/2013	1/29/2013	1/29/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)						
VOCs (mg/kg)											
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	NA	< 0.0061	< 0.0062	NA	NA	NA
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	NA	0.0038 J	< 0.012	NA	NA	NA
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	NA	< 0.018	< 0.019	NA	NA	NA
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	NA	< 0.0061	< 0.0062	NA	NA	NA
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	NA	< 0.0024	< 0.0025	NA	NA	NA
PAHs (mg/kg)											
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	NA	< 0.008	< 0.0081	NA	NA	NA
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	NA	< 0.008	< 0.0081	NA	NA	NA
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	NA	< 0.008	< 0.0081	NA	NA	NA
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	NA	< 0.008	< 0.0081	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-115 (continued)		MW-116				
						20	25	1	5	10	15	20
						1/29/2013	1/29/2013	1/29/2013	1/29/2013	1/30/2013	1/30/2013	1/30/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
Moisture (%)												
Percent Moisture	---	---	---	---	---	18.9	20.9	17.9	16.1	16.4	15.3	19.2
Metals (mg/kg)												
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	10300	5210	14600	9770	7550	3970	8370
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	2.53	1.05	4.38	3.65	2.48	2.83	6.28
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	179	68	130	155	43.5	19	19.9
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	4.85 J	< 13.9	7.77	7.48	9.23 J	6.99 J	4.74
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.251 J	0.173 J	0.407 J	0.156 J	0.114 J	0.102 J	0.283 J
Calcium	---	---	---	---	---	161000	219000	60800	122000	166000	216000	104000
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	9.21	5.52	14	8.46	6.73	3.86	7.41
Cobalt	---	---	3.50E+02	---	5.40E+00	3.7	1.33	5.52	2.94	2.58	2.7	2.95
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	3.3	1.19	11.1	4.05	2.97	2.53	4.92
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	7710	2980	10100	6240	4720	2880	7120
Lead	8.00E+02	8.00E+02	---	---	---	7.03	3.73	14.7	4.47	3.63	2.03	7.08
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	132	48	375	163	139	351	251
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	< 0.00435	< 0.00449	0.0081	0.00677	0.00774	0.000647 J	0.00829
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.228 J	< 0.558	0.585	0.485	0.331 J	0.645	0.837
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	6.69	2.74	11.6	6.19	4.51	5.57	7.79
Potassium	---	---	---	---	---	1690	773	3770	2130	1620	956	1280
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	0.699	0.428 J	0.95	0.485	0.353 J	0.252 J	0.512
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.573	< 0.558	< 0.413	< 0.382	< 0.432	< 0.448	< 0.46
Sodium	---	---	---	---	---	186	129	135	156	121	108	142
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 0.573	< 0.558	< 0.413	0.523	0.45	< 0.448	< 0.46
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	20.5	8.99	37.3	19	14.2	7.87	19.8
Anions (mg/kg)												
Chloride	---	---	---	---	---	51.6	50.4	22.2	29.8	8.03	31.6	33.3
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	5.04	< 3.55 B	14.7	4.51	5.76	8.7	3.92
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	< 1.23	< 1.24	2.63	< 0.992	0.896 J	< 0.984	< 0.997
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1.23	< 1.24	< 0.999	< 0.992	< 0.995	< 0.984	< 0.997
Sulfate	---	---	---	---	---	463	326	330	234	82.1	891	310
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 2.3	< 2.52	< 1.94	< 1.8	< 1.96	< 1.82	< 1.96
Radium (pci/g)												
Radium-226	---	---	---	---	---	0.58 LT,G,TI	< 0.51 G	1.87 G	0.86 LT,G	1.75 G	0.66 LT,G	0.94 LT,G
Radium-228	---	---	---	---	---	< 0.81 G	0.75 NQ	1.2 G,TI	< 0.8 G	1.4 M3,G	< 0.75 G	1.06 G,TI
TPH (mg/kg)												
GRO	---	---	---	---	---	NA	< 0.063	< 0.05	NA	NA	NA	NA
DRO	3.80E+03	---	---	---	---	NA	< 2.1	0.53 J	NA	NA	NA	NA
ORO	3.80E+03	---	---	---	---	NA	0.77 J	4.7	NA	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						MW-115 (continued)		MW-116				
						20	25	1	5	10	15	20
						1/29/2013	1/29/2013	1/29/2013	1/29/2013	1/30/2013	1/30/2013	1/30/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
VOCs (mg/kg)												
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	NA	< 0.013	< 0.01	NA	NA	NA	NA
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	NA	< 0.019	< 0.015	NA	NA	NA	NA
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	NA	< 0.0063	< 0.005	NA	NA	NA	NA
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	NA	< 0.0025	< 0.002	NA	NA	NA	NA
PAHs (mg/kg)												
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	NA	< 0.0083	< 0.0066	NA	NA	NA	NA
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	NA	< 0.0083	< 0.0066	NA	NA	NA	NA
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	NA	< 0.0083	< 0.0066	NA	NA	NA	NA
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	NA	< 0.0083	< 0.0066	NA	NA	NA	NA

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-116	MW-117					
Depth:						25	1	5	10	15	20	25
Date:						1/30/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
Moisture (%)												
Percent Moisture	---	---	---	---	---	23.2	22.5	19	26.4	23.9	20.7	21
Metals (mg/kg)												
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	7960	15200	5020	6140	5400	11200	8180
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	3.22	4.74	1.4	2.48	7.29	1.12	0.526 J
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	181	182	62.2	49.2	8.33	23.2	6.58
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	7.57	8.67	7.89	5.92 J	2.96 J	2.45 J	< 3.16
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.205 J	0.374 J	0.133 J	0.195 J	< 0.607	0.234 J	< 0.631
Calcium	---	---	---	---	---	76500	83700	151000	119000	26700	95400	2810
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	6.81	15.4	7.26	8.28	6.81	11.9	7.67
Cobalt	---	---	3.50E+02	---	5.40E+00	2.49	5.45	1.54	2.23	3.54	3.43	2.05
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	4.45	9.7	2.51	2.09	2.2	4.44	3.35
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	5710	10800	3570	5340	8050	6600	4590
Lead	8.00E+02	8.00E+02	---	---	---	5.57	11.9	2.9	4.46	3.04	7.99	4.74
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	169	410	105	69.2	91	72	37.5
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	0.000757 J	0.00702	< 0.00417	0.00201 J	0.0011 J	0.0033 J	< 0.0044
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.381 J	1.01	0.457 J	0.276 J	0.606 J	< 0.603	< 0.631
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	6.75	11.4	3.48	3.85	5.09	6.31	4.4
Potassium	---	---	---	---	---	1700	3310	1110	1310	1230	1760	1490
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	0.433	0.98	0.415 J	0.422 J	< 0.607	0.699	< 0.631
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.409	< 0.634	< 0.593	< 0.665	< 0.607	< 0.603	< 0.631
Sodium	---	---	---	---	---	120	332	164	119 J	154	208	153
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 0.409	< 0.634	< 0.593	< 0.665	< 0.607	< 0.603	< 0.631
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	17.8	38.7	11.6	12.2	10.1	22	14.5
Anions (mg/kg)												
Chloride	---	---	---	---	---	47.6	81.1	37.5	28.7	33.5	24.4	26.3
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	1.91	15.4	8.01	6.49	5.93	5.11	5.18
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	< 1	0.804 J	< 1.21	< 1.35	< 1.31	0.415 J	0.566 J
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1	< 1.28	< 1.21	< 1.35	< 1.31	< 1.26	< 1.26
Sulfate	---	---	---	---	---	254	777	3960	1790	2100	349	396
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 1.9	< 2.52	< 2.2	< 2.53	< 2.53	< 2.45	< 2.23
Radium (pci/g)												
Radium-226	---	---	---	---	---	0.78 LT,G	1.55 G	0.5 LT,TI	0.68 LT,TG	< 0.44 G	0.87 LT,G	0.51 LT,G
Radium-228	---	---	---	---	---	< 0.85 G	< 0.93 G	< 0.82	< 0.81 G	< 0.73 G	< 0.75 G	0.82 LT,G,TI
TPH (mg/kg)												
GRO	---	---	---	---	---	< 0.05	< 0.065	NA	NA	NA	NA	< 0.063
DRO	3.80E+03	---	---	---	---	< 1.7	< 2.2	NA	NA	NA	NA	< 2.1
ORO	3.80E+03	---	---	---	---	< 3.4	< 4.4	NA	NA	NA	NA	< 4.3

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-116	MW-117					
Depth:						25	1	5	10	15	20	25
Date:						1/30/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
VOCs (mg/kg)												
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	< 0.01	0.0086 J	NA	NA	NA	NA	0.0069 J
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	< 0.015	< 0.019	NA	NA	NA	NA	< 0.019
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	< 0.005	< 0.0065	NA	NA	NA	NA	< 0.0063
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	< 0.002	< 0.0026	NA	NA	NA	NA	< 0.0025
PAHs (mg/kg)												
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	< 0.0066	< 0.0085	NA	NA	NA	NA	< 0.0083
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	< 0.0066	< 0.0085	NA	NA	NA	NA	< 0.0083
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	< 0.0066	< 0.0085	NA	NA	NA	NA	< 0.0083
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	< 0.0066	< 0.0085	NA	NA	NA	NA	< 0.0083

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-118					
Depth:						1	5	10	15	20	25
Date:						2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)						
Moisture (%)											
Percent Moisture	---	---	---	---	---	25.7	34.8	29.3	27.2	17.9	21
Metals (mg/kg)											
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	14300	8560	7230	2930	3230	9540
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	4.08	3.53	2.53	0.76 J	1.02 J	3.21
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	105	85.6	84	8.93	6.44	32.6
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	7.25	7.21	4.16 J	< 15.8	< 14.7	< 5.95
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.353 J	0.13 J	0.172 J	0.335 J	0.457 J	0.22 J
Calcium	---	---	---	---	---	55400	115000	187000	245000	249000	99200
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	14.1	8.08	7.53	3.62	3.22	9.08
Cobalt	---	---	3.50E+02	---	5.40E+00	4.33	2.15	1.81	0.487 J	0.982 J	2.15
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	21.3	3.19	3.38	< 3.17	0.614 J	4.53
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	9280	5220	4430	1620	1960	7200
Lead	8.00E+02	8.00E+02	---	---	---	295	3.67	6.52	2.99 J	3.71	4.81
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	261	62.9	98.8	36.3	58.4	95.7
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	0.0401	0.00739	0.00351 J	0.0013 J	0.000827 J	0.0028 J
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.627	0.416 J	0.464 J	< 0.633	< 2.94	0.545 J
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	9.1	4.78	4.37	1.58 J	2.51 J	7.1
Potassium	---	---	---	---	---	3020	1610	1530	561	603	1740
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	0.652	0.286 J	0.344 J	1.49 J	1.38 J	0.724 J
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.585	< 0.715	< 0.635	< 0.633	< 2.94	< 1.19
Sodium	---	---	---	---	---	152	248	158	90.4	73.1 J	226
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 0.585	0.953	< 0.635	< 0.633	< 2.94	< 1.19
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	37.5	13.5	13.7	6.21	6.61	22.8
Anions (mg/kg)											
Chloride	---	---	---	---	---	34	56.9	74.6	52	66.2	NA
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	5.27	4.29	3.8	8.59	7.71	NA
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	< 1.22	< 1.53	< 1.37	< 1.22	< 1.1	NA
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1.22	< 1.53	< 1.37	< 1.22	< 1.1	NA
Sulfate	---	---	---	---	---	3100	10700	3020	777	681	NA
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 2.5	< 2.83	< 2.67	< 2.51	< 2.29	NA
Radium (pci/g)											
Radium-226	---	---		---	---	1.5 G	1.64 G	0.62 LT, G, TI	< 0.36 G	< 0.52 G	0.74 LT, G
Radium-228	---	---		---	---	0.89 NQ, G	0.96 NQ, G	< 0.74 G	< 0.57 G	< 0.89 G	1.04 G, TI
TPH (mg/kg)											
GRO	---	---	---	---	---	< 0.067	NA	NA	NA	NA	< 0.063
DRO	3.80E+03	---	---	---	---	< 2.3	NA	NA	NA	NA	< 2.1
ORO	3.80E+03	---	---	---	---	< 4.6	NA	NA	NA	NA	< 4.3

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-118					
Depth:						1	5	10	15	20	25
Date:						2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)						
VOCs (mg/kg)											
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	< 0.0067	NA	NA	NA	NA	< 0.0063
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	< 0.0083	NA	NA	NA	NA	< 0.0083
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	< 0.02	NA	NA	NA	NA	< 0.019
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	< 0.0067	NA	NA	NA	NA	< 0.0063
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	< 0.0027	NA	NA	NA	NA	< 0.0025
PAHs (mg/kg)											
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	< 0.0088	NA	NA	NA	NA	< 0.0083
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	< 0.0088	NA	NA	NA	NA	< 0.0083
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	< 0.0088	NA	NA	NA	NA	0.0026 J
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	< 0.0088	NA	NA	NA	NA	< 0.0083

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-119						RO-SB-1
Depth:						1	5	10	15	20	25	1
Date:						2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	1/31/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
Moisture (%)												
Percent Moisture	---	---	---	---	---	22.3	23	24.8	26	20.7	19.3	17.7
Metals (mg/kg)												
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	13800	13300	9390	5700	10300	11600	10800
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	3.39	4.21	6.34	2.98 J	2.8	2.38	4.07
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	89.9	108	50.7	47.3	208	18.2	149
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	6.94	5.63	6.02 J	11.9 J	4.44	6.19	6.67
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.483 J	0.295 J	0.167 J	< 3.34	0.188 J	0.218 J	0.266 J
Calcium	---	---	---	---	---	77800	103000	89200	246000	65300	124000	105000
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	13	11.1	9.37	4.79	8.86	9.42	10.6
Cobalt	---	---	3.50E+02	---	5.40E+00	4.37	3.77	3.84	2.05 J	2.77	4.83	4.17
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	12.1	5.81	4.42	2.39 J	3.91	4.7	8.25
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	8910	8220	7850	4080	6080	8790	8020
Lead	8.00E+02	8.00E+02	---	---	---	61	6.75	6.14	2.84 J	4.36	5.31	10.6
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	131	204	252	523	88.8	184	236
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	0.0207	0.00731	0.00912	0.00611	0.00501	0.00225 J	0.00979
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.593 J	0.743 J	0.858 J	2.16 J	0.302 J	< 1.23	0.495 J
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	9.34	8.08	9.28	8.56	6.69	8.83	8.27
Potassium	---	---	---	---	---	3310	2680	2500	1280	1650	2210	2690
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	1.18 J	0.895 J	0.644 J	1.32 J	0.62	0.663 J	0.655
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 1.19	< 1.09	< 1.26	< 3.34	< 0.599	< 1.23	< 0.583
Sodium	---	---	---	---	---	149	131	134	< 334	130	140	132
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 1.19	< 1.09	< 1.26	< 3.34	< 0.599	< 1.23	< 0.583
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	56.8	27.1	21.7	11.8	19.7	23.2	31.7
Anions (mg/kg)												
Chloride	---	---	---	---	---	NA	29.2	22.6	18.9	33.4	34.4	6.56
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	NA	12.3	5.94	5.87	4.97	3.28	16.4
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	NA	< 1.21	< 1.21	< 1.28	< 1.09	< 1.13	< 1.21
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	NA	< 1.21	< 1.21	< 1.28	< 1.09	< 1.13	< 1.21
Sulfate	---	---	---	---	---	NA	1680	1080	1310	849	495	204
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	NA	< 2.36	< 2.58	< 2.58	< 2.4	< 0.57	< 2.36
Radium (pci/g)												
Radium-226	---	---		---	---	1.41 G	1.14 G	1.44 G	0.56 LT,G	1.07 G	0.66 LT,G,TI	1.32 G
Radium-228	---	---		---	---	< 0.9 G	< 0.67 G	0.8 LT,G,TI	< 0.97 G	0.9 LT,G	< 0.72 G	< 0.9 G
TPH (mg/kg)												
GRO	---	---	---	---	---	< 0.064	NA	NA	NA	NA	< 0.062	< 0.061
DRO	3.80E+03	---	---	---	---	< 2.2	NA	NA	NA	NA	< 2.1	< 2.1
ORO	3.80E+03	---	---	---	---	1.1 J	NA	NA	NA	NA	< 4.2	< 4.1

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location:						MW-119						RO-SB-1
Depth:						1	5	10	15	20	25	1
Date:						2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	2/4/2013	1/31/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
VOCs (mg/kg)												
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	< 0.013	NA	NA	NA	NA	< 0.012	0.007 J
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	< 0.019	NA	NA	NA	NA	< 0.019	< 0.018
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	< 0.0064	NA	NA	NA	NA	< 0.0062	< 0.0061
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	< 0.0026	NA	NA	NA	NA	< 0.0025	< 0.0024
PAHs (mg/kg)												
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	< 0.0085	NA	NA	NA	NA	< 0.0082	0.0074 J
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	< 0.0085	NA	NA	NA	NA	< 0.0082	0.008 J
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	< 0.0085	NA	NA	NA	NA	< 0.0082	< 0.008
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	< 0.0085	NA	NA	NA	NA	< 0.0082	< 0.008

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						RO-SB-1 (continued)						
						5	10	15	20	25	30	35
						1/31/2013	1/31/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
Moisture (%)												
Percent Moisture	---	---	---	---	---	22.7	31	23.5	20.3	20.9	26.6	16
Metals (mg/kg)												
Aluminum	1.29E+06	4.14E+04	---	5.97E+05	---	7110	4110	8520	6090	18600	7810	4280
Arsenic	2.15E+01	5.74E+01	---	2.99E-01	---	3.42	2.03	1.68	2.91	3.12	2.01	1.82
Barium	2.55E+05	4.39E+03	---	2.70E+03	---	180	186	95.7	268	16.5	40.7	72.7
Boron	2.59E+05	5.14E+04	---	2.51E+02	---	4.3	4.47 J	5.8	3.56	3.76	3.67	2.01 J
Cadmium	1.11E+03	7.21E+01	---	9.39E+00	---	0.085 J	0.103 J	0.262 J	0.245 J	< 0.621	0.151 J	0.0817 J
Calcium	---	---	---	---	---	87900	184000	204000	252000	11500	95500	73200
Chromium (Total)	5.05E+02	1.34E+02	---	2.01E+05	---	6.49	5.94	6.96	6.61	9.2	6.41	4.22
Cobalt	---	---	3.50E+02	---	5.40E+00	2.59	1.28	3.65	1.2	6.52	1.97	1.87
Copper	5.19E+04	1.42E+04	---	5.56E+02	---	2.64	2.52	3.94	2.38	6.56	2.72	1.7
Iron	9.08E+05	2.48E+05	---	6.96E+03	---	4780	2390	5050	3230	9750	4870	3220
Lead	8.00E+02	8.00E+02	---	---	---	3.75	2.02	7.03	4.04	12	4.05	2.92
Manganese	1.60E+05	4.64E+02	---	2.63E+03	---	55.2	32.3	76.1	35.3	193	78.8	58.1
Mercury	1.12E+02	2.07E+01	---	6.54E-01	---	0.00395 J	0.00167 J	0.00335 J	0.00102 J	0.0274	0.0006 J	< 0.00409
Molybdenum	6.49E+03	1.77E+03	---	3.98E+01	---	0.205 J	< 0.635	0.165 J	< 0.606	0.42 J	0.22 J	0.198 J
Nickel	2.57E+04	7.53E+02	---	4.85E+02	---	4.83	2.4	5.53	3.95	10.4	4.51	3.34
Potassium	---	---	---	---	---	1430	808	1740	1250	3560	1450	932
Selenium	6.49E+03	1.75E+03	---	1.02E+01	---	0.542 J	0.276 J	0.943	0.62	0.414 J	0.539 J	0.332 J
Silver	6.49E+03	1.77E+03	---	1.38E+01	---	< 0.612	< 0.635	< 0.549	< 0.606	< 0.621	< 0.669	< 0.564
Sodium	---	---	---	---	---	183	125	123	101	105	100	53.7 J
Uranium	3.88E+03	2.77E+02	---	5.33E+02	---	< 0.612	< 0.635	< 0.549	< 0.606	< 0.621	< 0.669	< 0.564
Zinc	3.89E+05	1.06E+05	---	7.41E+03	---	14.4	9.11	20	9.84	30.7	14.9	8.89
Anions (mg/kg)												
Chloride	---	---	---	---	---	247	180	80.6	71.5	108	134	46.7
Fluoride	7.78E+04	1.81E+04	---	3.56E+03	---	12.5	21.5	15.3	9.85	14.6	5.24	5.8
Nitrate	2.08E+06	5.66E+05	---	4.25E+02	---	0.515 J	< 1.43	0.94 J	0.84 J	< 1.25	< 1.34	< 1.17
Nitrite	1.30E+05	3.54E+04	---	2.66E+01	---	< 1.29	< 1.43	< 1.3	< 1.24	< 1.25	< 1.34	< 1.17
Sulfate	---	---	---	---	---	2350	1900	832	703	851	763	614
Cyanide	6.33E+01	1.21E+01	---	5.22E-03	---	< 2.39	< 2.71	< 2.35	0.788 J	0.747 J	< 2.48	0.672 J
Radium (pci/g)												
Radium-226	---	---		---	---	1.09 G	0.89 LT,G,TI	0.87 LT,G	0.58 LT,G,TI	1.07 G	0.56 LT,G,TI	0.72 LT
Radium-228	---	---		---	---	1.17 M,G,NQ	< 0.93 G	< 0.82 G	0.99 NQ,G	1.11 G,TI	< 0.94 G	< 0.59
TPH (mg/kg)												
GRO	---	---	---	---	---	NA	NA	NA	NA	NA	NA	< 0.059
DRO	3.80E+03	---	---	---	---	NA	NA	NA	NA	NA	NA	< 2
ORO	3.80E+03	---	---	---	---	NA	NA	NA	NA	NA	NA	< 4

Table 6 - Summary of Soil Sampling Analytical Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Boring Location: Depth: Date:						RO-SB-1 (continued)						
						5	10	15	20	25	30	35
						1/31/2013	1/31/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013
Analyte	Ind / Occ SSL (mg/kg)	Construction Worker SSL (mg/kg)	Industrial RSL (mg/kg)	DAF 20 SSL (mg/kg)	RSL-based DAF 20 (mg/kg)							
VOCs (mg/kg)												
1,1,1-Trichloroethane	7.25E+04	1.36E+04	---	5.11E+01	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,1,2,2-Tetrachloroethane	3.94E+01	1.97E+02	---	4.80E-03	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,1,2-Trichloroethane	1.24E+01	2.30E+00	---	2.23E-03	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,1-Dichloroethane	3.83E+02	1.82E+03	---	1.36E-01	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,1-Dichloroethene	2.26E+03	4.24E+02	---	1.95E+00	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,2-Dibromoethane	3.31E+00	1.63E+01	---	3.52E-04	---	NA	NA	NA	NA	NA	NA	< 0.0059
1,2-Dichloroethane	4.07E+01	5.38E+01	---	8.14E-03	---	NA	NA	NA	NA	NA	NA	< 0.0059
Benzene	8.72E+01	1.42E+02	---	3.80E-02	---	NA	NA	NA	NA	NA	NA	< 0.0059
Carbon Tetrachloride	5.25E+01	2.02E+02	---	3.33E-02	---	NA	NA	NA	NA	NA	NA	< 0.0059
Chloroform	2.87E+01	1.34E+02	---	1.09E-02	---	NA	NA	NA	NA	NA	NA	< 0.0059
Dichloromethane	5.13E+03	1.21E+03	---	4.71E-01	---	NA	NA	NA	NA	NA	NA	0.0056 J
Ethylbenzene	3.68E+02	1.77E+03	---	2.62E-01	---	NA	NA	NA	NA	NA	NA	< 0.0059
Tetrachloroethene	6.29E+02	1.20E+02	---	3.21E-01	---	NA	NA	NA	NA	NA	NA	< 0.0059
Toluene	6.13E+04	1.40E+04	---	1.21E+01	---	NA	NA	NA	NA	NA	NA	< 0.0059
Total Xylenes	4.28E+03	7.98E+02	---	2.98E+00	---	NA	NA	NA	NA	NA	NA	< 0.018
Trichloroethene	3.65E+01	6.90E+00	---	1.75E-02	---	NA	NA	NA	NA	NA	NA	< 0.0059
Vinyl Chloride	2.84E+01	1.61E+02	---	1.35E-03	---	NA	NA	NA	NA	NA	NA	< 0.0024
PAHs (mg/kg)												
1-Methylnaphthalene	---	---	7.30E+02	---	9.00E-01	NA	NA	NA	NA	NA	NA	< 0.0078
2-Methylnaphthalene	---	---	3.00E+03	---	2.80E+00	NA	NA	NA	NA	NA	NA	< 0.0078
Benzo(a)Pyrene	3.23E+00	2.40E+01	---	6.05E-01	---	NA	NA	NA	NA	NA	NA	< 0.0078
Naphthalene	2.41E+02	1.59E+02	---	8.23E-02	---	NA	NA	NA	NA	NA	NA	< 0.0078

Notes and Abbreviations:

Screening hierarchy primarily based on the SSLs from Table A-1 of NMED Risk Assessment Guidance (July, 2015), as follows:

Samples from 1 foot depth interval are screened against lower of Ind/Occ SSL or CW SSL, or Ind RSL if no SSL has been published.

Samples from >1 to 10 foot depth interval are screened against CW SSL, or Ind RSL if no CW SSL has been published.

Samples from >10 foot depth interval are screened against DAF 20 SSL, or RSL-based DAF if no DAF 20 SSL has been published.

TPH results are screened against the "unknown oil" SSL from Table 6-2 of the NMED Risk Assessment Guidance (July, 2015)..

X Reported result is above the applicable SSL

< X Result was not detected with a detection limit of X

< X detection

--- = no SSL available

CW = Construction Worker

DAF = dilution attenuation factor

DRO = Diesel Range Organics

G = sample density differs by more than 15% of LCS density

GRO = Gasoline Range Organics

Ind = Industrial

Ind/Occ = Industrial/Occupational

J = estimated value.

LCS = laboratory control sample

LT = the sample has a detection above the minimum detectable concentration.

mg/kg = milligrams per kilogram

M3 = minimum detectable concentration not met

NMED = New Mexico Environment Department

NQ = not quantified

ORO = Oil Range Organics

PAH = polycyclic aromatic hydrocarbon

pci/g = average picocuries per gram

RSL = USEPA Regional Screening Level

SVOC = semivolatile organic compound

SSL = soil screening level

TI = the analyte is tentatively identified

TPH = total petroleum hydrocarbons

UB = blank contamination above detection limit, result set to not detected

USEPA = United States

Environmental Protection Agency

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Well: Date:			MW-114				MW-115				
			2/3/2013	5/15/2013	9/5/2013	11/21/2013	2/3/2013	5/15/2013	5/15/2013 (Dup)	9/4/2013	11/21/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result	Result
TPH (mg/L)											
Gasoline Range Organics	--		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diesel Range Organics	2.00E-01	NMED TPH	< 0.052	< 0.052	< 0.052	< 0.053	< 0.051	< 0.051	< 0.052	< 0.052	< 0.051
Oil Range Organics	2.00E-01	NMED TPH	< 0.1	< 0.1	< 0.1	< 0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
VOCs (mg/L)											
1,1,1-Trichloroethane	6.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2,2-Tetrachloroethane	1.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethane	2.50E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethene	7.00E-03	USUSEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dibromoethane	5.00E-05	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Benzene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	8.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Dichloromethane	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Ethylbenzene	7.00E-01	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	7.50E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Xylenes	6.20E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	1.00E-03	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
SVOCs (mg/L)											
1-Methylnaphthalene	1.10E-03	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
2-Methylnaphthalene	3.60E-02	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	3.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzo(a)Pyrene	2.00E-04	USEPA MCL	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dissolved Metals (mg/L)											
Aluminum	5.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.0265	< 0.01 J	0.00848 J	0.00813 J	0.00888 J	0.00816 J	0.00865 J	0.00648 J	0.00714 J
Arsenic	1.00E-02	USEPA MCL	0.00561	0.00437 J	0.00502	0.00539	0.00499 J	0.00478 J	0.00427 J	0.00467 J	0.00616
Barium	1.00E+00	WQCC Human Health (20.6.2.3103.A)	0.0204	0.0129	0.017	0.0112	0.0309	0.0107	0.011	0.0106	0.011
Boron	1.89E+00	Background UTL	0.139	0.101	0.132	0.816	0.865	0.605	0.635	0.782	0.858
Cadmium	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium	1.03E+03	Background UTL	600	576	672	558	518	511	495	622	606
Chromium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	0.00119 J	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005
Cobalt	5.00E-02	WQCC Irrigation (20.6.2.3103.C)	0.00738	0.00451 J	0.00718	< 0.005	0.0029 J	< 0.01	< 0.005	< 0.005	< 0.005
Copper	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.005	< 0.005	0.00197 J	< 0.005	0.00704	< 0.01	0.00151 J	< 0.005	< 0.005
Iron	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.2	< 0.2	< 0.2	0.167 J	< 0.2	< 0.4	< 0.2	< 0.2	< 0.2
Lead	1.50E-02	USEPA MCL	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Manganese	1.13E+00	Background UTL	1.51	0.844	1.42	0.035	0.255	0.0267	0.023	0.0362	0.0249
Mercury	4.40E-03	Background UTL	< 0.0002	< 0.0002	< 0.0002		< 0.0002	< 0.0002	< 0.0002	< 0.0002	<
Molybdenum	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.0103	0.00978	0.0116	0.00815	0.00877	0.0075	0.00723	0.00663	0.00738
Nickel	2.00E-01	WQCC Irrigation (20.6.2.3103.C)	0.00651	0.0041 J	0.00558	0.00369 J	0.00483 J	< 0.01	0.00225 J	0.00208 J	0.00206 J
Potassium	8.75E+00	Background UTL	2.86	2.76	2.94	0.678	1.78	0.78	0.766	0.782	0.709
Selenium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	0.00222 J	0.00636	0.00245 J	0.00451 J	0.0081	0.00654 J	0.00734	0.00568	0.00506
Silver	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005
Sodium	4.30E+03	Background UTL	146	123	138	250	199	206	201	247	261
Uranium	2.48E-01	Background UTL	0.0156	0.0108	0.0138	0.0856	0.0843	0.0825	0.0731	0.0936	0.0874
Zinc	1.00E+01	WQCC Domestic (20.6.2.3103.B)	0.00343 J	< 0.005	< 0.005	0.0806	0.00973	0.00821 J			0.0257

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Well: Date:			MW-114				MW-115				
			2/3/2013	5/15/2013	9/5/2013	11/21/2013	2/3/2013	5/15/2013	5/15/2013 (Dup)	9/4/2013	11/21/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result	Result
Radium (pCi/L)											
Radium-226	--		0.43 LT	< 0.36	0.37 LT	< 0.24	< 0.23	< 0.58	< 0.54 Y1	< 0.26	< 0.28
Radium-228	--		0.74 LT	< 0.55	0.62 LT	1.07	< 0.52	< 0.64	< 0.55 Y1	< 0.47	1.11
Radium-226 & Radium-228	5.00E+00	USUSEPA MCL	1.17	0	0.99	1.07	0	0	0	0	1.11
Anions (mg/L)											
Chloride	5.93E+03	Background UTL	158	150	199	422	422	373	364	530	428
Fluoride (F-, Anion)	2.95E+00	Background UTL	1.76	1.91	1.82	1.37	1.1	1.18	1.15	0.845	1.36
Nitrate/Nitrite	1.51E+01	Background UTL	1.43 H	< 2	0.055 JH	< 1	0.821 H	< 2	< 2	0.174 JH	< 1
Sulfate	4.41E+03	Background UTL	2200	1800	1950	3060	2790	2490	2420	2900	3090
Cyanide	2.00E-01	USEPA MCL	< 0.02	0.00432 J	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total Dissolved Solids (mg/L)											
Total Dissolved Solids	1.67E+04	Background UTL	3760	3990	3870	5390	4960	5510	4990	6130	5370

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

			Well: MW-116						MW-117			
Date:			2/3/2013	5/16/2013	9/4/2013	9/4/2013 (Dup)	11/20/2013	11/20/2013 (Dup)	2/3/2013	5/15/2013	9/4/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
TPH (mg/L)												
Gasoline Range Organics	--		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diesel Range Organics	2.00E-01	NMED TPH	< 0.051	< 0.052	< 0.052	< 0.052	< 0.054	< 0.053	< 0.052	< 0.052	< 0.051	< 0.051
Oil Range Organics	2.00E-01	NMED TPH	< 0.1	< 0.1	< 0.1	< 0.1	< 0.11	< 0.11	< 0.1	< 0.1	< 0.1	< 0.1
VOCs (mg/L)												
1,1,1-Trichloroethane	6.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2,2-Tetrachloroethane	1.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethane	2.50E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethene	7.00E-03	USUSEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dibromoethane	5.00E-05	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Benzene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	8.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Dichloromethane	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Ethylbenzene	7.00E-01	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	7.50E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Xylenes	6.20E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	1.00E-03	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
SVOCs (mg/L)												
1-Methylnaphthalene	1.10E-03	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
2-Methylnaphthalene	3.60E-02	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	3.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzo(a)Pyrene	2.00E-04	USEPA MCL	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dissolved Metals (mg/L)												
Aluminum	5.00E+00	WQCC Irrigation (20.6.2.3103.C)	B	0.349	0.0126	0.0118	0.00814 J	0.0073 J	0.0289	0.0184	0.0169	0.0298
Arsenic	1.00E-02	USEPA MCL	0.00274 J	0.00502	0.00535	0.00467 J	0.00525	0.00526	0.00498 J	0.00367 J	0.00559	0.00347 J
Barium	1.00E+00	WQCC Human Health (20.6.2.3103.A)	0.0161	0.0111	0.00928	0.00946	0.00989	0.011	0.0235	0.0113	0.0108	0.0108
Boron	1.89E+00	Background UTL	0.22	0.238	0.304	0.281	0.312	0.307	0.207	0.175	0.202	0.204
Cadmium	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium	1.03E+03	Background UTL	624	578	588	631	606	616	568	524	550	556
Chromium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	0.00119 J	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005
Cobalt	5.00E-02	WQCC Irrigation (20.6.2.3103.C)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00256 J	< 0.01	< 0.005	< 0.005
Copper	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.005	0.00176 J	< 0.005	< 0.005	< 0.005	< 0.005	0.0141	< 0.01	< 0.005	0.00345 J
Iron	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.2	0.201	< 0.2	< 0.2	< 0.2	0.132 J	< 0.2	< 0.4	< 0.2	0.11 J
Lead	1.50E-02	USEPA MCL	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00125 J
Manganese	1.13E+00	Background UTL	0.0437	0.0342	0.00478 J	0.00366 J	0.0092	0.00576	0.108	0.00978 J	0.00502	0.00982
Mercury	4.40E-03	Background UTL	0.000131 J	0.000046 J	0.000061 J	0.00006 J			< 0.0002	< 0.0002	< 0.0002	< 0.0002
Molybdenum	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.00348 J	0.00308 J	0.00304 J	0.003 J	0.0035 J	0.00336 J	0.0112	0.00664	0.014	0.0114
Nickel	2.00E-01	WQCC Irrigation (20.6.2.3103.C)	0.0012 J	0.00204 J	0.00115 J	0.00112 J	0.00245 J	0.00144 J	0.00413 J	< 0.01	0.00189 J	0.00305 J
Potassium	8.75E+00	Background UTL	1.06	1.38	1.21	1.22	1.3	1.37	6.92	4.37	8.92	7.54
Selenium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	0.00203 J	0.00733	0.00493 J	0.00558	0.00611	0.00582	0.00427 J	0.00585 J	0.00316 J	0.0038 J
Silver	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sodium	4.30E+03	Background UTL	206	194	235	230	235	235	176	160	118	115
Uranium	2.48E-01	Background UTL	0.0331	0.0343	0.04	0.0388	0.0391	0.0387	0.0263	0.0247	0.0224	0.0182
Zinc	1.00E+01	WQCC Domestic (20.6.2.3103.B)	< 0.005 B	< 0.005	< 0.005	< 0.005	0.0311	0.0218	0.0123	< 0.01	0.00266 J	0.0343

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

Well: Date:			MW-116						MW-117			
			2/3/2013	5/16/2013	9/4/2013	9/4/2013 (Dup)	11/20/2013	11/20/2013 (Dup)	2/3/2013	5/15/2013	9/4/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Radium (pCi/L)												
Radium-226	--		< 0.32	< 0.36	< 0.25	0.28 LT	0.1 LT	< 0.23	0.54 LT	< 0.45	0.2 LT	0.15 LT
Radium-228	--		< 0.55	< 0.46	< 0.53	< 0.54	1.73	1.23	0.89 LT	< 0.53	0.74 LT	1.25
Radium-226 & Radium-228	5.00E+00	USEPA MCL	0	0	0	0.28	1.83	1.23	1.43	0	0.94	1.4
Anions (mg/L)												
Chloride	5.93E+03	Background UTL	389	330	344	339	331	331	154	137	71	92.4
Fluoride (F-, Anion)	2.95E+00	Background UTL	1.31 J	1.19	1.17	1.11	1.61	1.51	2.73	2.29	2.8	3.95
Nitrate/Nitrite	1.51E+01	Background UTL	1.37 J	< 2	0.418 H	0.45 H	0.457 J	0.487 J	< 0.1 H	< 2	< 0.03	< 1
Sulfate	4.41E+03	Background UTL	2250	2080	2180	2140	2470	2470	2310	2010	2020	2190
Cyanide	2.00E-01	USEPA MCL	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total Dissolved Solids (mg/L)												
Total Dissolved Solids	1.67E+04	Background UTL	3650	4480	4440	4470	4570	4210	3910	4260	3970	4150

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

			Well: MW-118				MW-119			
Date:			2/5/2013	5/15/2013	9/4/2013	11/20/2013	2/5/2013	5/15/2013	9/4/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result
TPH (mg/L)										
Gasoline Range Organics	--		0.0436 J	< 0.05	< 0.05	< 0.05	0.0371 J	< 0.05	< 0.05	< 0.05
Diesel Range Organics	2.00E-01	NMED TPH	< 0.052	< 0.051	< 0.052	< 0.052	< 0.051	< 0.052	< 0.052	< 0.053
Oil Range Organics	2.00E-01	NMED TPH	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.11
VOCs (mg/L)										
1,1,1-Trichloroethane	6.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2,2-Tetrachloroethane	1.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethane	2.50E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethene	7.00E-03	USUSEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dibromoethane	5.00E-05	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Benzene	5.00E-03	USEPA MCL	0.0042	< 0.001	< 0.001	< 0.001	0.0036	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	8.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Dichloromethane	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Ethylbenzene	7.00E-01	USEPA MCL	0.0024	< 0.001	< 0.001	< 0.001	0.0021	< 0.001	< 0.001	< 0.001
Tetrachloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	7.50E-01	WQCC Human Health (20.6.2.3103.A)	0.0033	< 0.001	< 0.001	< 0.001	0.0027	< 0.001	< 0.001	< 0.001
Total Xylenes	6.20E-01	WQCC Human Health (20.6.2.3103.A)	0.0047	< 0.001	< 0.001	< 0.001	0.0037	< 0.001	< 0.001	< 0.001
Trichloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	1.00E-03	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
SVOCs (mg/L)										
1-Methylnaphthalene	1.10E-03	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
2-Methylnaphthalene	3.60E-02	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	3.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzo(a)Pyrene	2.00E-04	USEPA MCL	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dissolved Metals (mg/L)										
Aluminum	5.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.0146 B	0.00796 J	0.00992 J	0.0103	< 0.01 B	0.0296	0.0113	0.0149
Arsenic	1.00E-02	USEPA MCL	0.011	0.0146	0.0156	0.0125	0.00294 J	0.00537	0.00595	0.00438 J
Barium	1.00E+00	WQCC Human Health (20.6.2.3103.A)	0.0145	0.00919	0.0099	0.00964	0.00981	0.00625	0.00864	0.00973
Boron	1.89E+00	Background UTL	0.226	0.23	0.307	0.288	0.0987	0.13	0.183	0.219
Cadmium	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium	1.03E+03	Background UTL	563	530	543	532	494	491	635	551
Chromium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	0.00105 J	< 0.005	< 0.005	< 0.005	0.00116 J
Cobalt	5.00E-02	WQCC Irrigation (20.6.2.3103.C)	< 0.005	< 0.005	< 0.005	< 0.005	0.000871 J	< 0.005	< 0.005	< 0.005
Copper	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.00156 J	0.00156 J	< 0.005	0.00338 J	0.00309 J	0.00137 J	< 0.005	0.00311 J
Iron	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.2	< 0.2	< 0.2	0.179 J	< 0.2	< 0.2	< 0.2	0.185 J
Lead	1.50E-02	USEPA MCL	< 0.005	< 0.005	< 0.005	0.00107 J	< 0.005	< 0.005	< 0.005	< 0.005
Manganese	1.13E+00	Background UTL	0.0232	< 0.005	< 0.005	0.00526	0.0424	< 0.005	< 0.005	0.00459 J
Mercury	4.40E-03	Background UTL	0.000042 J	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
Molybdenum	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.0195	0.0179	0.0162	0.0141	0.0083	0.00745	0.00846	0.00861
Nickel	2.00E-01	WQCC Irrigation (20.6.2.3103.C)	0.00173 J	0.00184 J	0.00131 J	0.00214 J	0.00174 J	0.00163 J	0.0014 J	0.00222 J
Potassium	8.75E+00	Background UTL	7.95	7.2	7.69	6.92	0.87	0.794	0.993	1.1
Selenium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	0.00861	0.0127	0.0129	0.00327 J	0.00246 J	0.00506	0.0066	0.00144 J
Silver	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sodium	4.30E+03	Background UTL	218	229	215	163	127	120	133	98.8
Uranium	2.48E-01	Background UTL	0.037	0.033	0.0395	0.0311	0.0244	0.0222	0.0275	0.0213
Zinc	1.00E+01	WQCC Domestic (20.6.2.3103.B)	< 0.005	< 0.005	< 0.005	0.0407	< 0.005	< 0.005		0.0241

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
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Navajo Refining Company, Artesia Refinery, New Mexico

Well: Date:			MW-118				MW-119			
			2/5/2013	5/15/2013	9/4/2013	11/20/2013	2/5/2013	5/15/2013	9/4/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result	Result	Result	Result	Result
Radium (pCi/L)										
Radium-226	--		0.38 Y1,LT	0.22 LT	< 0.21	0.16 LT	< 0.25	< 0.31 Y1	0.17 LT	
Radium-228	--		0.87 Y1,LT		0.64 LT	1.23	< 0.52	< 0.47 Y1		1.08
Radium-226 & Radium-228	5.00E+00	USUSEPA MCL	1.25	0.22	0.64	1.39	0	0	0.17	1.08
Anions (mg/L)										
Chloride	5.93E+03	Background UTL	296	287	132	90.1	116	118	244	185
Fluoride (F-, Anion)	2.95E+00	Background UTL	5.16	5.39	4.48	6.78	2.36	2.43	2.28	3.17
Nitrate/Nitrite	1.51E+01	Background UTL	2.39	2.09	0.325 H	< 1	2.35	1.91 J	0.228 H	< 1
Sulfate	4.41E+03	Background UTL	2450	2250	2310	2470	2090	1970	1940	2210
Cyanide	2.00E-01	USEPA MCL	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total Dissolved Solids (mg/L)										
Total Dissolved Solids	1.67E+04	Background UTL	4610	5090	4550	4640	3670	4030	4030	4130

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

			Well: Date:			
			RO Discharge			
			2/3/2013	5/16/2013	9/5/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result
TPH (mg/L)						
Gasoline Range Organics	--		< 0.05	< 0.05	< 0.05	< 0.05
Diesel Range Organics	2.00E-01	NMED TPH	< 0.052	< 0.053	< 0.052	< 0.053
Oil Range Organics	2.00E-01	NMED TPH	0.17	< 0.11	< 0.1	< 0.11
VOCs (mg/L)						
1,1,1-Trichloroethane	6.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2,2-Tetrachloroethane	1.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethane	2.50E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethene	7.00E-03	USUSEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dibromoethane	5.00E-05	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Benzene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	8.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
Dichloromethane	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002
Ethylbenzene	7.00E-01	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	7.50E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
Total Xylenes	6.20E-01	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	5.00E-03	USEPA MCL	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	1.00E-03	WQCC Human Health (20.6.2.3103.A)	< 0.001	< 0.001	< 0.001	< 0.001
SVOCs (mg/L)						
1-Methylnaphthalene	1.10E-03	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002
2-Methylnaphthalene	3.60E-02	USEPA TW	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	3.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzo(a)Pyrene	2.00E-04	USEPA MCL	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dissolved Metals (mg/L)						
Aluminum	5.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.00668 J	0.00529 J	0.00809 J	0.0567
Arsenic	1.00E-02	USEPA MCL	0.00494 J	0.0025 J	0.00244 J	0.00125 J
Barium	1.00E+00	WQCC Human Health (20.6.2.3103.A)	0.0628	0.0464	0.0553	0.0533
Boron	1.89E+00	Background UTL	0.143	0.104	0.0934	0.109
Cadmium	5.00E-03	USEPA MCL	< 0.002	< 0.002	< 0.002	< 0.002
Calcium	1.03E+03	Background UTL	625	397	410	459
Chromium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.01	0.00114 J	< 0.005
Cobalt	5.00E-02	WQCC Irrigation (20.6.2.3103.C)	< 0.005	< 0.01	< 0.005	< 0.005
Copper	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.00177 J	< 0.01	< 0.005	0.00218 J
Iron	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	< 0.2	< 0.4	< 0.2	0.113 J
Lead	1.50E-02	USEPA MCL	< 0.005	< 0.01	< 0.005	< 0.005
Manganese	1.13E+00	Background UTL	< 0.005	< 0.01	< 0.005	0.0111
Mercury	4.40E-03	Background UTL	< 0.0002	< 0.0002	< 0.0002	
Molybdenum	1.00E+00	WQCC Irrigation (20.6.2.3103.C)	0.0125	0.00622	0.00604	0.00815
Nickel	2.00E-01	WQCC Irrigation (20.6.2.3103.C)	0.00264 J	< 0.01	0.00329 J	0.00127 J
Potassium	8.75E+00	Background UTL	4.41	2.91	2.72	3.04
Selenium	5.00E-02	WQCC Human Health (20.6.2.3103.A)	0.013	0.0075 J	0.00669	0.00481 J
Silver	5.00E-02	WQCC Human Health (20.6.2.3103.A)	< 0.005	< 0.005	< 0.005	< 0.005
Sodium	4.30E+03	Background UTL	65.4	40.4	45.7	83.9
Uranium	2.48E-01	Background UTL	0.00601	< 0.01	< 0.005	< 0.005
Zinc	1.00E+01	WQCC Domestic (20.6.2.3103.B)	0.0132	0.00516 J	0.00672	0.00909

Table 7 - Summary of Groundwater and RO Discharge Sampling Results
RO Reject Water Discharge Fields Investigation - Final Report - Revised
Navajo Refining Company, Artesia Refinery, New Mexico

			RO Discharge			
Well: Date:			2/3/2013	5/16/2013	9/5/2013	11/20/2013
Analyte	CGWSL	CGWSL Source	Result	Result	Result	Result
Radium (pCi/L)						
Radium-226	--		NA	0.49 LT	0.46 LT	0.78 LT
Radium-228	--		NA			1.08
Radium-226 & Radium-228	5.00E+00	USUSEPA MCL	NA	0.49	0.46	1.86
Anions (mg/L)						
Chloride	5.93E+03	Background UTL	67.5	38.2	61.1	134
Fluoride (F-, Anion)	2.95E+00	Background UTL	3.32	2.15	2.26	2.67
Nitrate/Nitrite	1.51E+01	Background UTL	3.22 H	2.11	1.56 H	1.06
Sulfate	4.41E+03	Background UTL	1690	1080	1030	1240
Cyanide	2.00E-01	USEPA MCL	< 0.02	0.00487 J	< 0.02	< 0.02
Total Dissolved Solids (mg/L)						
Total Dissolved Solids	1.67E+04	Background UTL	3150	2410	2290	2770

Notes and Abbreviations:
CGWSL taken from background UTL recommended from background groundwater evaluation OR the lowest of the following:
New Mexico WQCC Standards found in NMAC 20.6.2.3103.
If no value in NMAC 20.6.2.3103 was available, then the USEPA Federal MCL was used.
If no value in NMAC 20.6.2.3103 or USEPA Federal MCL available, then the USEPA Tap Water RSL was used.
TPH CGWSL is the "unknown oil" groundwater value from Table 6-2, 2012 NMED RAG.

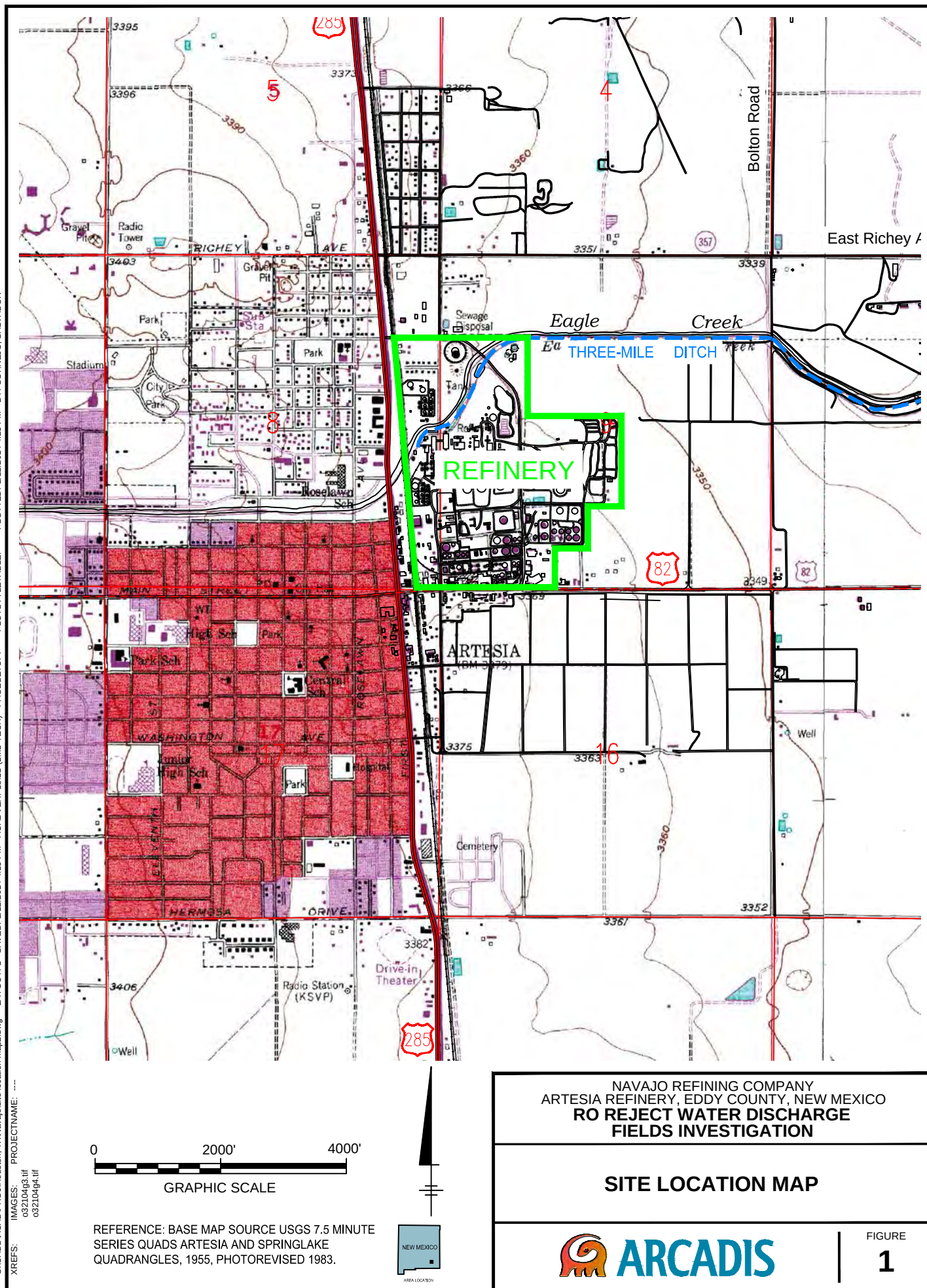
X	Result was greater than the CGWSL
< X	Analyte was not detected, with detection limit of X.
< X	Analyte was not detected, detection limit X was greater than CGWSL.

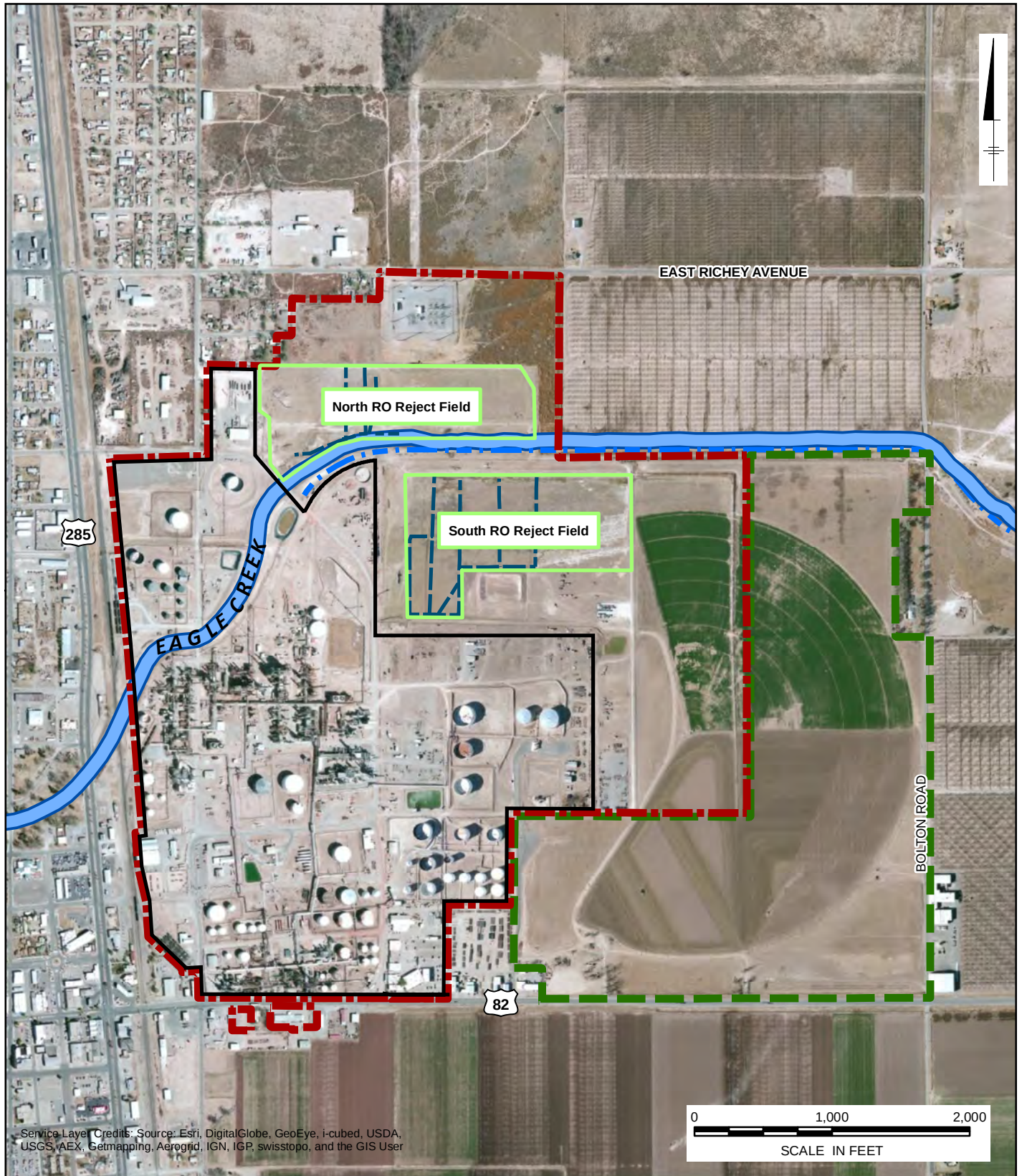
-- = No CGWSL is available
B = blank contamination was present
CGWSL = Critical Groundwater Screening Level
H = analyzed outside of holding time
J = estimated value, below the reporting limit
LCS = laboratory control sample
LT = the sample has a detection above the achieved minimum detectable concentration but below the requested.
MCL = maximum contaminant level
mg/L = milligrams per liter
NA = not analyzed
NMAC = New Mexico Administrative Code
NMED RAG = 2015 New Mexico Environment Department Risk Assessment Guidance
pci/L = average picocuries per liter
Qual = qualifier from laboratory or data validation
RL = laboratory reporting limit
SVOC = semivolatile organic compounds
VOC = volatile organic compounds
TPH = total petroleum hydrocarbons
USEPA = United States Environmental Protection Agency
UTL = Upper Tolerance Limit
WQCC = Water Quality Control Commission
Y1 = Chemical yield is in control at 100-110%. Quantitative yield is assumed.



Figures

CITY: (Read) DIV: (Group) (Read) DE: (Read) TM: (Opt) LY: (Opt) ON: -OFF=REF-
 G:\CADD\ACAD\PROJ\Housh, TX\Navajo\Site location map2.dwg LAYOUT: 1. SAVED: 2/12/2014 4:15 PM ACADVER: 18.1S (LMS TECH) PAGES: 1. PLOT: 2/12/2014 4:25 PM BY: CORNEJO, SALVADOR
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LEGEND:

- RO REJECT WATER DISCHARGE FIELD
- REFINERY FENCELINE
- REJECT FIELD IRRIGATION TRENCHES
- NAVAJO REFINING PROPERTY LINE
- MONTANA REFINING PROPERTY LINE
- APPROXIMATE LOCATION OF FORMER THREE-MILE DITCH AND EXISTING UNDERGROUND DISCHARGE PIPING
- WATERWAYS

NAVAJO REFINING COMPANY
 ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
 RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
 FINAL REPORT

SITE FEATURES

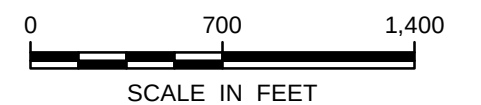


FIGURE

2

- ☐ SOIL BORING LOCATION
- ☐ NOT SAMPLED AS PART OF ROUTINE MONITORING PROGRAM
- ☒ SAMPLES TO BE COLLECTED QUARTERLY
- ☐ SAMPLES COLLECTED BIENNIALLY
- ☒ SAMPLES COLLECTED ANNUALLY
- ☒ SAMPLES COLLECTED SEMIANNUALLY
- ☐ SAMPLES COLLECTED ANNUALLY IF PSH < 0.03 FT
- ☒ SAMPLES COLLECTED SEMIANNUALLY IF PSH < 0.03 FT
- ☐ RECOVERY TRENCH WELL LOCATION NOT SAMPLED AS PART OF ROUTINE MONITORING PROGRAM
- ☒ REJECT FIELD IRRIGATION TRENCHES
- ☒ RO REJECT WATER DISCHARGE FIELD

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

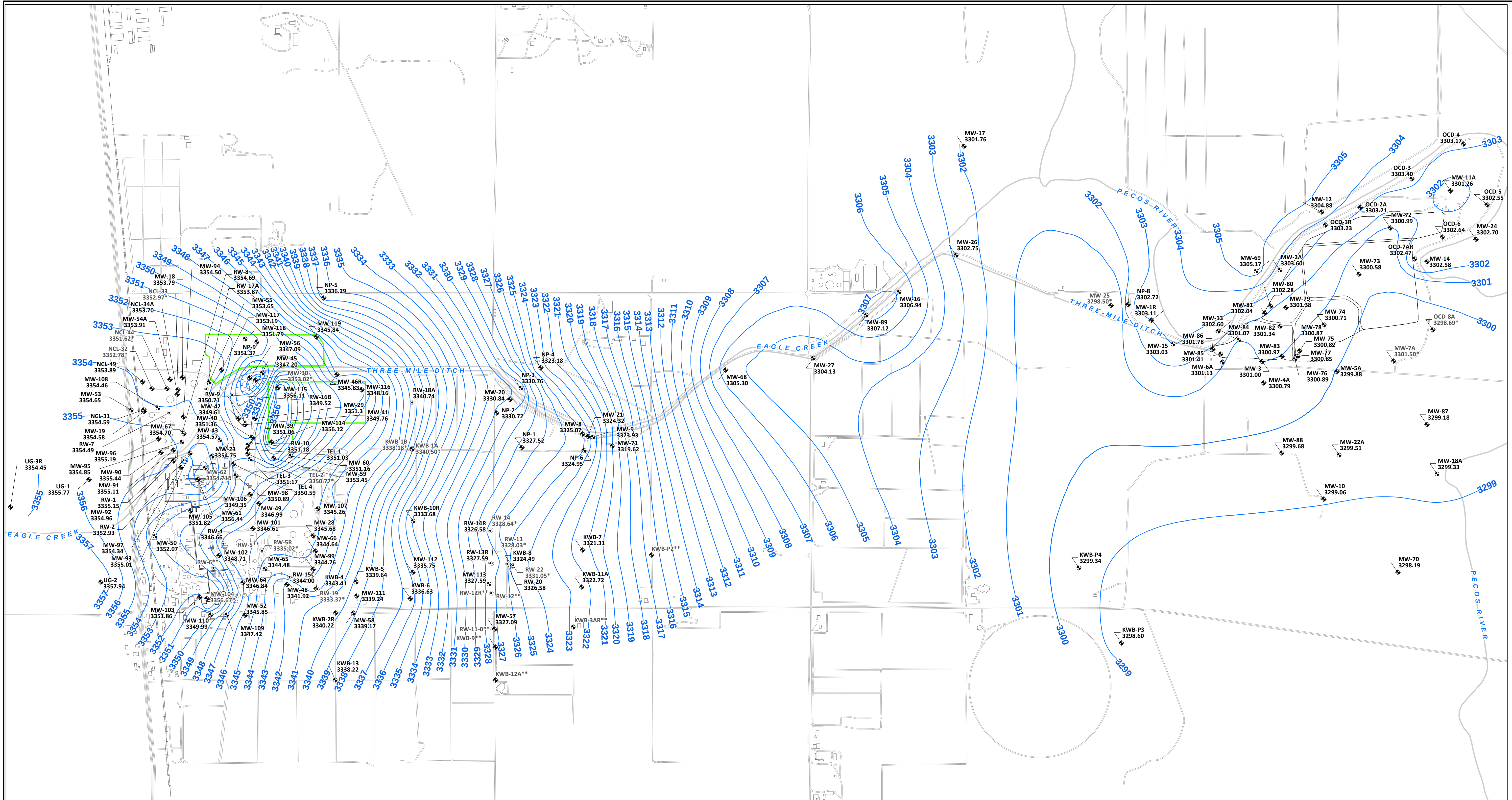


NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT

SOIL BORING AND MONITORING WELL LOCATIONS



CITY: DIV/GROUP: DB/baldwmb LD: PIC: PW: TM: TR:
Project (Project #)
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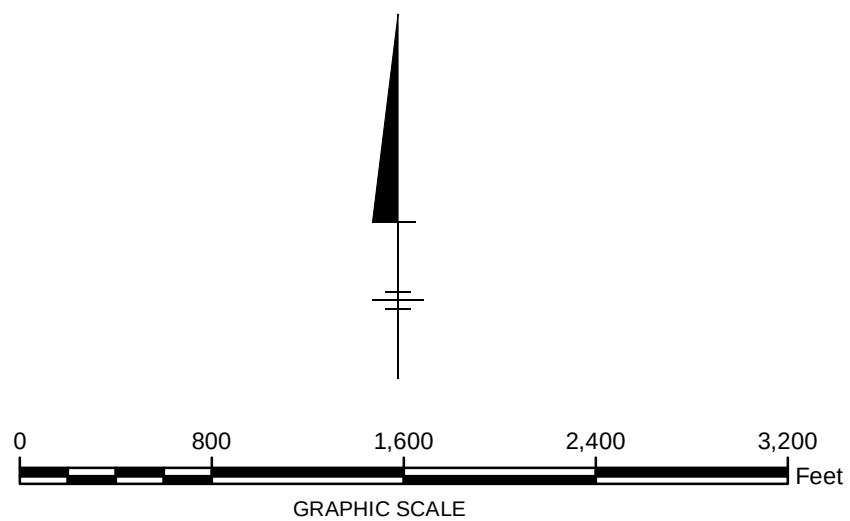
- LEGEND:
- ◆ MONITORING WELL
 - RECOVERY WELL
 - SHALLOW SATURATED ZONE POTENTIOMETRIC SURFACE CONTOURS (HASHED WHERE DEPRESSED)
 - ▭ RO REJECT WATER DISCHARGE FIELD

NOTE:

POTENTIOMETRIC SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL.

* = NOT USED TO CONSTRUCT CONTOURS

** = DRY OR INACCESSIBLE WELL

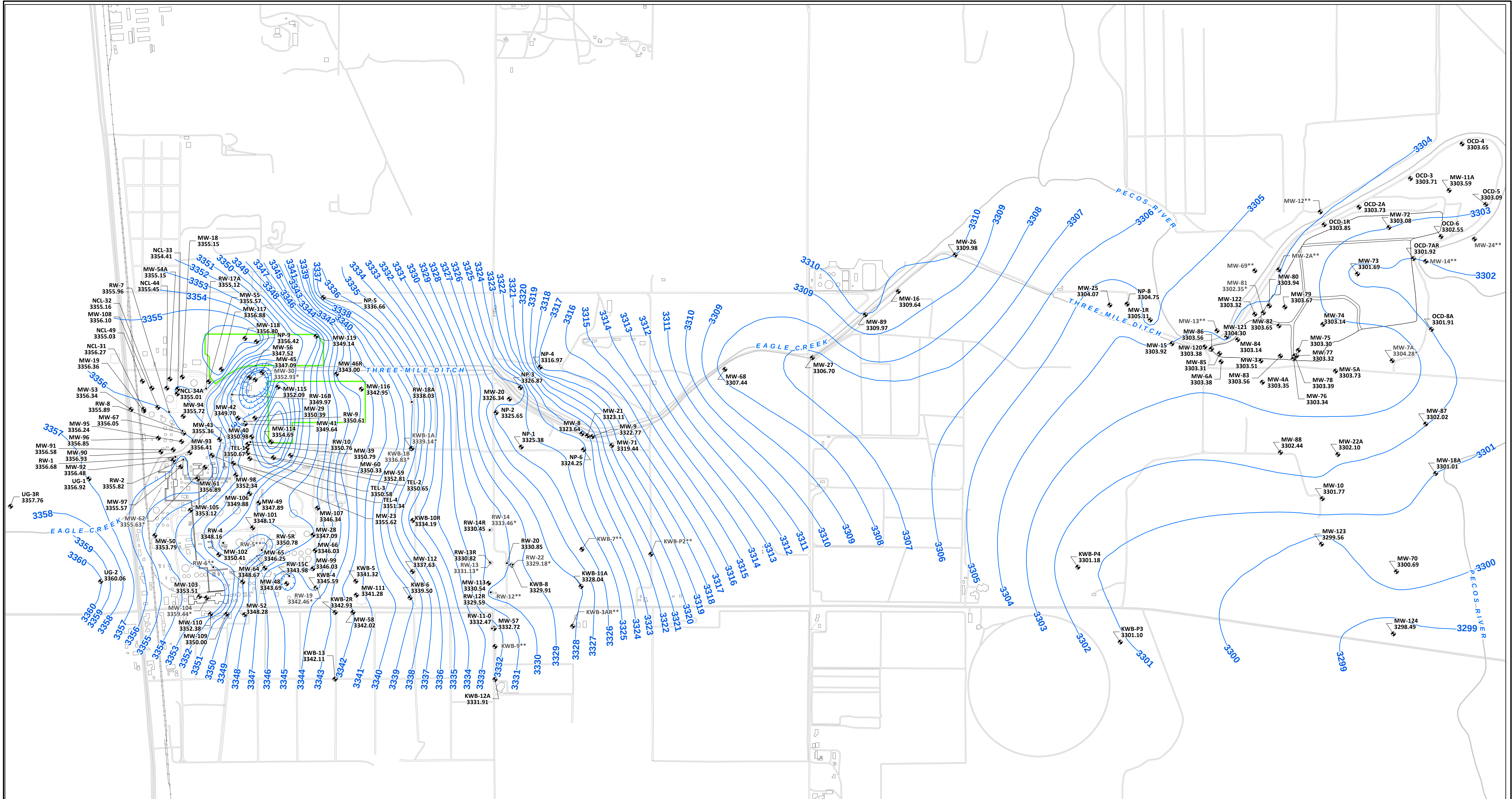


NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT

**SHALLOW SATURATED ZONE
POTENTIOMETRIC SURFACE MAP
2013 FIRST SEMIANNUAL EVENT (MARCH)**



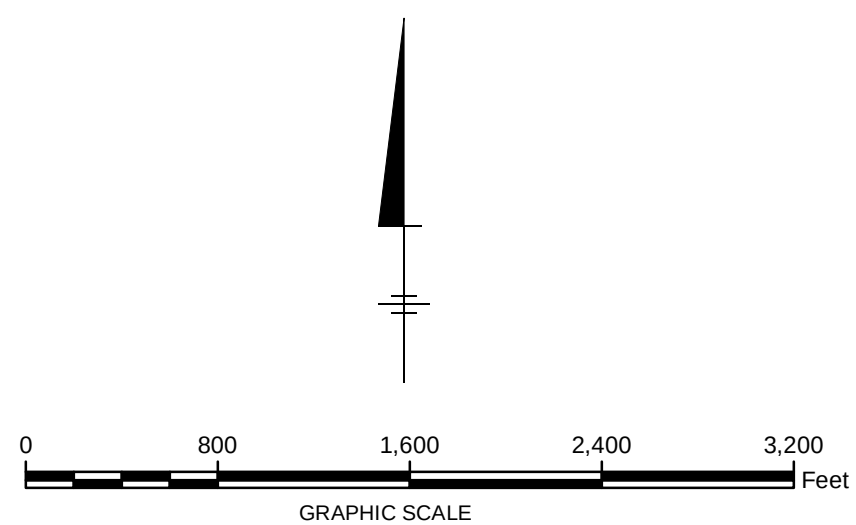
CITY: DIV/GROUP: DB/baldwmb LD: PIC: PM: TM: TR:
Project (Project #)
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- LEGEND:
- ◆ MONITORING WELL
 - RECOVERY WELL
 - SHALLOW SATURATED ZONE POTENTIOMETRIC SURFACE CONTOURS (HASHED WHERE DEPRESSED)
 - ▭ RO REJECT WATER DISCHARGE FIELD

NOTE:

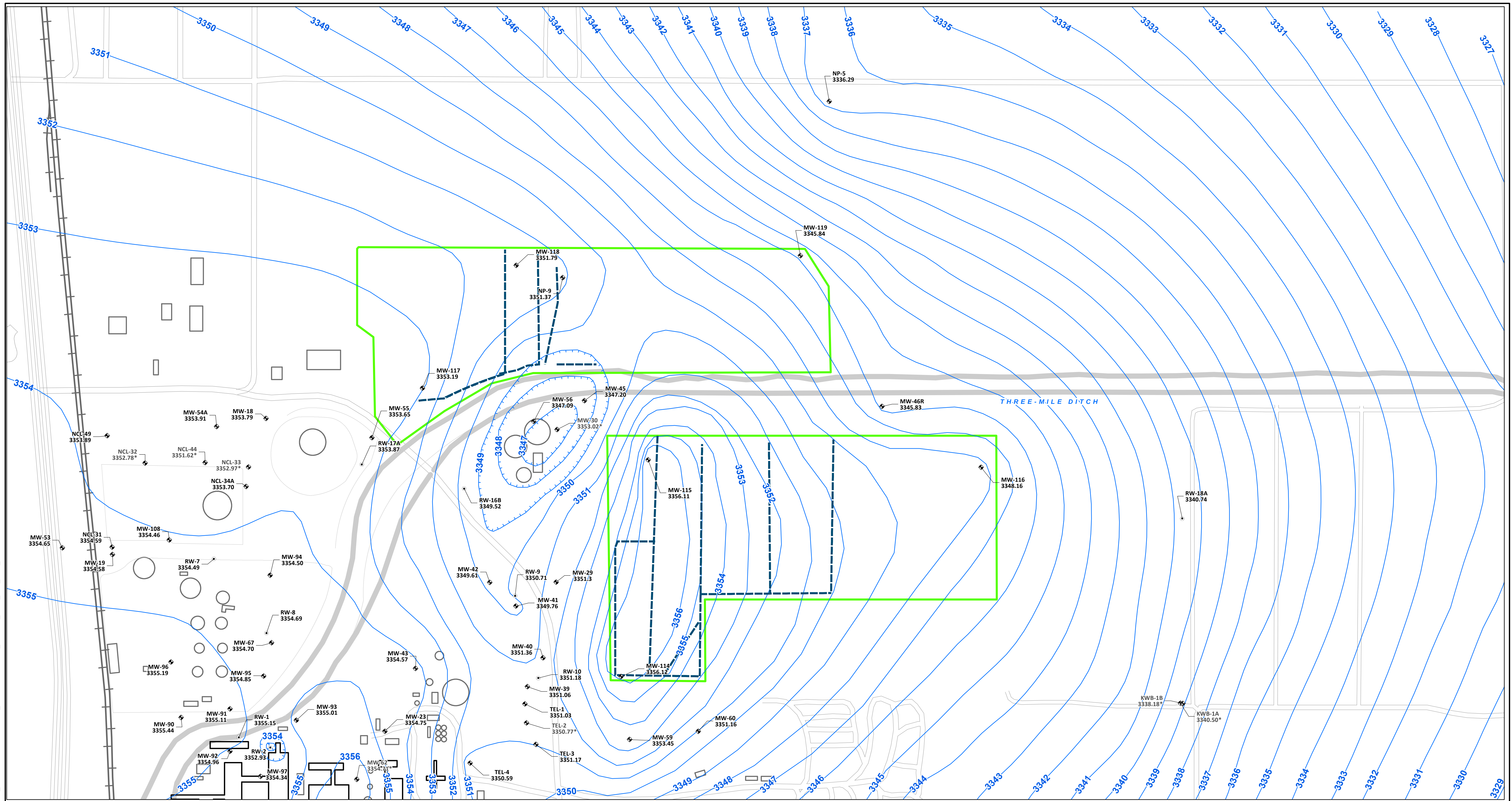
POTENTIOMETRIC SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL.
* = NOT USED TO CONSTRUCT CONTOURS
** = DRY OR INACCESSIBLE WELL



NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT

**SHALLOW SATURATED ZONE
POTENTIOMETRIC SURFACE MAP
2013 SECOND SEMIANNUAL EVENT (OCT)**



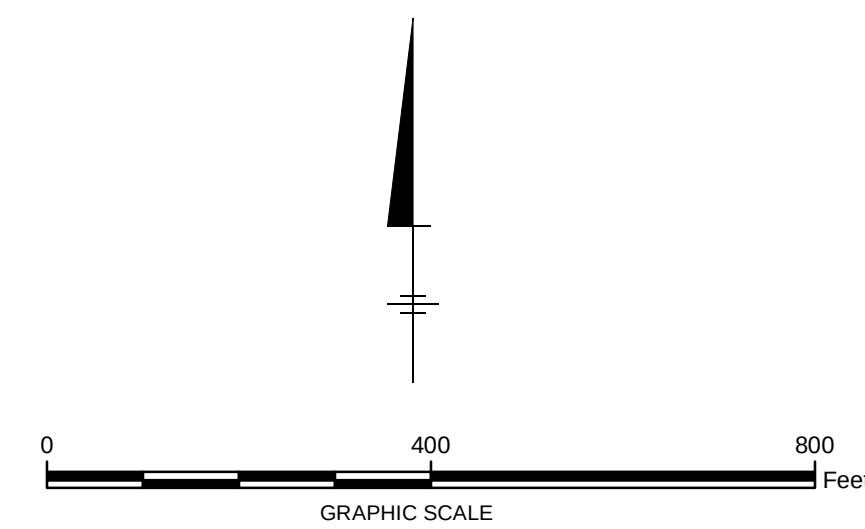


LEGEND:

-  MONITORING WELL
 RECOVERY WELL
 REJECT FIELD IRRIGATION TRENCHES
 SHALLOW SATURATED ZONE POTENTIOMETRIC SURFACE CONTOURS (HASHED WHERE DEPRESSED)
 RO REJECT WATER DISCHARGE FIELD

NOTE:

POTENTIOMETRIC SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL.
 * = NOT USED TO CONSTRUCT CONTOURS
 ** = DRY OR INACCESSIBLE WELL



NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
**RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT**

**RO REJECT AREA – SHALLOW SATURATED ZONE
POTENTIOMETRIC SURFACE MAP
(MARCH 2013)**



FIGURE

6

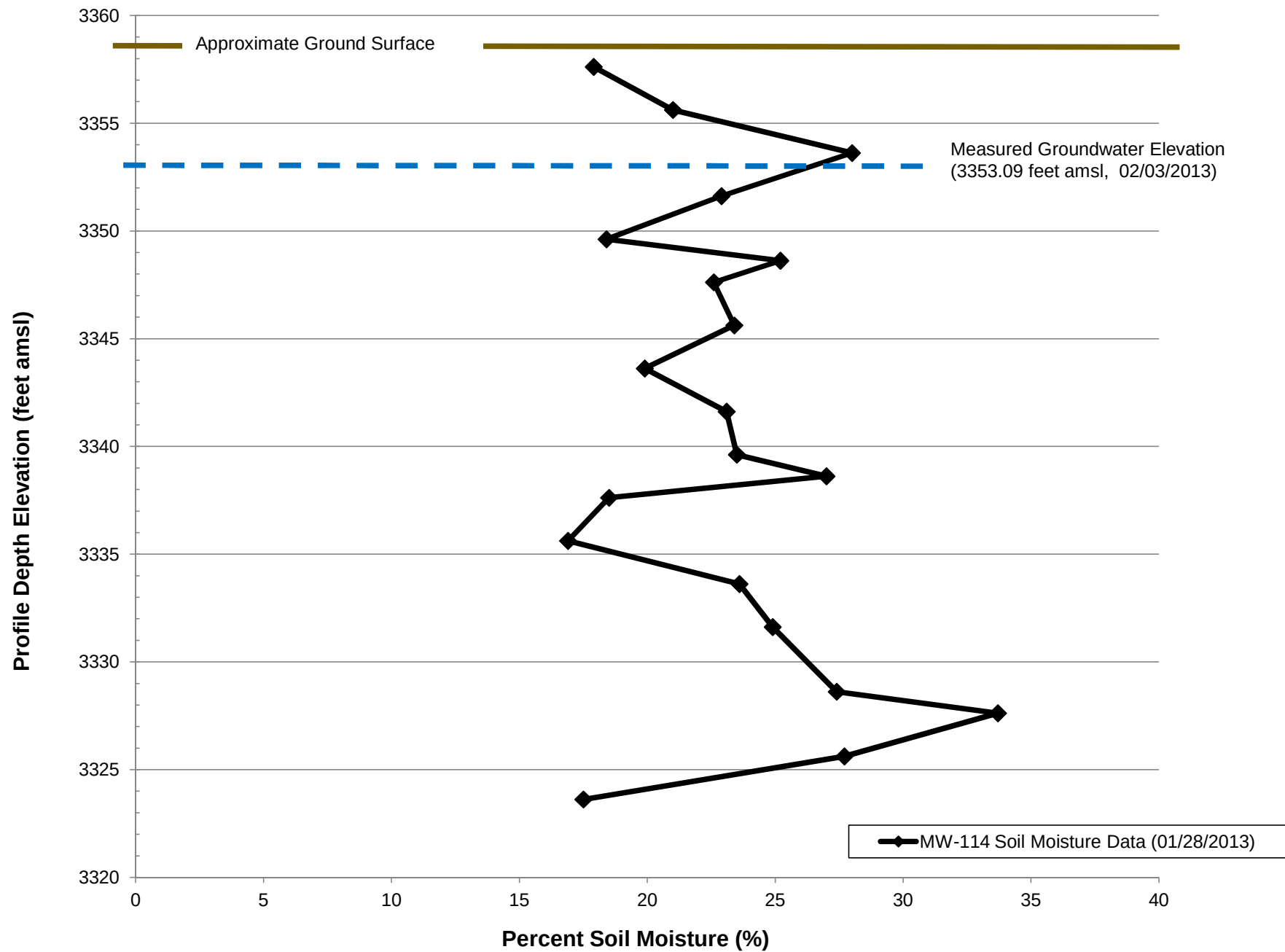


Figure 8 - MW-114 Soil Moisture Profile

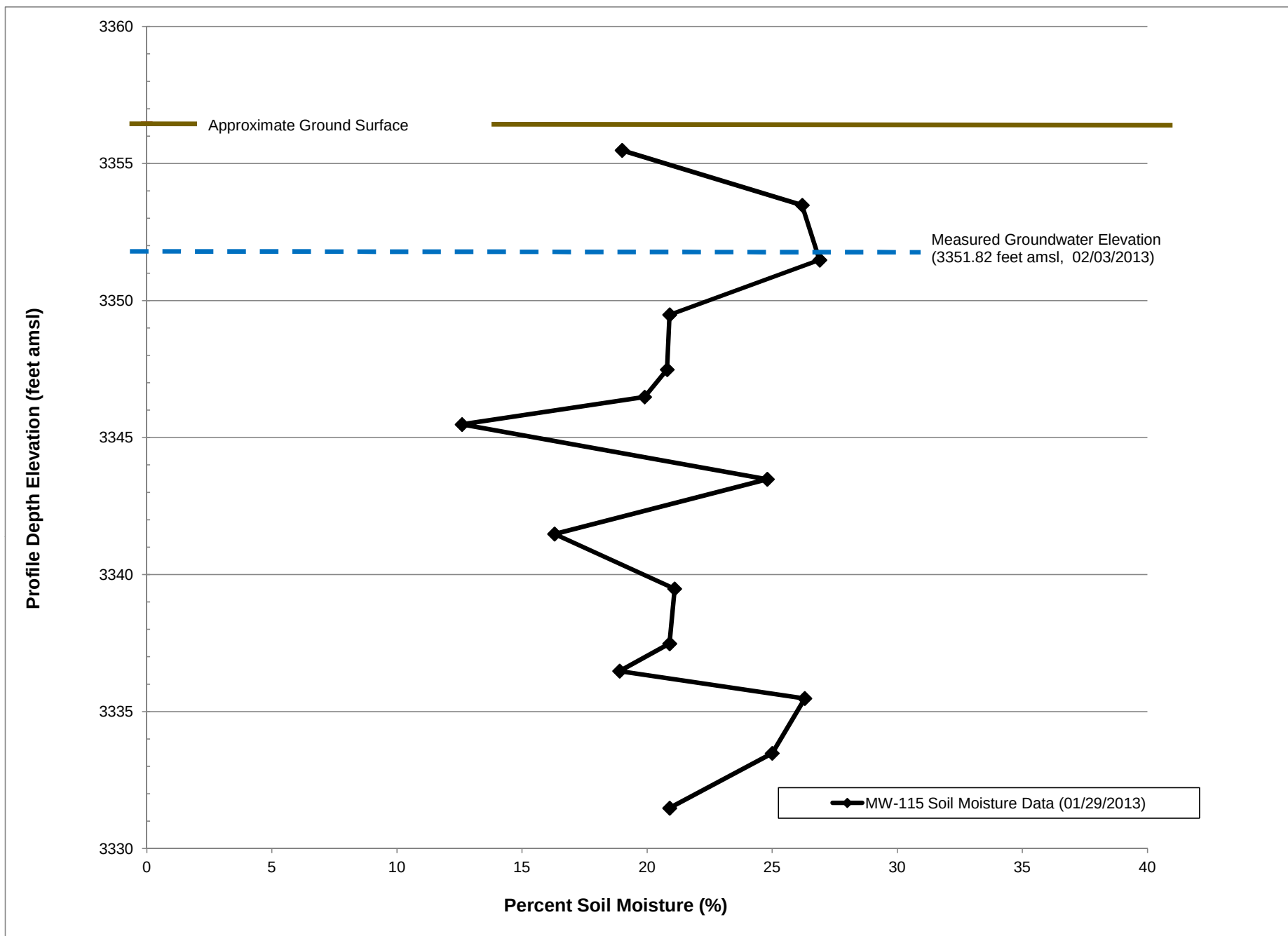


Figure 9 - MW-115 Soil Moisture Profile

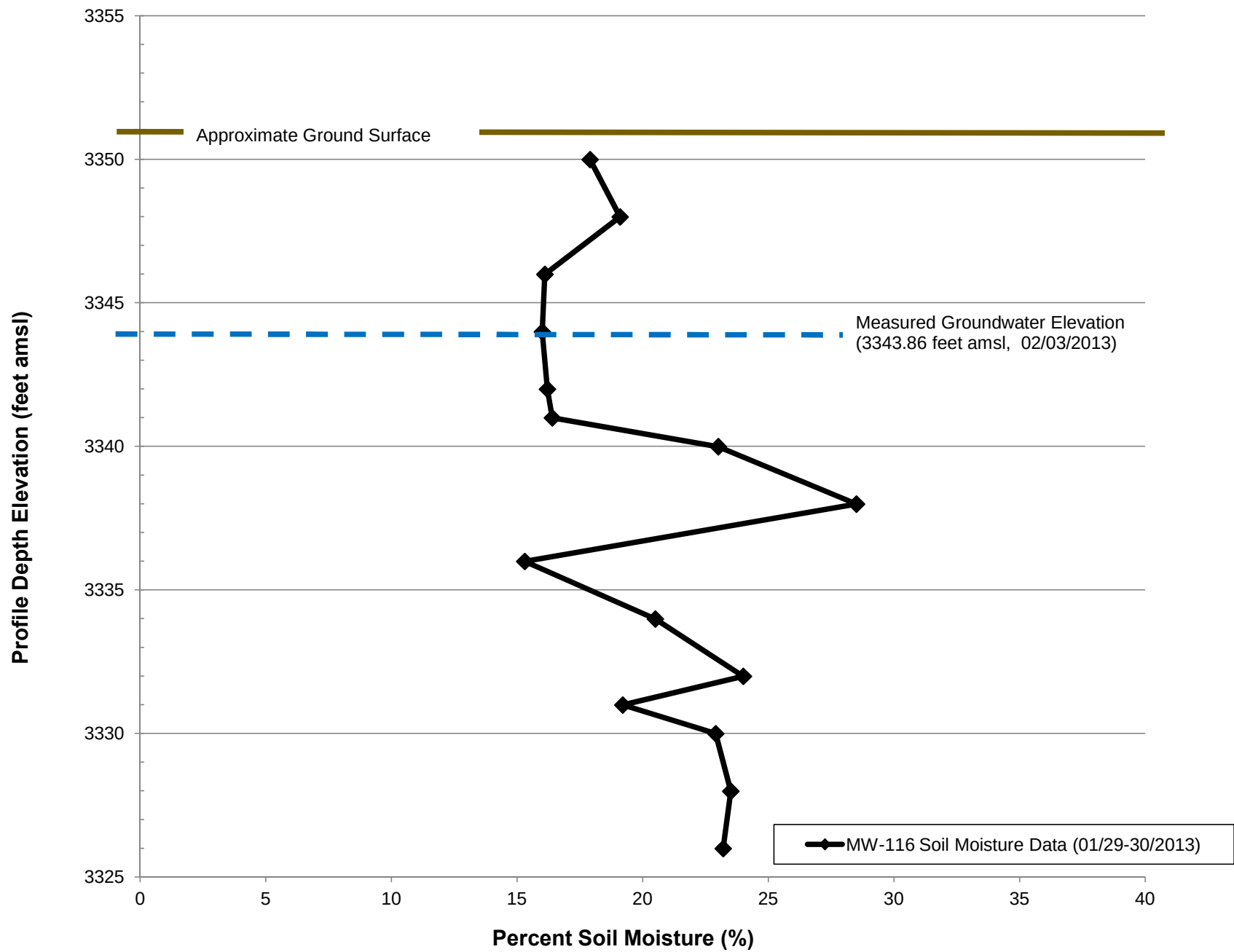


Figure 10 - MW-116 Soil Moisture Profile

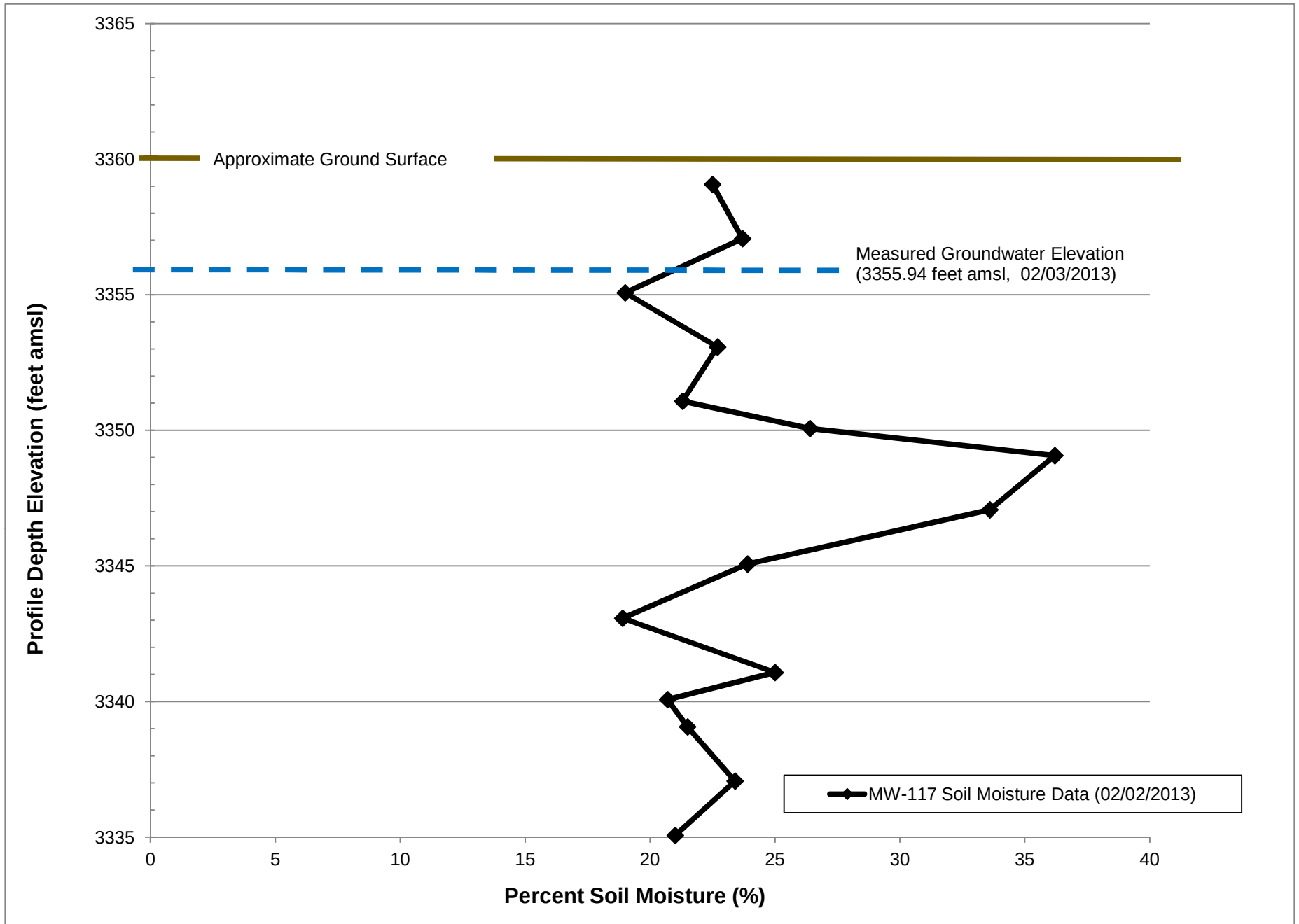


Figure 11 - MW-117 Soil Moisture Profile

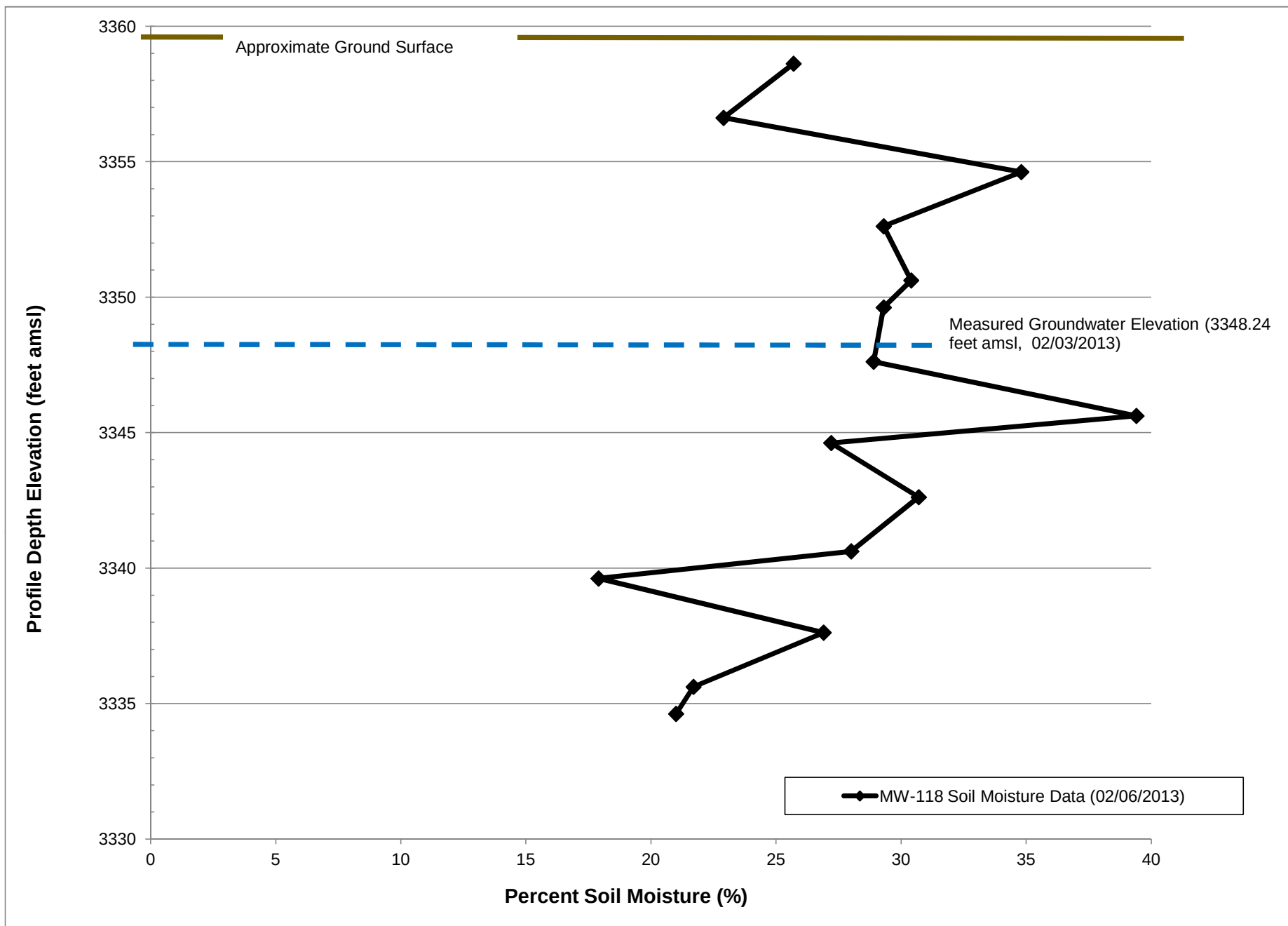


Figure 12 - MW-118 Soil Moisture Profile

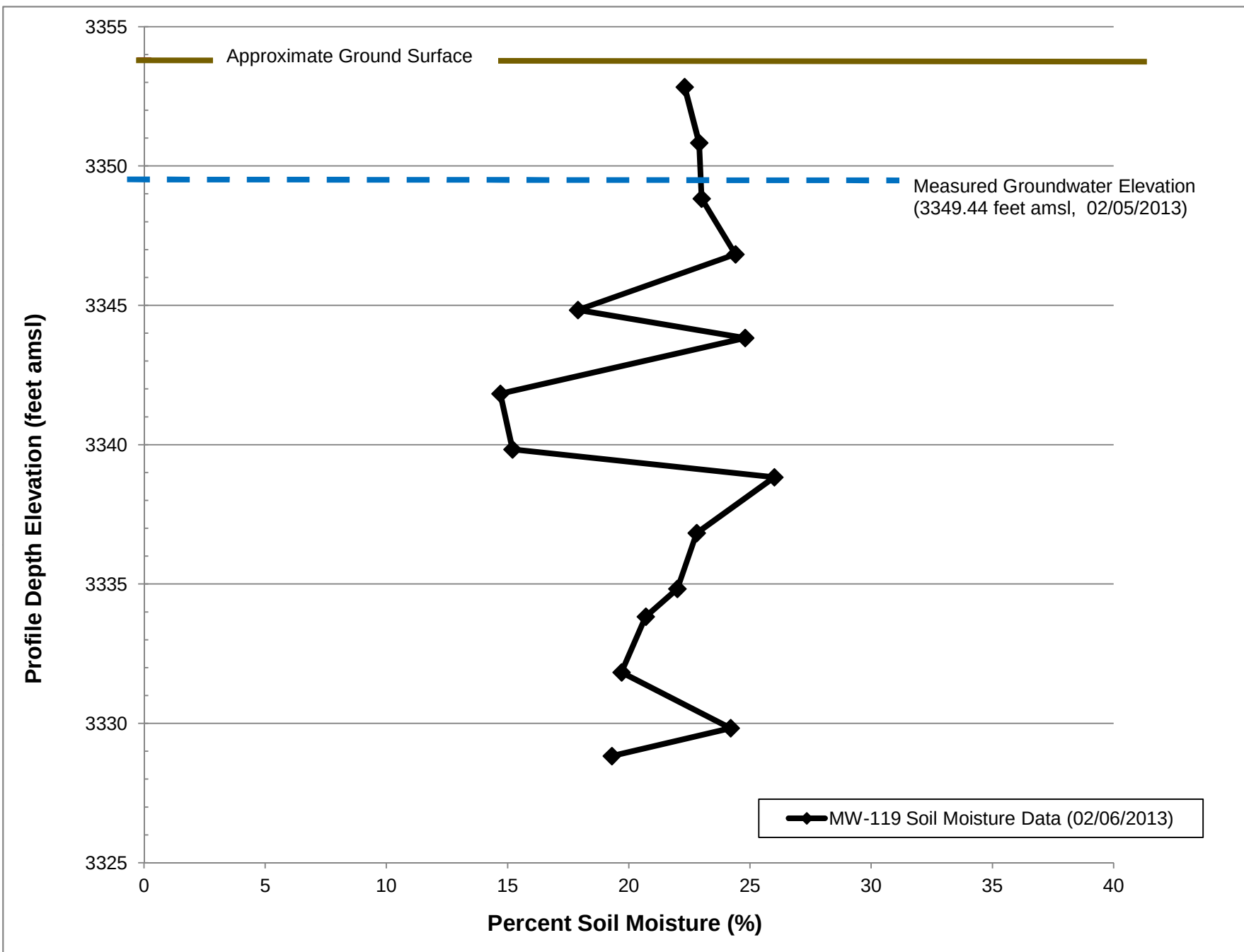


Figure 13 - MW-119 Soil Moisture Profile

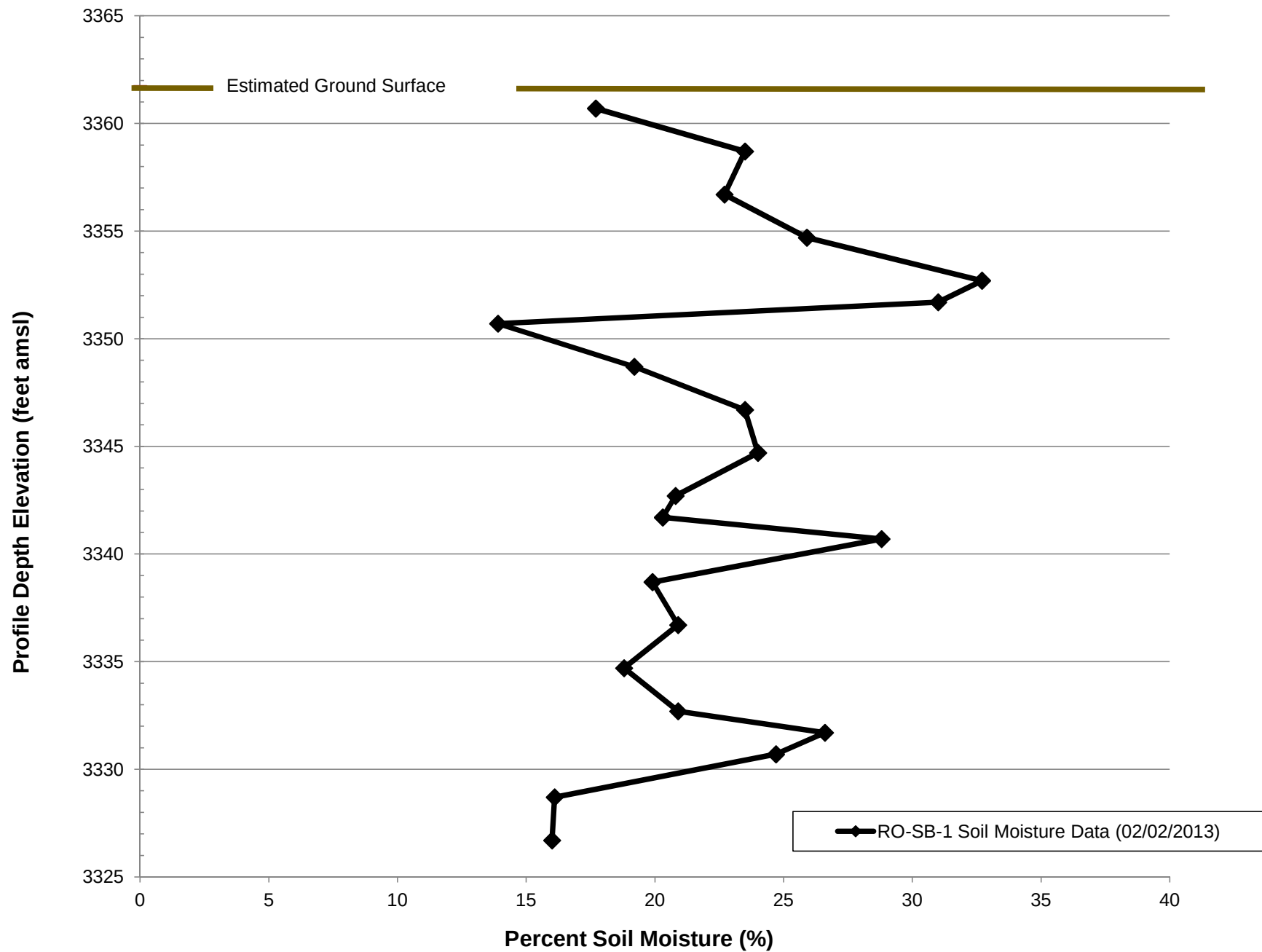


Figure 14 - RO-SB-1 Soil Moisture Profile



Figure 15 - MW-114 Hydrograph with 2013 Precipitation



Figure 16 - MW-115 Hydrograph with 2013 Precipitation



Figure 17 - MW-116 Hydrograph with 2013 Precipitation

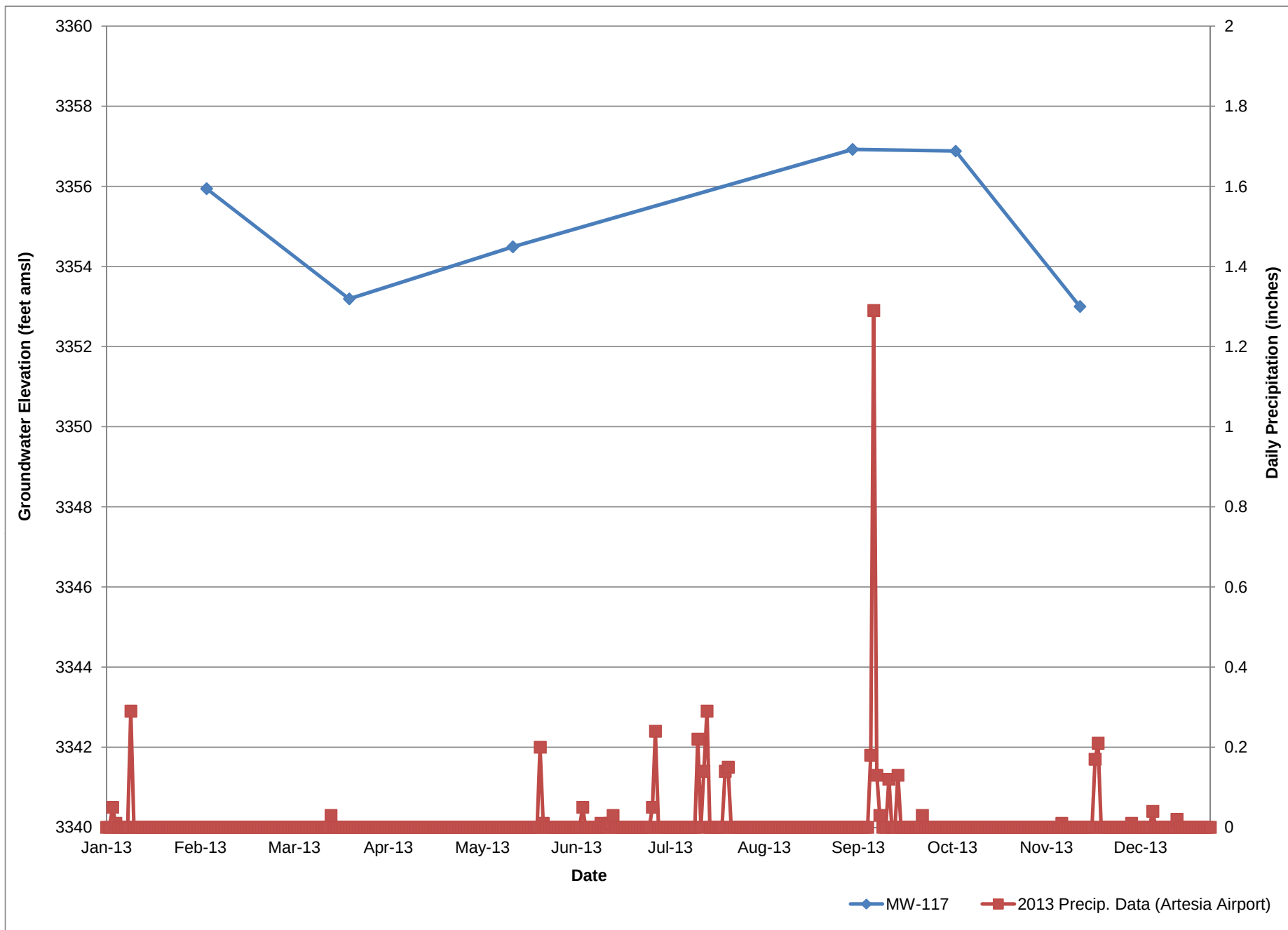


Figure 18 - MW-117 Hydrograph with 2013 Precipitation

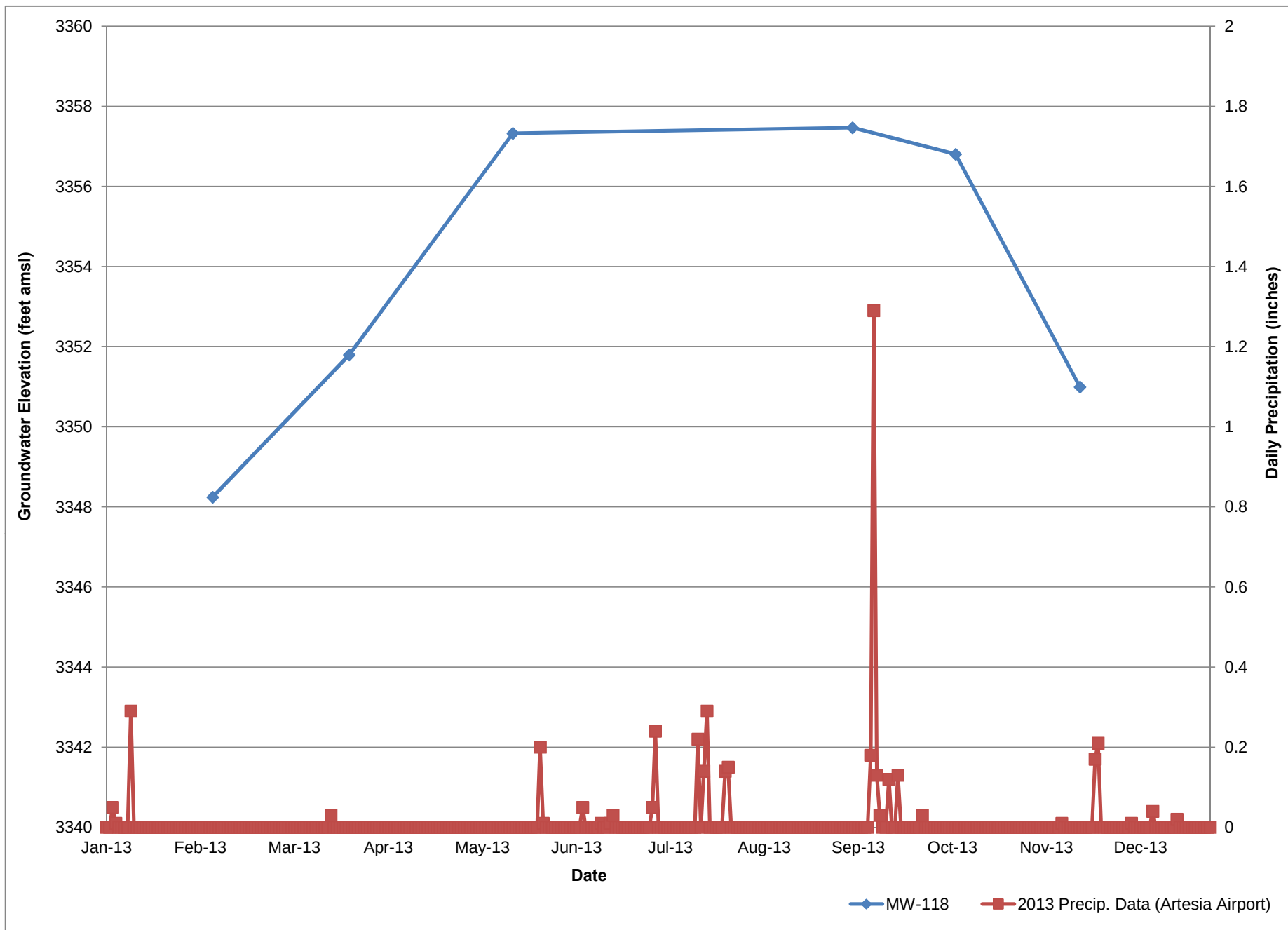


Figure 19 - MW-118 Hydrograph with 2013 Precipitation

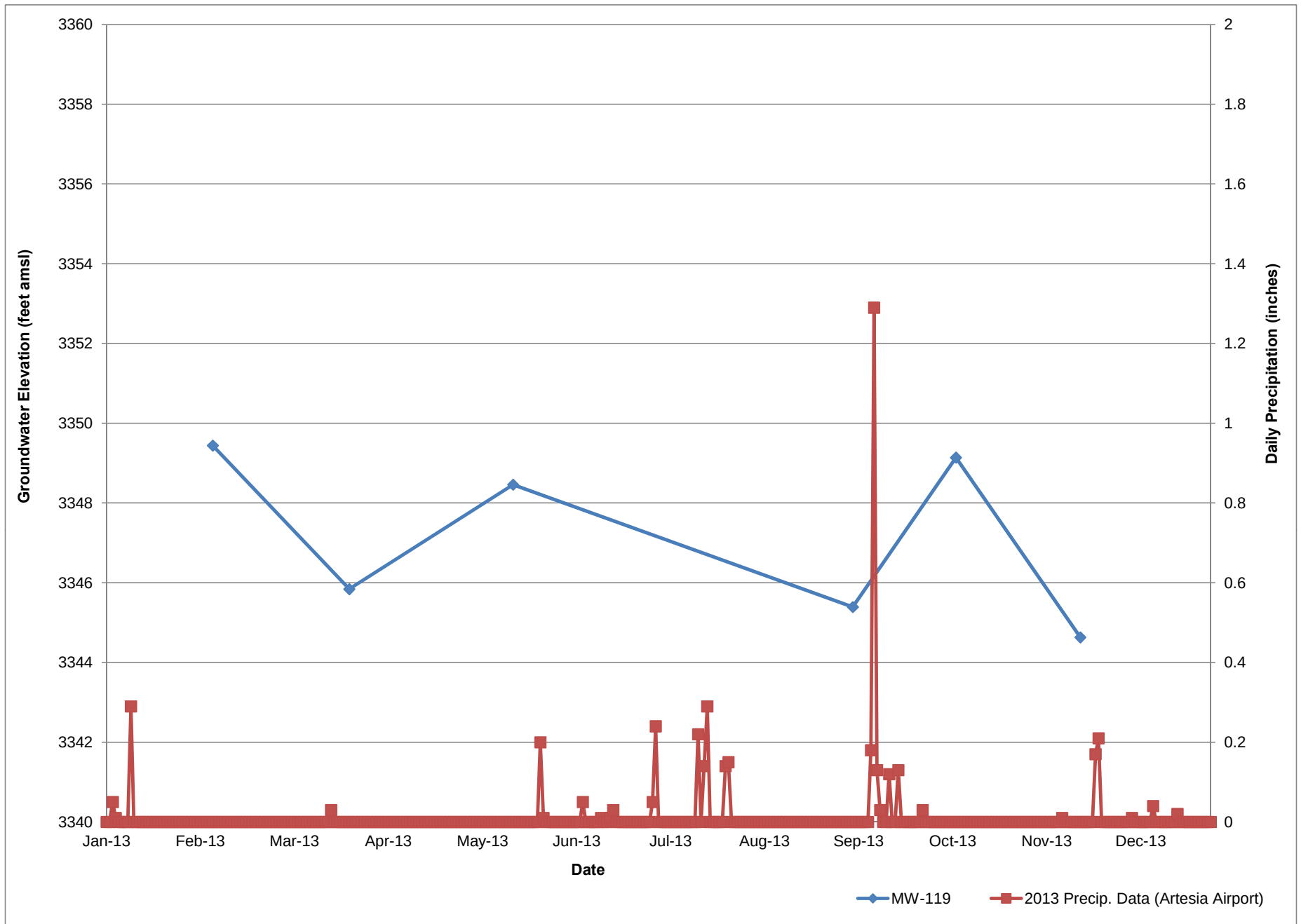


Figure 20 - MW-119 Hydrograph with 2013 Precipitation



Appendix A

Boring Logs

Date Start/Finish: 1/28/2013 Drilling Company: National Drilling Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 673082.16 Easting: 523818.86 Casing Elevation: 3361.68 Borehole Depth: 35' bgs Surface Elevation: 3358.62 Descriptions By: Ben McKenna	Well/Boring ID: MW-114 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

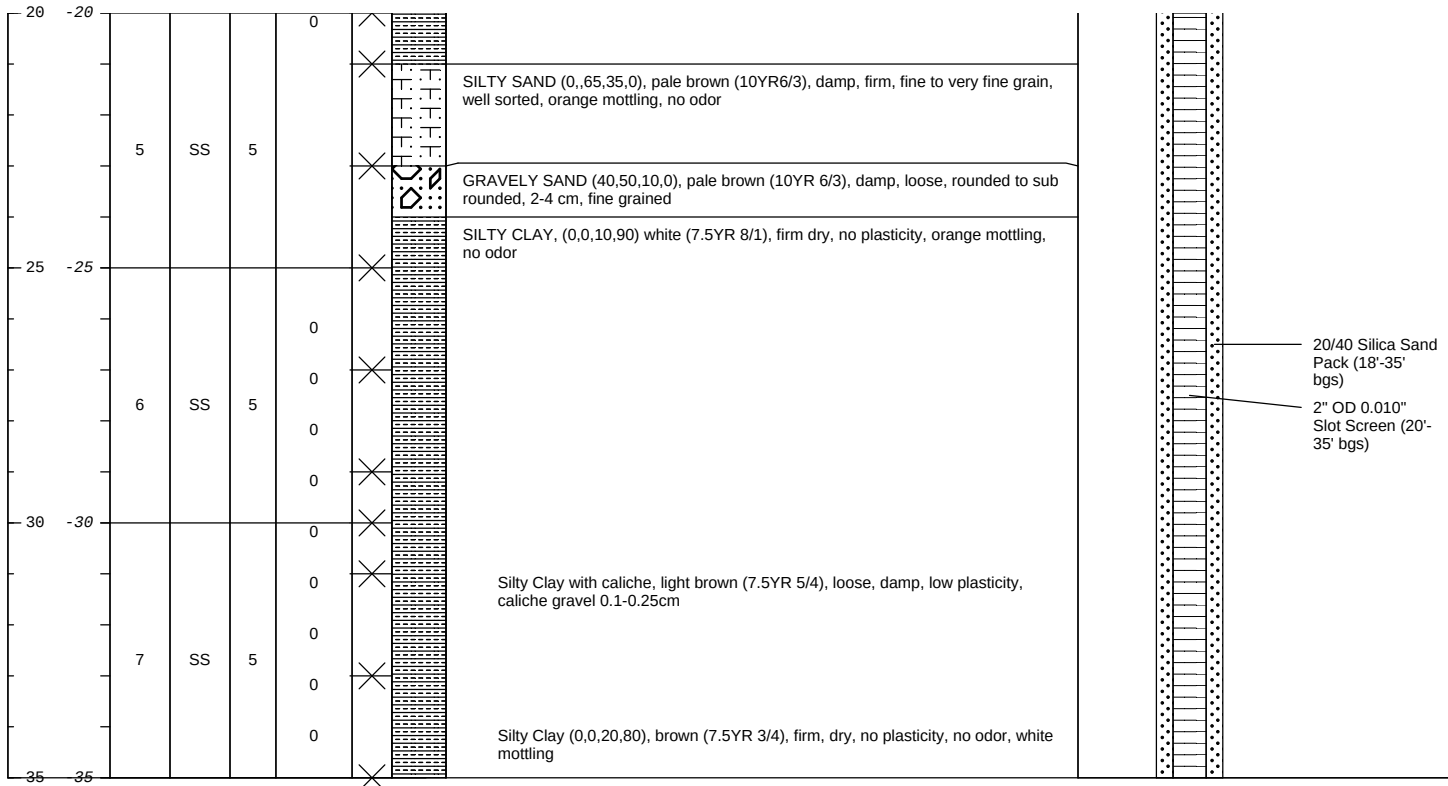
DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction

0	0								Stick-up (3' ags)
		1	HA	5		X			
						X			
5	-5				0	X		SILTY CLAY (0,0,20,80), light reddish brown (5YR6/4), moist, medium-high plasticity, trace caliche 0.5-1 cm, firm, no odor	2" OD PVC Casing
		2	SS	3		X		No Recovery	PVC Riser (0'-20' bgs)
						X			
10	-10				1.1	X		SILTY CLAY (0,0,20,80), pink (5YR 7/3), firm, moist, medium plasticity, caliche gravels 0.5-1 cm, no odor	
		3	SS	5	0	X		Silty Clay with caliche (0,0,20,80), red (2.5YR 4/6), soft, moist, low plasticity, no odor, caliche gravels 0.25-0.5 cm	
					0	X			
					0	X			
15	-15				0	X		Silty Clay (0,0,45,55), light gray (5YR 7/1), soft, dry, low-med plasticity, no odor, caliche gravels 0.25-.5 cm	Bentonite Seal (14'-18' bgs)
		4	SS	5	0	X			
					0	X			
					0	X			
20	-20				0	X			

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 1/28/2013 Drilling Company: National Drilling Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 673082.16 Easting: 523818.86 Casing Elevation: 3361.68 Borehole Depth: 35' bgs Surface Elevation: 3358.62 Descriptions By: Ben McKenna	Well/Boring ID: MW-114 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction



	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 1/29/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 673997.34 Easting: 523932.93 Casing Elevation: 3359.31 Borehole Depth: 25' bgs Surface Elevation: 3356.48 Descriptions By: Ben McKenna	Well/Boring ID: MW-115 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Stick-up (3' ags)
		1	HA	5	0	X		SILTY CLAY (0,0,20,80), dark reddish brown (1.5YR3/3), soft, dry, no plasticity, no odor, trace organics	
					0	X			
5	-5				0	X		Silty Clay (0,0,20,80), reddish brown (2.5YR5/4), soft, wet, no plasticity, no odor	2" OD PVC Casing
								No Recovery	PVC Riser (0'-10' bgs)
		2	HA	3.5	0	X		Silty Clay (0,0,10,90), dark reddish brown (5YR3/2), firm,moist, medium-high plasticity, no odor	Bentonite Seal (4'-8' bgs)
					1.9	X		Silty Clay (0,0,40,60), light reddish brown (5YR6/3), wet, soft, no plasticity, no odor	
						X		Silty Clay (0,0,20,80), light gray (7.5YR7/1), firm, damp, low plasticity	
10	-10					X		Silty Clay (0,0,30,70), white (7.5YR8/1), firm, moist, low plasticity, no odor, orange mottling	
		3	SS	5		X		Silty Clay (0,0,45,55), white (7.5YR 8/1), loose, damp, low-medium plasticity, orange mottling, trace caliche gravels	
						X			
15	-15				0.5	X		Silty Clay (0,0,25,75), pinkish gray (7.5YR 8/1), loose, damp, low-medium plasticity, caliche gravels 1-4 cm, no odor	20/40 Silica Sand Pack (8'-25' bgs)
		4	SS	5		X		Silty Clay (0,0,35,65), light brown (7.5YR 6/4), dry, soft, no plasticity, no odor, white mottling	
					0.6	X			
20	-20					X		Silty Clay (0,0,10,90), brown (7.5YR5/4), dry, firm, low-medium plasticity, no odor	2" OD 0.010" Slot Screen (10'-25' bgs)
						X			
		5	SS	5	0.8	X		Silty Clay (0,0,30,70), light brown (7.5YR 6/3), dry, firm, no plasticity, no odor, trace caliche gravels	
					1.9	X			
25	-25					X			

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 1/30/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 673966.06 Easting: 525339.63 Casing Elevation: 3353.77 Borehole Depth: 25' bgs Surface Elevation: 3350.99 Descriptions By: Ben McKenna	Well/Boring ID: MW-116 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Stick-up (3" ags)
		1	HA	5		X		SILTY CLAY (0,0,20,80), dark reddish brown (2.5YR2/3), loose, dry, low plasticity, no odor, trace organics	
						X		Silty Clay (0,0,35,65), light reddish brown (3.5YR6/4), damp, soft, high plasticity, no odor	2" OD PVC Casing
5	-5					X		Silty Clay (0,0,40,60), pink (7.5YR8/1), soft, moist, low-medium plasticity, no odor	PVC Riser (0'-10' bgs)
		2	HA	3.5		X		No Recovery	Bentonite Seal (4'-8' bgs)
					0.4	X		GRAVELLY CLAY (35, 0, 10, 55), pink (7.5YR8/4), moist, loose, no plasticity, caliche gravels 0.5-6 cm, no odor	
10	-10					X		Gravelly Clay (45,0,0,55), caliche cobbles 1-8 cm	
		3	SS	5	0.4	X		Clayey Gravels (65,0,0,35), black (10YR2/1), wet, loose, poorly sorted, angular to subangular, no odor	
					0.6	X			
15	-15					X		SILTY CLAY (0,0,10,90), light reddish brown (5YR6/4), stiff, dry, low-medium plasticity, pink mottling	
		4	SS	5	0.8	X		Silty Clay (5,0,15,80), reddish brown (5YR4/4), firm, dry, medium plasticity, no odor, trace gravels 0.5-3 centimeters	20/40 Silica Sand Pack (8'-25' bgs)
						X			
20	-20					X		Silty Clay (0,0,10,90), light reddish brown (5YR6/4), stiff, dry, low plasticity, pink mottling, no odor	2" OD 0.010" Slot Screen (10'-25' bgs)
		5	SS	5	0.2	X		Silty Clay (0,0,40,60), light reddish brown (5YR6/3), soft, damp, low-medium plasticity, no odor	
					0.3	X		Silty Clay (0,0,20,80), pinkish gray (7.5YR7/2), dry, firm, med-high plasticity, no odor, brown mottling	
25	-25					X			

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 1/31/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 674301.52 Easting: 522979.73 Casing Elevation: 3363.01 Borehole Depth: 25' bgs Surface Elevation: 3360.07 Descriptions By: Eric Bergersen	Well/Boring ID: MW-117 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Stick-up (3" ags)
		1	HA	5	0.6	X		CLAY (0,0,0,100), dark brown (10YR3/3), moist, soft, high plasticity, no odor, trace organics	
					0.4	X		SILTY CLAY (0,0,70,30), very pale brown (10YR7/4), very moist, soft, no plasticity, no odor	2" OD PVC Casing
5	-5				0.1	X		Silty Clay with gravel (5,0,70,25), very pale brown (10YR 8/2), wet, no plasticity, no odor, orange mottling	PVC Riser (0'-10' bgs)
		2	HA	5	0	X		Silty Clay (0,0,90,10), light gray (10YR 7/2), moist, no plasticity, no odor	Bentonite Seal (4'-8' bgs)
10	-10					X		Silty Clay (0,0,40,60), reddish brown (5YR5/4) moist, no plasticity, no odor	
		3	SS	5		X		Silty Clay with caliche (0,0,70,30), brown (7.5YR 5/2), moist, no plasticity, no odor	
15	-15					X		Silty Clay (0,0,50,50), light reddish brown (5YR 6/4), moist, medium plasticity, no odor	
		4	SS	5		X		Silty Clay (0,0,65,35), light brownish gray (10YR 6/2), slightly moist, no plasticity, no odor, light brown mottling	
20	-20					X		GRAVELLY CLAY (50,0,10,40), light brownish gray (10YR 6/2), moist, no plasticity, no odor, angular to subrounded 1-2 cm	20/40 Silica Sand Pack (8'-25' bgs)
		5	SS	5		X		SILTY CLAY (0,0,90,10), light gray (10YR 7/2), saturated, no plasticity, no odor, very soft Silty Clay (0,0,10,90), light reddish brown (5YR 6/3), very stiff, medium plasticity, no odor, moist	2" OD 0.010" Slot Screen (10'-25' bgs)
25	-25					X			

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 2/4/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 674819.18 Easting: 523375.94 Casing Elevation: 3361.95 Borehole Depth: 25' bgs Surface Elevation: 3359.62 Descriptions By: Ben McKenna	Well/Boring ID: MW-118 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Stick-up (3" ags)
		1	HA	5		X		SILTY CLAY (0,0,30,70), dark brown (7.5YR 3/4), medium plasticity, moist, no odor	
5	-5					X		Silty Clay with trace caliche (0,0,65,35), brown (7.5YR5/4), saturated, loose, no plasticity, no odor	2" OD PVC Casing
		2	HA	5		X			PVC Riser (0'-10' bgs)
						X			Bentonite Seal (4'-8' bgs)
10	-10				0	X		Silty Clay (0,0,20,80), white (5YR 8/1), firm, moist, medium plasticity	
					0	X			
		3	SS	5	0	X		Silty Clay (0,0,40,60) light reddish brown (5YR 6/3), loose, damp, no plasticity, no odor, trace caliche gravels	
					0	X			
15	-15				0	X		Silty Clay (0,0,10,90), reddish yellow (5YR 6/6), dry, stiff, no plasticity, no odor	
					0	X			
		4	SS	5	0	X		Silty Clay (0,0,30,70), reddish brown (5YR 4/4), moist, firm, low-medium plasticity, no odor	20/40 Silica Sand Pack (8'-25' bgs)
					0	X			
20	-20				0	X		Silty Clay with gravels (5,0,5,90), reddish yellow (5YR 6/6), dry stiff, no plastiicty, no odor, caliche 0.5-3 cm	2" OD 0.010" Slot Screen (10'-25' bgs)
					0	X			
		5	SS	5	0	X		Silty Clay with gravels (5,0,10,85), yellowish red (5YR 5/6), stiff, dry, no plasticity, no odor, gravels subangular 0.5-3 cm	
					0	X			
25	-25				0	X		SILTY SAND (0,60,40,0), yellowish red (5YR 5/6), loose, damp, poorly sorted, fine grained, no odor	

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 2/4/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: 674860.11 Easting: 524575.80 Casing Elevation: 3356.11 Borehole Depth: 25' bgs Surface Elevation: 3353.83 Descriptions By: Ben McKenna	Well/Boring ID: MW-119 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Stick-up (3" ags)
1		1	HA	5		X		SILTY CLAY (0,0,30,70), pink (7.5YR 5/4), wet, no plasticity, no odor	
5	-5	2	HA	5		X		Silty Clay (0,0,80,20), pink (7.5YR 7/4), loose, wet, no plasticity, no odor	2" OD PVC Casing
10	-10	3	SS	5	0	X		Silty Clay (0,0,15,85), light reddish brown (5YR6/4), firm, moist, med-high plasticity, no odor	PVC Riser (0'-10' bgs)
					0	X		Silty Clay (0,0,40,60), reddish brown (5YR 4/4), loose, dry, no plasticity, no odor	Bentonite Seal (4'-8' bgs)
15	-15	4	SS	5	0	X		Silty Clay (0,0,20,80), dark reddish brown (5YR3/4), firm, moist, medium plasticity, no odor	
					0	X		Silty Clay (0,0,35,65), reddish brown (5YR4/4), firm, moist, low plasticity, no odor	
20	-20	5	SS	5	0	X		Silty Clay (0,0,20,80), dark reddish brown (5YR4/4), stiff, low plasticity, moist, no odor	
					0	X		Silty Clay (0,0,40,60), light reddish brown (5YR6/4), moist, loose, medium plasticity, no odor	
25	-25				0	X		CLAY (0,0,0,100), light reddish brown (5YR 6/4), dry, very stiff, low plasticity, no odor, white mottling	20/40 Silica Sand Pack (8'-25' bgs)
									2" OD 0.010" Slot Screen (10'-25' bgs)

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 2/4/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: Easting: Casing Elevation: Borehole Depth: 35' bgs Surface Elevation: Descriptions By: Ben McKenna	Well/Boring ID: RO-SB-1 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction

0	0							SILTY CLAY (0,0,20,80), dark brown (7.5YR 3/3), loose, dry, low plasticity, no odor, trace organics	
		1	HA	5	0	X		Silty Clay (0,0,20,80), light brown (7.5YR 6/3), moist, firm, medium-high plasticity, no odor	
5	-5				3.3	X			
		2	HA	5	0.7	X		Silty Clay (0,0,35,65), pink (5YR8/4), moist, firm, medium-high plasticity, no odor	
					0.3	X			
10	-10				0	X		No Recovery	
		3	SS	3	0	X		Silty Clay (0,0,35,65), pink (5YR8/4), damp, loose, no plastiicty, trace gravels, no odor	
					0	X		Silty Clay (0,0,10,90), pink (5YR 8/4), dry, stiff, no plasticity, no odor	
15	-15				0	X			
		4	SS	5	1.4	X		Silty Clay with gravels (15, 0, 20, 65), pink (5YR 7/4), loose, moist, no plasticity, no odor, angular to subangular, caliche gravels 0.5-3 cm	
					0	X		Silty Clay with Gravels (15,0,20,65), pink (5YR 7/4), wet, loose, no plasticity, no odor	
20	-20				0	X		Silty Clay (0,0,10,90), reddish yellow (5YR6/6), dry, stiff, no plasticity, no odor	

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)

Date Start/Finish: 2/4/2013 Drilling Company: National Drilling Driller's Name: Gerald Becker Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Rig Type: CME 85	Northing: Easting: Casing Elevation: Borehole Depth: 35' bgs Surface Elevation: Descriptions By: Ben McKenna	Well/Boring ID: RO-SB-1 Client: Navajo Refining Company Location: Navajo Refinery Artesia, New Mexico

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction

20	-20				0	X		No Recovery	
		5	SS	3	0	X		SILTY CLAY (0,0,10,90), red (2.5YR 5/6), dry, firm, low-medium plasticity, no odor	
					0.5	X		SILTY CLAY with GRAVELS (15,0,20,65), pink (5YR 7/4), wet, loose, no plasticity, no odor	
25	-25				0	X		SILTY CLAY (0,0,10,90), pink (5YR 7/4), firm, dry, medium plasticity, no odor	
		6	SS	5	0	X		Silty Clay with Gravels (10,0,30,60), reddish brown (5YR 5/4), dry, loose, no plasticity, no odor	
					0.1	X			
					0	X		Silty Clay (0,0,10,90), reddish brown (5YR 5/4), stiff, dry, no plasticity, no odor	
30	-30				0	X			
					0	X			
		7	SS	5	1.2	X		Gravelly Clay Seam	
					0	X			
					0	X		Silty Clay (0,0,20,80), light gray (5YR 7/1), loose, dry, low plasticity, no odor	
35	-35					X			

	Remarks: bgs = below ground surface; amsl = above mean sea level; HA = Hand Auger; ppm = parts per million; NA = not applicable/available; SS = split spoon, ags = above ground surface Lithology is described as percentage of (Gravel, Sand, Silt, Clay)



Appendix B

Soil Analytical Data



13-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **1301997**

Dear Robert,

ALS Environmental received 16 samples on 31-Jan-2013 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 49.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Sonia West".

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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Environmental

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RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1301997

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1301997-01	MW -115 (1)	Soil		1/29/2013 14:25	1/31/2013 09:10	☐
1301997-02	MW -115 (3)	Soil		1/29/2013 14:30	1/31/2013 09:10	☐
1301997-03	MW- 115 (5)	Soil		1/29/2013 14:35	1/31/2013 09:10	☐
1301997-04	MW -115 (7)	Soil		1/29/2013 15:02	1/31/2013 09:10	☐
1301997-05	MW- 115 (9)	Soil		1/29/2013 15:02	1/31/2013 09:10	☐
1301997-06	MW- 115 (10)	Soil		1/29/2013 16:10	1/31/2013 09:10	☐
1301997-07	MW -115 (11)	Soil		1/29/2013 16:12	1/31/2013 09:10	☐
1301997-08	MW -115 (13)	Soil		1/29/2013 16:12	1/31/2013 09:10	☐
1301997-09	MW- 115 (15)	Soil		1/29/2013 15:20	1/31/2013 09:10	☐
1301997-10	MW -115 (17)	Soil		1/29/2013 15:22	1/31/2013 09:10	☐
1301997-11	MW -115 (19)	Soil		1/29/2013 15:22	1/31/2013 09:10	☐
1301997-12	MW -115 (20)	Soil		1/29/2013 16:00	1/31/2013 09:10	☐
1301997-13	MW -115 (21)	Soil		1/29/2013 15:30	1/31/2013 09:10	☐
1301997-14	MW- 115 (23)	Soil		1/29/2013 15:30	1/31/2013 09:10	☐
1301997-15	MW-115 (25)	Soil		1/29/2013 15:45	1/31/2013 09:10	☐
1301997-16	Trip Blank 011813-29	Water		1/29/2013	1/31/2013 09:10	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1301997

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302400.

Batch 67579, TPH DRO/ORO, Sample 1302018-01: MS/MSD is for an unrelated sample.

Batch 67523, Metals, Sample 13011005-01: MS/MSD is for an unrelated sample.

Batch 67523, Metals, Sample 13011005-01: Duplicate RPD is for an unrelated sample.

Batch 67656, Low-Level Semivolatile Organics, Sample 1302140-04: MS/MSD is for an unrelated sample.

Batch 67656, Low-Level Semivolatile Organics, Sample 1302140-04: MS/MSD RPD is for an unrelated sample.

Batch R141995, Volatile Organics, Sample MW- 115 (1): MS/MSD recoveries were outside the control limits for Toluene. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Batch R142113, Volatile Organics, Sample 1302069-01: MS/MSD is for an unrelated sample.

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (1)
Collection Date: 1/29/2013 02:25 PM

Work Order: 1301997
Lab ID: 1301997-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	1.4	J	0.62	4.2	mg/Kg-dry	1	2/6/2013 14:40
TPH (Diesel Range)	U		0.62	2.1	mg/Kg-dry	1	2/6/2013 14:40
Surr: 2-Fluorobiphenyl	62.8			60-135	%REC	1	2/6/2013 14:40
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW7471A / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.025	0.062	mg/Kg-dry	1	2/5/2013 16:49
Surr: 4-Bromofluorobenzene	94.5			70-130	%REC	1	2/5/2013 16:49
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	18.2		0.36	4.39	µg/Kg-dry	1	2/5/2013 16:05
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: SKS							
Aluminum	13,800		24	118	mg/Kg-dry	100	2/6/2013 15:31
Arsenic	3.60		0.12	0.591	mg/Kg-dry	1	2/5/2013 16:25
Barium	147		0.094	0.591	mg/Kg-dry	1	2/5/2013 16:25
Boron	6.45		1.7	2.95	mg/Kg-dry	1	2/6/2013 13:16
Cadmium	0.390	J	0.059	0.591	mg/Kg-dry	1	2/5/2013 16:25
Calcium	64,700		1,200	5,910	mg/Kg-dry	100	2/6/2013 15:31
Chromium	12.8		0.11	0.591	mg/Kg-dry	1	2/5/2013 16:25
Cobalt	4.78		0.083	0.591	mg/Kg-dry	1	2/5/2013 16:25
Copper	11.4		0.12	0.591	mg/Kg-dry	1	2/5/2013 16:25
Iron	9,060		12	59.1	mg/Kg-dry	1	2/5/2013 16:25
Lead	23.7		0.059	0.591	mg/Kg-dry	1	2/5/2013 16:25
Manganese	357		12	59.1	mg/Kg-dry	100	2/6/2013 15:31
Molybdenum	0.742		0.18	0.591	mg/Kg-dry	1	2/5/2013 16:25
Nickel	9.67		0.11	0.591	mg/Kg-dry	1	2/5/2013 16:25
Potassium	3,360		15	59.1	mg/Kg-dry	1	2/5/2013 16:25
Selenium	0.949		0.21	0.591	mg/Kg-dry	1	2/5/2013 16:25
Silver	U		0.094	0.591	mg/Kg-dry	1	2/5/2013 16:25
Sodium	327		13	59.1	mg/Kg-dry	1	2/5/2013 16:25
Uranium	U		0.59	0.591	mg/Kg-dry	1	2/5/2013 16:25
Zinc	33.8		0.30	0.591	mg/Kg-dry	1	2/5/2013 16:25
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		2.0	8.1	µg/Kg-dry	1	2/7/2013 17:49
2-Methylnaphthalene	U		2.0	8.1	µg/Kg-dry	1	2/7/2013 17:49
Benzo(a)pyrene	U		2.0	8.1	µg/Kg-dry	1	2/7/2013 17:49
Naphthalene	U		2.0	8.1	µg/Kg-dry	1	2/7/2013 17:49
Surr: 2,4,6-Tribromophenol	59.9			36-126	%REC	1	2/7/2013 17:49
Surr: 2-Fluorobiphenyl	77.2			43-125	%REC	1	2/7/2013 17:49

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (1)
Collection Date: 1/29/2013 02:25 PM

Work Order: 1301997
Lab ID: 1301997-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<i>Surr: 2-Fluorophenol</i>	72.3			37-125	%REC	1	2/7/2013 17:49
<i>Surr: 4-Terphenyl-d14</i>	92.5			32-125	%REC	1	2/7/2013 17:49
<i>Surr: Nitrobenzene-d5</i>	79.6			37-125	%REC	1	2/7/2013 17:49
<i>Surr: Phenol-d6</i>	76.1			40-125	%REC	1	2/7/2013 17:49
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,1,2,2-Tetrachloroethane	U		0.62	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,1,2-Trichloroethane	U		2.5	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,1-Dichloroethane	U		0.62	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,1-Dichloroethene	U		1.9	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,2-Dibromoethane	U		0.86	6.2	µg/Kg-dry	1	2/1/2013 11:23
1,2-Dichloroethane	U		0.74	6.2	µg/Kg-dry	1	2/1/2013 11:23
Benzene	U		0.74	6.2	µg/Kg-dry	1	2/1/2013 11:23
Carbon tetrachloride	U		1.5	6.2	µg/Kg-dry	1	2/1/2013 11:23
Chloroform	U		2.2	6.2	µg/Kg-dry	1	2/1/2013 11:23
Ethylbenzene	U		1.1	6.2	µg/Kg-dry	1	2/1/2013 11:23
Methylene chloride	U		3.1	12	µg/Kg-dry	1	2/1/2013 11:23
Tetrachloroethene	U		1.2	6.2	µg/Kg-dry	1	2/1/2013 11:23
Toluene	U		0.86	6.2	µg/Kg-dry	1	2/1/2013 11:23
Trichloroethene	U		2.0	6.2	µg/Kg-dry	1	2/1/2013 11:23
Vinyl chloride	U		1.2	2.5	µg/Kg-dry	1	2/1/2013 11:23
Xylenes, Total	U		3.2	19	µg/Kg-dry	1	2/1/2013 11:23
<i>Surr: 1,2-Dichloroethane-d4</i>	93.0			70-128	%REC	1	2/1/2013 11:23
<i>Surr: 4-Bromofluorobenzene</i>	101			73-126	%REC	1	2/1/2013 11:23
<i>Surr: Dibromofluoromethane</i>	105			71-128	%REC	1	2/1/2013 11:23
<i>Surr: Toluene-d8</i>	101			73-127	%REC	1	2/1/2013 11:23
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	58.8		2.5	6.14	mg/Kg-dry	1	2/5/2013 21:07
Fluoride	5.20		0.37	1.23	mg/Kg-dry	1	2/5/2013 21:07
Nitrogen, Nitrate (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 21:07
Nitrogen, Nitrite (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 21:07
Sulfate	1,160		2.5	6.14	mg/Kg-dry	1	2/5/2013 21:07
<i>Surr: Selenate (surr)</i>	87.1			85-115	%REC	1	2/5/2013 21:07
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.69	2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	19.0		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (3)
Collection Date: 1/29/2013 02:30 PM

Work Order: 1301997
Lab ID: 1301997-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	26.2		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW- 115 (5)
Collection Date: 1/29/2013 02:35 PM

Work Order: 1301997
Lab ID: 1301997-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	5.69		0.40	4.90	µg/Kg-dry	1	2/5/2013 16:17
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	13,200		24	120	mg/Kg-dry	100	2/6/2013 15:33
Arsenic	2.42		0.12	0.599	mg/Kg-dry	1	2/5/2013 16:27
Barium	79.7		0.096	0.599	mg/Kg-dry	1	2/5/2013 16:27
Boron	9.03		3.4	5.99	mg/Kg-dry	2	2/6/2013 13:18
Cadmium	0.257	J	0.060	0.599	mg/Kg-dry	1	2/5/2013 16:27
Calcium	90,500		1,200	5,990	mg/Kg-dry	100	2/6/2013 15:33
Chromium	13.0		0.11	0.599	mg/Kg-dry	1	2/5/2013 16:27
Cobalt	4.55		0.084	0.599	mg/Kg-dry	1	2/5/2013 16:27
Copper	7.86		0.12	0.599	mg/Kg-dry	1	2/5/2013 16:27
Iron	8,880		12	59.9	mg/Kg-dry	1	2/5/2013 16:27
Lead	8.22		0.060	0.599	mg/Kg-dry	1	2/5/2013 16:27
Manganese	211		0.12	0.599	mg/Kg-dry	1	2/5/2013 16:27
Molybdenum	0.680		0.18	0.599	mg/Kg-dry	1	2/5/2013 16:27
Nickel	8.77		0.11	0.599	mg/Kg-dry	1	2/5/2013 16:27
Potassium	2,630		16	59.9	mg/Kg-dry	1	2/5/2013 16:27
Selenium	0.843		0.22	0.599	mg/Kg-dry	1	2/5/2013 16:27
Silver	U		0.096	0.599	mg/Kg-dry	1	2/5/2013 16:27
Sodium	216		13	59.9	mg/Kg-dry	1	2/5/2013 16:27
Uranium	0.856		0.60	0.599	mg/Kg-dry	1	2/5/2013 16:27
Zinc	31.4		0.30	0.599	mg/Kg-dry	1	2/5/2013 16:27
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	51.5		2.7	6.79	mg/Kg-dry	1	2/5/2013 21:22
Fluoride	5.92		0.41	1.36	mg/Kg-dry	1	2/5/2013 21:22
Nitrogen, Nitrate (As N)	U		0.41	1.36	mg/Kg-dry	1	2/5/2013 21:22
Nitrogen, Nitrite (As N)	U		0.41	1.36	mg/Kg-dry	1	2/5/2013 21:22
Sulfate	1,070		2.7	6.79	mg/Kg-dry	1	2/5/2013 21:22
Surr: Selenate (surr)	86.1			85-115	%REC	1	2/5/2013 21:22
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.81	2.71	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	26.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (7)
Collection Date: 1/29/2013 03:02 PM

Work Order: 1301997
Lab ID: 1301997-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW- 115 (9)
Collection Date: 1/29/2013 03:02 PM

Work Order: 1301997
Lab ID: 1301997-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.8		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW- 115 (10)
Collection Date: 1/29/2013 04:10 PM

Work Order: 1301997
Lab ID: 1301997-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	14.6		0.34	4.22	µg/Kg-dry	1	2/5/2013 16:19
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	12,100		23	117	mg/Kg-dry	100	2/6/2013 15:35
Arsenic	2.90		0.12	0.587	mg/Kg-dry	1	2/5/2013 16:34
Barium	120		0.094	0.587	mg/Kg-dry	1	2/5/2013 16:34
Boron	6.04		1.6	2.94	mg/Kg-dry	1	2/6/2013 13:21
Cadmium	0.449	J	0.059	0.587	mg/Kg-dry	1	2/5/2013 16:34
Calcium	63,400		1,200	5,870	mg/Kg-dry	100	2/6/2013 15:35
Chromium	14.3		0.11	0.587	mg/Kg-dry	1	2/6/2013 13:21
Cobalt	4.70		0.082	0.587	mg/Kg-dry	1	2/5/2013 16:34
Copper	15.5		0.12	0.587	mg/Kg-dry	1	2/5/2013 16:34
Iron	8,210		12	58.7	mg/Kg-dry	1	2/5/2013 16:34
Lead	44.9		0.059	0.587	mg/Kg-dry	1	2/5/2013 16:34
Manganese	175		0.12	0.587	mg/Kg-dry	1	2/5/2013 16:34
Molybdenum	0.614		0.18	0.587	mg/Kg-dry	1	2/5/2013 16:34
Nickel	9.68		0.11	0.587	mg/Kg-dry	1	2/5/2013 16:34
Potassium	3,490		15	58.7	mg/Kg-dry	1	2/5/2013 16:34
Selenium	1.20		0.21	0.587	mg/Kg-dry	1	2/5/2013 16:34
Silver	0.110	J	0.094	0.587	mg/Kg-dry	1	2/5/2013 16:34
Sodium	288		13	58.7	mg/Kg-dry	1	2/5/2013 16:34
Uranium	U		0.59	0.587	mg/Kg-dry	1	2/5/2013 16:34
Zinc	37.9		0.29	0.587	mg/Kg-dry	1	2/5/2013 16:34
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	55.0		2.5	6.17	mg/Kg-dry	1	2/5/2013 22:05
Fluoride	7.73		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:05
Nitrogen, Nitrate (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:05
Nitrogen, Nitrite (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:05
Sulfate	722		2.5	6.17	mg/Kg-dry	1	2/5/2013 22:05
Surr: Selenate (surr)	88.8			85-115	%REC	1	2/5/2013 22:05
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.73	2.43	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	19.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (11)
Collection Date: 1/29/2013 04:12 PM

Work Order: 1301997
Lab ID: 1301997-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	12.6		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (13)
Collection Date: 1/29/2013 04:12 PM

Work Order: 1301997
Lab ID: 1301997-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.8		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW- 115 (15)
Collection Date: 1/29/2013 03:20 PM

Work Order: 1301997
Lab ID: 1301997-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	U		0.34	4.15	µg/Kg-dry	1	2/5/2013 16:21
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	4,980		22	110	mg/Kg-dry	100	2/6/2013 15:38
Arsenic	0.893		0.11	0.549	mg/Kg-dry	1	2/5/2013 16:37
Barium	458		8.8	54.9	mg/Kg-dry	100	2/6/2013 15:38
Boron	3.78	J	3.1	5.49	mg/Kg-dry	2	2/6/2013 13:23
Cadmium	0.117	J	0.055	0.549	mg/Kg-dry	1	2/5/2013 16:37
Calcium	157,000		1,100	5,490	mg/Kg-dry	100	2/6/2013 15:38
Chromium	5.84		0.20	1.10	mg/Kg-dry	2	2/6/2013 13:23
Cobalt	1.62		0.077	0.549	mg/Kg-dry	1	2/5/2013 16:37
Copper	1.31		0.11	0.549	mg/Kg-dry	1	2/5/2013 16:37
Iron	3,200		11	54.9	mg/Kg-dry	1	2/5/2013 16:37
Lead	3.28		0.055	0.549	mg/Kg-dry	1	2/5/2013 16:37
Manganese	62.9		0.11	0.549	mg/Kg-dry	1	2/5/2013 16:37
Molybdenum	U		0.16	0.549	mg/Kg-dry	1	2/5/2013 16:37
Nickel	3.12		0.099	0.549	mg/Kg-dry	1	2/5/2013 16:37
Potassium	860		14	54.9	mg/Kg-dry	1	2/5/2013 16:37
Selenium	0.348	J	0.20	0.549	mg/Kg-dry	1	2/5/2013 16:37
Silver	U		0.088	0.549	mg/Kg-dry	1	2/5/2013 16:37
Sodium	122		12	54.9	mg/Kg-dry	1	2/5/2013 16:37
Uranium	U		0.55	0.549	mg/Kg-dry	1	2/5/2013 16:37
Zinc	8.52		0.27	0.549	mg/Kg-dry	1	2/5/2013 16:37
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	49.1		2.4	5.93	mg/Kg-dry	1	2/5/2013 22:20
Fluoride	3.85		0.36	1.19	mg/Kg-dry	1	2/5/2013 22:20
Nitrogen, Nitrate (As N)	U		0.36	1.19	mg/Kg-dry	1	2/5/2013 22:20
Nitrogen, Nitrite (As N)	U		0.36	1.19	mg/Kg-dry	1	2/5/2013 22:20
Sulfate	383		2.4	5.93	mg/Kg-dry	1	2/5/2013 22:20
Surr: Selenate (surr)	85.2			85-115	%REC	1	2/5/2013 22:20
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.69	2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	16.3		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (17)
Collection Date: 1/29/2013 03:22 PM

Work Order: 1301997
Lab ID: 1301997-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	21.1		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (19)
Collection Date: 1/29/2013 03:22 PM

Work Order: 1301997
Lab ID: 1301997-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (20)
Collection Date: 1/29/2013 04:00 PM

Work Order: 1301997
Lab ID: 1301997-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	U		0.35	4.35	µg/Kg-dry	1	2/5/2013 16:23
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	10,300		23	115	mg/Kg-dry	100	2/6/2013 15:40
Arsenic	2.53		0.11	0.573	mg/Kg-dry	1	2/5/2013 16:39
Barium	179		0.092	0.573	mg/Kg-dry	1	2/5/2013 16:39
Boron	4.85	J	3.2	5.73	mg/Kg-dry	2	2/6/2013 13:26
Cadmium	0.251	J	0.057	0.573	mg/Kg-dry	1	2/5/2013 16:39
Calcium	161,000		1,100	5,730	mg/Kg-dry	100	2/6/2013 15:40
Chromium	9.21		0.21	1.15	mg/Kg-dry	2	2/6/2013 13:26
Cobalt	3.70		0.080	0.573	mg/Kg-dry	1	2/5/2013 16:39
Copper	3.30		0.11	0.573	mg/Kg-dry	1	2/5/2013 16:39
Iron	7,710		11	57.3	mg/Kg-dry	1	2/5/2013 16:39
Lead	7.03		0.057	0.573	mg/Kg-dry	1	2/5/2013 16:39
Manganese	132		0.11	0.573	mg/Kg-dry	1	2/5/2013 16:39
Molybdenum	0.228	J	0.17	0.573	mg/Kg-dry	1	2/5/2013 16:39
Nickel	6.69		0.10	0.573	mg/Kg-dry	1	2/5/2013 16:39
Potassium	1,690		15	57.3	mg/Kg-dry	1	2/5/2013 16:39
Selenium	0.699		0.21	0.573	mg/Kg-dry	1	2/5/2013 16:39
Silver	U		0.092	0.573	mg/Kg-dry	1	2/5/2013 16:39
Sodium	186		13	57.3	mg/Kg-dry	1	2/5/2013 16:39
Uranium	U		0.57	0.573	mg/Kg-dry	1	2/5/2013 16:39
Zinc	20.5		0.29	0.573	mg/Kg-dry	1	2/5/2013 16:39
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	51.6		2.5	6.15	mg/Kg-dry	1	2/5/2013 22:34
Fluoride	5.04		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:34
Nitrogen, Nitrate (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:34
Nitrogen, Nitrite (As N)	U		0.37	1.23	mg/Kg-dry	1	2/5/2013 22:34
Sulfate	463		2.5	6.15	mg/Kg-dry	1	2/5/2013 22:34
Surr: Selenate (surr)	86.1			85-115	%REC	1	2/5/2013 22:34
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.69	2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	18.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW -115 (21)
Collection Date: 1/29/2013 03:30 PM

Work Order: 1301997
Lab ID: 1301997-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	26.3		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW- 115 (23)
Collection Date: 1/29/2013 03:30 PM

Work Order: 1301997
Lab ID: 1301997-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	25.0		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (25)
Collection Date: 1/29/2013 03:45 PM

Work Order: 1301997
Lab ID: 1301997-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	0.77	J	0.63	4.3	mg/Kg-dry	1	2/6/2013 15:03
TPH (Diesel Range)	U		0.63	2.1	mg/Kg-dry	1	2/6/2013 15:03
Surr: 2-Fluorobiphenyl	66.7			60-135	%REC	1	2/6/2013 15:03
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW7471A / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.025	0.063	mg/Kg-dry	1	2/5/2013 17:08
Surr: 4-Bromofluorobenzene	95.3			70-130	%REC	1	2/5/2013 17:08
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	U		0.36	4.49	µg/Kg-dry	1	2/5/2013 16:25
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: SKS							
Aluminum	5,210		22	112	mg/Kg-dry	100	2/6/2013 15:43
Arsenic	1.05		0.11	0.558	mg/Kg-dry	1	2/5/2013 16:42
Barium	68.0		0.089	0.558	mg/Kg-dry	1	2/5/2013 16:42
Boron	U		7.8	13.9	mg/Kg-dry	5	2/6/2013 13:28
Cadmium	0.173	J	0.056	0.558	mg/Kg-dry	1	2/5/2013 16:42
Calcium	219,000		1,100	5,580	mg/Kg-dry	100	2/6/2013 15:43
Chromium	5.52		0.50	2.79	mg/Kg-dry	5	2/6/2013 13:28
Cobalt	1.33		0.078	0.558	mg/Kg-dry	1	2/5/2013 16:42
Copper	1.19		0.11	0.558	mg/Kg-dry	1	2/5/2013 16:42
Iron	2,980		11	55.8	mg/Kg-dry	1	2/5/2013 16:42
Lead	3.73		0.056	0.558	mg/Kg-dry	1	2/5/2013 16:42
Manganese	48.0		0.11	0.558	mg/Kg-dry	1	2/5/2013 16:42
Molybdenum	U		0.17	0.558	mg/Kg-dry	1	2/5/2013 16:42
Nickel	2.74		0.10	0.558	mg/Kg-dry	1	2/5/2013 16:42
Potassium	773		15	55.8	mg/Kg-dry	1	2/5/2013 16:42
Selenium	0.428	J	0.20	0.558	mg/Kg-dry	1	2/5/2013 16:42
Silver	U		0.089	0.558	mg/Kg-dry	1	2/5/2013 16:42
Sodium	129		12	55.8	mg/Kg-dry	1	2/5/2013 16:42
Uranium	U		0.56	0.558	mg/Kg-dry	1	2/5/2013 16:42
Zinc	8.99		0.28	0.558	mg/Kg-dry	1	2/5/2013 16:42
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/7/2013 18:11
2-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/7/2013 18:11
Benzo(a)pyrene	U		2.0	8.3	µg/Kg-dry	1	2/7/2013 18:11
Naphthalene	U		2.0	8.3	µg/Kg-dry	1	2/7/2013 18:11
Surr: 2,4,6-Tribromophenol	42.0			36-126	%REC	1	2/7/2013 18:11
Surr: 2-Fluorobiphenyl	57.7			43-125	%REC	1	2/7/2013 18:11

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (25)
Collection Date: 1/29/2013 03:45 PM

Work Order: 1301997
Lab ID: 1301997-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	46.4			37-125	%REC	1	2/7/2013 18:11
Surr: 4-Terphenyl-d14	71.0			32-125	%REC	1	2/7/2013 18:11
Surr: Nitrobenzene-d5	59.5			37-125	%REC	1	2/7/2013 18:11
Surr: Phenol-d6	55.0			40-125	%REC	1	2/7/2013 18:11
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,1,2,2-Tetrachloroethane	U		0.63	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,1,2-Trichloroethane	U		2.5	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,1-Dichloroethane	U		0.63	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,1-Dichloroethene	U		1.9	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,2-Dibromoethane	U		0.89	6.3	µg/Kg-dry	1	2/1/2013 12:55
1,2-Dichloroethane	U		0.76	6.3	µg/Kg-dry	1	2/1/2013 12:55
Benzene	U		0.76	6.3	µg/Kg-dry	1	2/1/2013 12:55
Carbon tetrachloride	U		1.5	6.3	µg/Kg-dry	1	2/1/2013 12:55
Chloroform	U		2.3	6.3	µg/Kg-dry	1	2/1/2013 12:55
Ethylbenzene	U		1.1	6.3	µg/Kg-dry	1	2/1/2013 12:55
Methylene chloride	U		3.2	13	µg/Kg-dry	1	2/1/2013 12:55
Tetrachloroethene	U		1.3	6.3	µg/Kg-dry	1	2/1/2013 12:55
Toluene	U		0.89	6.3	µg/Kg-dry	1	2/1/2013 12:55
Trichloroethene	U		2.0	6.3	µg/Kg-dry	1	2/1/2013 12:55
Vinyl chloride	U		1.3	2.5	µg/Kg-dry	1	2/1/2013 12:55
Xylenes, Total	U		3.3	19	µg/Kg-dry	1	2/1/2013 12:55
Surr: 1,2-Dichloroethane-d4	84.3			70-128	%REC	1	2/1/2013 12:55
Surr: 4-Bromofluorobenzene	88.2			73-126	%REC	1	2/1/2013 12:55
Surr: Dibromofluoromethane	96.3			71-128	%REC	1	2/1/2013 12:55
Surr: Toluene-d8	101			73-127	%REC	1	2/1/2013 12:55
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	50.4		2.5	6.20	mg/Kg-dry	1	2/5/2013 22:49
Fluoride	3.55		0.37	1.24	mg/Kg-dry	1	2/5/2013 22:49
Nitrogen, Nitrate (As N)	U		0.37	1.24	mg/Kg-dry	1	2/5/2013 22:49
Nitrogen, Nitrite (As N)	U		0.37	1.24	mg/Kg-dry	1	2/5/2013 22:49
Sulfate	326		2.5	6.20	mg/Kg-dry	1	2/5/2013 22:49
Surr: Selenate (surr)	85.6			85-115	%REC	1	2/5/2013 22:49
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.76	2.52	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: Trip Blank 011813-29
Collection Date: 1/29/2013

Work Order: 1301997
Lab ID: 1301997-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/4/2013 16:55
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/4/2013 16:55
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Benzene	U		0.00020	0.0010	mg/L	1	2/4/2013 16:55
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Chloroform	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/4/2013 16:55
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/4/2013 16:55
Toluene	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/4/2013 16:55
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/4/2013 16:55
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/4/2013 16:55
Surr: 1,2-Dichloroethane-d4	91.5			71-125	%REC	1	2/4/2013 16:55
Surr: 4-Bromofluorobenzene	96.6			70-125	%REC	1	2/4/2013 16:55
Surr: Dibromofluoromethane	99.5			74-125	%REC	1	2/4/2013 16:55
Surr: Toluene-d8	98.6			78-123	%REC	1	2/4/2013 16:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67579** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 11:56 AM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104153		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.092	0.10	3.33	0	62.8	60-135	0			

LCS	Sample ID: FLCSS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 12:19 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104154		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	27.05	3.4	33.33	0	81.2	70-130	0			
TPH (Diesel Range)	35.72	1.7	33.33	0	107	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.536	0.10	3.33	0	76.2	60-135	0			

MS	Sample ID: 1302018-01BMS				Units: mg/Kg		Analysis Date: 2/6/2013 01:06 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104156		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEO
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
<i>Surr: 2-Fluorobiphenyl</i>	2.284	0.10	3.32	0	68.8	60-135	0			

MSD	Sample ID: 1302018-01BMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:29 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104157		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEO
TPH (Diesel Range)	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
<i>Surr: 2-Fluorobiphenyl</i>	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

The following samples were analyzed in this batch:

1301997-01D	1301997-15D

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

QC Page: 1 of 23

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142225** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 01:02 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103619		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
Surr: 4-Bromofluorobenzene	0.08374	0.0050	0.1	0	83.7	70-130	0			

LCS	Sample ID: GLCSS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:25 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103613		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.942	0.050	1	0	94.2	70-130	0			
Surr: 4-Bromofluorobenzene	0.09701	0.0050	0.1	0	97	70-130	0			

LCSD	Sample ID: GLCSDS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:44 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103616		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9525	0.050	1	0	95.2	70-130	0.942	1.11	30	
Surr: 4-Bromofluorobenzene	0.09686	0.0050	0.1	0	96.9	70-130	0.09701	0.146	30	

MS	Sample ID: 1302018-04ZMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103628		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8005	0.050	1	0	80	70-130	0			
Surr: 4-Bromofluorobenzene	0.08728	0.0050	0.1	0	87.3	70-130	0			

MSD	Sample ID: 1302018-04ZMSD				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103632		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8125	0.050	1	0	81.2	70-130	0.8005	1.49	30	
Surr: 4-Bromofluorobenzene	0.08872	0.0050	0.1	0	88.7	70-130	0.08728	1.64	30	

The following samples were analyzed in this batch:

1301997-01B	1301997-15B

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/5/2013 03:05 PM**

Client ID: Run ID: **ICPMS05_130205A** SeqNo: **3102200** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4165	1.0								J
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Uranium	U	0.50								
Zinc	U	0.50								

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/6/2013 12:35 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3103603** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	2.5								
Sodium	U	50								

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

LCS		Sample ID: MLCSS1-020113-67523				Units: mg/Kg		Analysis Date: 2/5/2013 03:08 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102201		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	10.68	1.0	10	0	107	80-120	0			
Arsenic	9.673	0.50	10	0	96.7	80-120	0			
Barium	10.35	0.50	10	0	104	80-120	0			
Cadmium	9.748	0.50	10	0	97.5	80-120	0			
Calcium	992.3	50	1000	0	99.2	80-120	0			
Chromium	9.832	0.50	10	0	98.3	80-120	0			
Cobalt	9.927	0.50	10	0	99.3	80-120	0			
Copper	10.12	0.50	10	0	101	80-120	0			
Iron	974.8	50	1000	0	97.5	80-120	0			
Lead	9.786	0.50	10	0	97.9	80-120	0			
Manganese	9.681	0.50	10	0	96.8	80-120	0			
Molybdenum	9.985	0.50	10	0	99.8	80-120	0			
Nickel	9.83	0.50	10	0	98.3	80-120	0			
Potassium	956.7	50	1000	0	95.7	80-120	0			
Selenium	9.813	0.50	10	0	98.1	80-120	0			
Silver	10.22	0.50	10	0	102	80-120	0			
Uranium	9.429	0.50	10	0	94.3	80-120	0			
Zinc	9.937	0.50	10	0	99.4	80-120	0			

LCS		Sample ID: MLCSS1-020113-67523				Units: mg/Kg		Analysis Date: 2/6/2013 12:38 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103604		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	47.92	2.5	50	0	95.8	80-120	0			
Sodium	981.7	50	1000	0	98.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/5/2013 03:22 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102207		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13710	0.84	8.429	12570	13500	75-125	0			SEO
Arsenic	11.71	0.42	8.429	4.385	86.9	75-125	0			
Barium	138.7	0.42	8.429	129.6	107	75-125	0			O
Cadmium	8.001	0.42	8.429	0.4065	90.1	75-125	0			
Calcium	57470	42	842.9	57640	-19.7	75-125	0			SEO
Chromium	22.67	0.42	8.429	14.02	103	75-125	0			
Cobalt	13.02	0.42	8.429	5.519	89	75-125	0			
Copper	18.8	0.42	8.429	11.12	91.1	75-125	0			
Iron	11500	42	842.9	10120	164	75-125	0			SO
Lead	22.81	0.42	8.429	14.66	96.6	75-125	0			
Manganese	381.8	0.42	8.429	383.5	-20	75-125	0			SEO
Molybdenum	6.315	0.42	8.429	0.5853	68	75-125	0			S
Nickel	19.09	0.42	8.429	11.62	88.6	75-125	0			
Selenium	7.95	0.42	8.429	0.9501	83	75-125	0			
Silver	8.085	0.42	8.429	0.05106	95.3	75-125	0			
Uranium	8.095	0.42	8.429	0.408	91.2	75-125	0			
Zinc	46.05	0.42	8.429	37.34	103	75-125	0			O

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/6/2013 12:50 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103618		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	39.78	4.2	42.14	60.18	-48.4	75-125	0			S
Potassium	4808	84	842.9	3553	149	75-125	0			SO
Sodium	914.3	84	842.9	168.4	88.5	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/5/2013 03:25 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102208		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	12110	0.80	7.956	12570	-5790	75-125	13710	12.4	25	SEO
Arsenic	11.34	0.40	7.956	4.385	87.4	75-125	11.71	3.25	25	
Barium	134	0.40	7.956	129.6	54.7	75-125	138.7	3.43	25	SO
Cadmium	7.562	0.40	7.956	0.4065	89.9	75-125	8.001	5.64	25	
Calcium	52910	40	795.6	57640	-594	75-125	57470	8.27	25	SEO
Chromium	20.95	0.40	7.956	14.02	87.1	75-125	22.67	7.88	25	
Cobalt	12.38	0.40	7.956	5.519	86.3	75-125	13.02	5.05	25	
Copper	17.82	0.40	7.956	11.12	84.3	75-125	18.8	5.32	25	
Iron	10370	40	795.6	10120	31.2	75-125	11500	10.3	25	SO
Lead	22.24	0.40	7.956	14.66	95.2	75-125	22.81	2.51	25	
Manganese	389.4	0.40	7.956	383.5	74	75-125	381.8	1.96	25	SEO
Molybdenum	5.373	0.40	7.956	0.5853	60.2	75-125	6.315	16.1	25	S
Nickel	18.17	0.40	7.956	11.62	82.4	75-125	19.09	4.89	25	
Selenium	7.14	0.40	7.956	0.9501	77.8	75-125	7.95	10.7	25	
Silver	7.509	0.40	7.956	0.05106	93.7	75-125	8.085	7.4	25	
Uranium	7.518	0.40	7.956	0.408	89.4	75-125	8.095	7.39	25	
Zinc	44.04	0.40	7.956	37.34	84.2	75-125	46.05	4.46	25	O

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/6/2013 12:52 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103621		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	37.07	4.0	39.78	60.18	-58.1	75-125	39.78	7.06	25	S
Potassium	4552	80	795.6	3553	126	75-125	4808	5.48	25	SO
Sodium	855.4	80	795.6	168.4	86.4	75-125	914.3	6.65	25	

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/5/2013 03:20 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102206		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.109	0.42	0	0	0	0-0	4.385	6.5	25	
Barium	122.9	0.42	0	0	0	0-0	129.6	5.34	25	
Cadmium	0.3587	0.42	0	0	0	0-0	0.4065	0	25	J
Chromium	13.06	0.42	0	0	0	0-0	14.02	7.09	25	
Cobalt	5.04	0.42	0	0	0	0-0	5.519	9.08	25	
Copper	10.23	0.42	0	0	0	0-0	11.12	8.3	25	
Iron	9434	42	0	0	0	0-0	10120	7.01	25	
Lead	14.13	0.42	0	0	0	0-0	14.66	3.72	25	
Molybdenum	0.5423	0.42	0	0	0	0-0	0.5853	7.63	25	
Nickel	10.65	0.42	0	0	0	0-0	11.62	8.76	25	
Selenium	0.8324	0.42	0	0	0	0-0	0.9501	13.2	25	
Silver	U	0.42	0	0	0	0-0	0.05106	0	25	
Uranium	U	0.42	0	0	0		0.408	0	25	
Zinc	34.3	0.42	0	0	0	0-0	37.34	8.48	25	

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/6/2013 12:47 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103614		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	6.159	4.2	0	0	0	0-0	60.18	163	25	R
Potassium	3479	83	0	0	0	0-0	3553	2.09	25	
Sodium	122.9	83	0	0	0	0-0	168.4	31.2	25	R

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/6/2013 03:01 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103960		Prep Date: 2/4/2013		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13720	83	0	0	0	0-0	14570	6.05	25	
Calcium	56380	4,200	0	0	0	0-0	60800	7.55	25	
Manganese	355.2	42	0	0	0	0-0	374.9	5.4	25	

The following samples were analyzed in this batch:

1301997-01D	1301997-03D	1301997-06D
1301997-09D	1301997-12D	1301997-15D

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67585** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:01 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102354		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:03 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102355		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	332.7	3.3	333.3	0	99.8	85-115	0			

MS	Sample ID: 1301997-01DMS				Units: µg/Kg		Analysis Date: 2/5/2013 04:09 PM			
Client ID: MW -115 (1)	Run ID: HG02_130205A				SeqNo: 3102358		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	376.9	3.5	354.9	14.76	102	85-115	0			

MSD	Sample ID: 1301997-01DMSD				Units: µg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID: MW -115 (1)	Run ID: HG02_130205A				SeqNo: 3102359		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	375.1	3.5	354.5	14.76	102	85-115	376.9	0.484	20	

DUP	Sample ID: 1301997-01DDUP				Units: µg/Kg		Analysis Date: 2/5/2013 04:07 PM			
Client ID: MW -115 (1)	Run ID: HG02_130205A				SeqNo: 3102357		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	15.21	3.6	0	0	0		14.76	3.04	20	

The following samples were analyzed in this batch:

1301997-01D	1301997-03D	1301997-06D
1301997-09D	1301997-12D	1301997-15D

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MBLK Sample ID: **SBLKS2-130207-67656** Units: **µg/Kg** Analysis Date: **2/7/2013 04:24 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106635** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
Surr: 2,4,6-Tribromophenol	104.3	6.6	166.7	0	62.6	36-126	0			
Surr: 2-Fluorobiphenyl	132.1	6.6	166.7	0	79.2	43-125	0			
Surr: 2-Fluorophenol	126.1	6.6	166.7	0	75.7	37-125	0			
Surr: 4-Terphenyl-d14	166.2	6.6	166.7	0	99.7	32-125	0			
Surr: Nitrobenzene-d5	134.1	6.6	166.7	0	80.4	37-125	0			
Surr: Phenol-d6	130.7	6.6	166.7	0	78.4	40-125	0			

LCS Sample ID: **SLCSS2-130207-67656** Units: **µg/Kg** Analysis Date: **2/7/2013 04:45 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106636** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	131.8	6.6	166.7	0	79.1	50-120	0			
2-Methylnaphthalene	133.3	6.6	166.7	0	80	50-120	0			
Benzo(a)pyrene	148.1	6.6	166.7	0	88.8	50-130	0			
Naphthalene	128.1	6.6	166.7	0	76.9	50-125	0			
Surr: 2,4,6-Tribromophenol	125.4	6.6	166.7	0	75.2	36-126	0			
Surr: 2-Fluorobiphenyl	128.4	6.6	166.7	0	77	43-125	0			
Surr: 2-Fluorophenol	122.2	6.6	166.7	0	73.3	37-125	0			
Surr: 4-Terphenyl-d14	159.7	6.6	166.7	0	95.8	32-125	0			
Surr: Nitrobenzene-d5	126.5	6.6	166.7	0	75.9	37-125	0			
Surr: Phenol-d6	122.6	6.6	166.7	0	73.5	40-125	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MS Sample ID: **1302140-04DMS** Units: **µg/Kg** Analysis Date: **2/7/2013 07:35 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106643** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	129.4	6.6	166.5	6.178	74	50-120	0			
2-Methylnaphthalene	107.7	6.6	166.5	6.039	61	50-120	0			
Benzo(a)pyrene	224.3	6.6	166.5	160.5	38.3	50-130	0			S
Naphthalene	102.2	6.6	166.5	5.73	57.9	50-125	0			
Surr: 2,4,6-Tribromophenol	91.94	6.6	166.5	0	55.2	36-126	0			
Surr: 2-Fluorobiphenyl	106.7	6.6	166.5	0	64.1	43-125	0			
Surr: 2-Fluorophenol	91.1	6.6	166.5	0	54.7	37-125	0			
Surr: 4-Terphenyl-d14	124.5	6.6	166.5	0	74.8	32-125	0			
Surr: Nitrobenzene-d5	105.2	6.6	166.5	0	63.2	37-125	0			
Surr: Phenol-d6	85.27	6.6	166.5	0	51.2	40-125	0			

MSD Sample ID: **1302140-04DMSD** Units: **µg/Kg** Analysis Date: **2/7/2013 07:56 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106644** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	183.4	6.6	166.4	6.178	106	50-120	129.4	34.5	30	R
2-Methylnaphthalene	143.5	6.6	166.4	6.039	82.6	50-120	107.7	28.5	30	
Benzo(a)pyrene	307.6	6.6	166.4	160.5	88.4	50-130	224.3	31.3	30	R
Naphthalene	132.9	6.6	166.4	5.73	76.4	50-125	102.2	26.1	30	
Surr: 2,4,6-Tribromophenol	101.8	6.6	166.4	0	61.2	36-126	91.94	10.2	30	
Surr: 2-Fluorobiphenyl	123.6	6.6	166.4	0	74.2	43-125	106.7	14.6	30	
Surr: 2-Fluorophenol	108.3	6.6	166.4	0	65.1	37-125	91.1	17.3	30	
Surr: 4-Terphenyl-d14	150.5	6.6	166.4	0	90.4	32-125	124.5	18.9	30	
Surr: Nitrobenzene-d5	124.3	6.6	166.4	0	74.7	37-125	105.2	16.7	30	
Surr: Phenol-d6	101.4	6.6	166.4	0	60.9	40-125	85.27	17.3	30	

The following samples were analyzed in this batch:

1301997-01D 1301997-15D

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020113-R141995** Units: **µg/Kg** Analysis Date: **2/1/2013 09:52 AM**

Client ID: Run ID: **VOA5_130201A** SeqNo: **3098471** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	42.8	0	50	0	85.6	70-128	0			
Surr: 4-Bromofluorobenzene	46.86	0	50	0	93.7	73-126	0			
Surr: Dibromofluoromethane	48.11	0	50	0	96.2	71-128	0			
Surr: Toluene-d8	44.78	0	50	0	89.6	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

LCS		Sample ID: VLCSS1-020113-R141995				Units: µg/Kg		Analysis Date: 2/1/2013 08:43 AM		
Client ID:		Run ID: VOA5_130201A				SeqNo: 3098470		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	53.98	5.0	50	0	108	79-124	0			
1,1,2,2-Tetrachloroethane	53.32	5.0	50	0	107	75-123	0			
1,1,2-Trichloroethane	55.87	5.0	50	0	112	79-120	0			
1,1-Dichloroethane	52.6	5.0	50	0	105	75-124	0			
1,1-Dichloroethene	55.13	5.0	50	0	110	80-122	0			
1,2-Dibromoethane	57.09	5.0	50	0	114	79-120	0			
1,2-Dichloroethane	52.14	5.0	50	0	104	73-121	0			
Benzene	50.57	5.0	50	0	101	79-120	0			
Carbon tetrachloride	45.29	5.0	50	0	90.6	74-126	0			
Chloroform	55.04	5.0	50	0	110	78-120	0			
Ethylbenzene	54.99	5.0	50	0	110	80-122	0			
Methylene chloride	51.62	10	50	0	103	70-123	0			
Tetrachloroethene	47.09	5.0	50	0	94.2	80-121	0			
Toluene	49.54	5.0	50	0	99.1	79-120	0			
Trichloroethene	52.16	5.0	50	0	104	80-121	0			
Vinyl chloride	61.5	2.0	50	0	123	76-126	0			
Xylenes, Total	150.9	15	150	0	101	80-120	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	51.49	0	50	0	103	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	47.86	0	50	0	95.7	73-126	0			
<i>Surr: Dibromofluoromethane</i>	51.61	0	50	0	103	71-128	0			
<i>Surr: Toluene-d8</i>	43.85	0	50	0	87.7	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MS		Sample ID: 1301997-01AMS				Units: µg/Kg		Analysis Date: 2/1/2013 11:46 AM		
Client ID: MW -115 (1)		Run ID: VOA5_130201A				SeqNo: 3098546		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	51.53	5.0	50	0	103	79-124	0			
1,1,2,2-Tetrachloroethane	45.86	5.0	50	0	91.7	75-123	0			
1,1,2-Trichloroethane	56	5.0	50	0	112	79-120	0			
1,1-Dichloroethane	49.56	5.0	50	0	99.1	75-124	0			
1,1-Dichloroethene	54.01	5.0	50	0	108	80-122	0			
1,2-Dibromoethane	49.35	5.0	50	0	98.7	79-120	0			
1,2-Dichloroethane	51.25	5.0	50	0	103	73-121	0			
Benzene	52.11	5.0	50	0	104	79-120	0			
Carbon tetrachloride	46.06	5.0	50	0	92.1	74-126	0			
Chloroform	48.72	5.0	50	0	97.4	78-120	0			
Ethylbenzene	50.85	5.0	50	0	102	80-122	0			
Methylene chloride	48.37	10	50	0	96.7	70-123	0			
Tetrachloroethene	43.7	5.0	50	0	87.4	80-121	0			
Toluene	53.36	5.0	50	0	107	79-120	0			
Trichloroethene	51.31	5.0	50	0	103	80-121	0			
Vinyl chloride	55.22	2.0	50	0	110	76-126	0			
Xylenes, Total	146.8	15	150	0	97.9	80-120	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	49.29	0	50	0	98.6	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	49	0	50	0	98	73-126	0			
<i>Surr: Dibromofluoromethane</i>	49.78	0	50	0	99.6	71-128	0			
<i>Surr: Toluene-d8</i>	51.55	0	50	0	103	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MSD		Sample ID: 1301997-01AMSD				Units: µg/Kg		Analysis Date: 2/1/2013 12:09 PM		
Client ID: MW -115 (1)		Run ID: VOA5_130201A				SeqNo: 3098547		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	54.79	5.0	50	0	110	79-124	51.53	6.13	30	
1,1,2,2-Tetrachloroethane	44.09	5.0	50	0	88.2	75-123	45.86	3.93	30	
1,1,2-Trichloroethane	54.9	5.0	50	0	110	79-120	56	1.98	30	
1,1-Dichloroethane	51.87	5.0	50	0	104	75-124	49.56	4.56	30	
1,1-Dichloroethene	52.81	5.0	50	0	106	80-122	54.01	2.24	30	
1,2-Dibromoethane	48.8	5.0	50	0	97.6	79-120	49.35	1.12	30	
1,2-Dichloroethane	46.29	5.0	50	0	92.6	73-121	51.25	10.2	30	
Benzene	51.81	5.0	50	0	104	79-120	52.11	0.568	30	
Carbon tetrachloride	47.75	5.0	50	0	95.5	74-126	46.06	3.61	30	
Chloroform	53.56	5.0	50	0	107	78-120	48.72	9.45	30	
Ethylbenzene	55.58	5.0	50	0	111	80-122	50.85	8.9	30	
Methylene chloride	53.37	10	50	0	107	70-123	48.37	9.82	30	
Tetrachloroethene	45.21	5.0	50	0	90.4	80-121	43.7	3.39	30	
Toluene	61.14	5.0	50	0	122	79-120	53.36	13.6	30	S
Trichloroethene	51.76	5.0	50	0	104	80-121	51.31	0.863	30	
Vinyl chloride	58.35	2.0	50	0	117	76-126	55.22	5.51	30	
Xylenes, Total	157.7	15	150	0	105	80-120	146.8	7.13	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	48.55	0	50	0	97.1	70-128	49.29	1.51	30	
<i>Surr: 4-Bromofluorobenzene</i>	46.51	0	50	0	93	73-126	49	5.21	30	
<i>Surr: Dibromofluoromethane</i>	48.96	0	50	0	97.9	71-128	49.78	1.67	30	
<i>Surr: Toluene-d8</i>	55.55	0	50	0	111	73-127	51.55	7.47	30	

The following samples were analyzed in this batch:

1301997-01A	1301997-15A

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MBLK		Sample ID: VBLKW-130204-R142113				Units: µg/L		Analysis Date: 2/4/2013 11:16 AM			
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100918		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	U	1.0									
1,1,2,2-Tetrachloroethane	U	1.0									
1,1,2-Trichloroethane	U	1.0									
1,1-Dichloroethane	U	1.0									
1,1-Dichloroethene	U	1.0									
1,2-Dibromoethane	U	1.0									
1,2-Dichloroethane	U	1.0									
Benzene	U	1.0									
Carbon tetrachloride	U	1.0									
Chloroform	U	1.0									
Ethylbenzene	U	1.0									
Methylene chloride	U	2.0									
Tetrachloroethene	U	1.0									
Toluene	U	1.0									
Trichloroethene	U	1.0									
Vinyl chloride	U	1.0									
Xylenes, Total	U	1.0									
Surr: 1,2-Dichloroethane-d4	43.85	1.0	50	0	87.7	71-125	0				
Surr: 4-Bromofluorobenzene	49.08	1.0	50	0	98.2	70-125	0				
Surr: Dibromofluoromethane	48.08	1.0	50	0	96.2	74-125	0				
Surr: Toluene-d8	48.41	1.0	50	0	96.8	78-123	0				

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCS		Sample ID: VLCSW-130204-R142113				Units: µg/L		Analysis Date: 2/4/2013 10:03 AM		
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100916		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	54.47	1.0	50	0	109	80-120	0			
1,1,2,2-Tetrachloroethane	46.02	1.0	50	0	92	74-123	0			
1,1,2-Trichloroethane	48.93	1.0	50	0	97.9	80-120	0			
1,1-Dichloroethane	46.62	1.0	50	0	93.2	80-120	0			
1,1-Dichloroethene	53.04	1.0	50	0	106	80-120	0			
1,2-Dibromoethane	53.39	1.0	50	0	107	80-120	0			
1,2-Dichloroethane	49.07	1.0	50	0	98.1	79-120	0			
Benzene	48.6	1.0	50	0	97.2	80-120	0			
Carbon tetrachloride	58.54	1.0	50	0	117	79-120	0			
Chloroform	46.57	1.0	50	0	93.1	80-120	0			
Ethylbenzene	48.8	1.0	50	0	97.6	80-120	0			
Methylene chloride	47.71	2.0	50	0	95.4	75-125	0			
Tetrachloroethene	53.4	1.0	50	0	107	80-120	0			
Toluene	48.37	1.0	50	0	96.7	80-121	0			
Trichloroethene	53.7	1.0	50	0	107	80-120	0			
Vinyl chloride	48.96	1.0	50	0	97.9	75-125	0			
Xylenes, Total	142.5	1.0	150	0	95	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	44.17	1.0	50	0	88.3	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	52.31	1.0	50	0	105	70-125	0			
<i>Surr: Dibromofluoromethane</i>	49.72	1.0	50	0	99.4	74-125	0			
<i>Surr: Toluene-d8</i>	48.59	1.0	50	0	97.2	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCSD				Sample ID: VLCS DW-130204-R142113			Units: µg/L		Analysis Date: 2/4/2013 10:27 AM		
Client ID:		Run ID: VOA4_130204A			SeqNo: 3100917		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	51.78	1.0	50	0	104	80-120	54.47	5.06	20		
1,1,2,2-Tetrachloroethane	46.55	1.0	50	0	93.1	74-123	46.02	1.14	20		
1,1,2-Trichloroethane	48.97	1.0	50	0	97.9	80-120	48.93	0.0875	20		
1,1-Dichloroethane	44.74	1.0	50	0	89.5	80-120	46.62	4.11	20		
1,1-Dichloroethene	51.9	1.0	50	0	104	80-120	53.04	2.16	20		
1,2-Dibromoethane	53.91	1.0	50	0	108	80-120	53.39	0.979	20		
1,2-Dichloroethane	48.06	1.0	50	0	96.1	79-120	49.07	2.09	20		
Benzene	47	1.0	50	0	94	80-120	48.6	3.35	20		
Carbon tetrachloride	56.1	1.0	50	0	112	79-120	58.54	4.26	20		
Chloroform	45.18	1.0	50	0	90.4	80-120	46.57	3.02	20		
Ethylbenzene	46.79	1.0	50	0	93.6	80-120	48.8	4.2	20		
Methylene chloride	46.38	2.0	50	0	92.8	75-125	47.71	2.83	20		
Tetrachloroethene	50.41	1.0	50	0	101	80-120	53.4	5.75	20		
Toluene	46.08	1.0	50	0	92.2	80-121	48.37	4.84	20		
Trichloroethene	52.04	1.0	50	0	104	80-120	53.7	3.14	20		
Vinyl chloride	46.66	1.0	50	0	93.3	75-125	48.96	4.81	20		
Xylenes, Total	138	1.0	150	0	92	80-124	142.5	3.19	20		
Surr: 1,2-Dichloroethane-d4	43.85	1.0	50	0	87.7	71-125	44.17	0.739	20		
Surr: 4-Bromofluorobenzene	51.57	1.0	50	0	103	70-125	52.31	1.41	20		
Surr: Dibromofluoromethane	48.7	1.0	50	0	97.4	74-125	49.72	2.09	20		
Surr: Toluene-d8	48.27	1.0	50	0	96.5	78-123	48.59	0.661	20		

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MS				Sample ID: 1302069-01AMS		Units: µg/L		Analysis Date: 2/4/2013 01:41 PM		
Client ID:		Run ID: VOA4_130204A			SeqNo: 3100924		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	56.87	1.0	50	0	114	80-120	0			
1,1,2,2-Tetrachloroethane	45.23	1.0	50	0	90.5	74-123	0			
1,1,2-Trichloroethane	50.26	1.0	50	0	101	80-120	0			
1,1-Dichloroethane	48.56	1.0	50	0	97.1	80-120	0			
1,1-Dichloroethene	57.49	1.0	50	0	115	80-120	0			
1,2-Dibromoethane	53.79	1.0	50	0	108	80-120	0			
1,2-Dichloroethane	50.8	1.0	50	0	102	79-120	0			
Benzene	51.17	1.0	50	0	102	80-120	0			
Carbon tetrachloride	61.34	1.0	50	0	123	79-120	0			S
Chloroform	49.2	1.0	50	0	98.4	80-120	0			
Ethylbenzene	50.6	1.0	50	0	101	80-120	0			
Methylene chloride	49.13	2.0	50	0	98.3	75-125	0			
Tetrachloroethene	55.78	1.0	50	0	112	80-120	0			
Toluene	49.91	1.0	50	0	99.8	80-121	0			
Trichloroethene	57.43	1.0	50	0	115	80-120	0			
Vinyl chloride	53.66	1.0	50	0	107	75-125	0			
Xylenes, Total	148.5	1.0	150	0	99	80-124	0			
Surr: 1,2-Dichloroethane-d4	44.59	1.0	50	0	89.2	71-125	0			
Surr: 4-Bromofluorobenzene	50.99	1.0	50	0	102	70-125	0			
Surr: Dibromofluoromethane	49.65	1.0	50	0	99.3	74-125	0			
Surr: Toluene-d8	48.21	1.0	50	0	96.4	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MSD	Sample ID: 1302069-01AMSD				Units: µg/L		Analysis Date: 2/4/2013 02:06 PM			
Client ID:	Run ID: VOA4_130204A				SeqNo: 3100925		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	59.48	1.0	50	0	119	80-120	56.87	4.49	20	
1,1,2,2-Tetrachloroethane	47.09	1.0	50	0	94.2	74-123	45.23	4.04	20	
1,1,2-Trichloroethane	51.43	1.0	50	0	103	80-120	50.26	2.29	20	
1,1-Dichloroethane	50.19	1.0	50	0	100	80-120	48.56	3.31	20	
1,1-Dichloroethene	60.32	1.0	50	0	121	80-120	57.49	4.82	20	S
1,2-Dibromoethane	56.01	1.0	50	0	112	80-120	53.79	4.04	20	
1,2-Dichloroethane	52.53	1.0	50	0	105	79-120	50.8	3.34	20	
Benzene	52.17	1.0	50	0	104	80-120	51.17	1.94	20	
Carbon tetrachloride	63.38	1.0	50	0	127	79-120	61.34	3.27	20	S
Chloroform	50.81	1.0	50	0	102	80-120	49.2	3.21	20	
Ethylbenzene	51.95	1.0	50	0	104	80-120	50.6	2.63	20	
Methylene chloride	51.27	2.0	50	0	103	75-125	49.13	4.28	20	
Tetrachloroethene	57.11	1.0	50	0	114	80-120	55.78	2.36	20	
Toluene	50.87	1.0	50	0	102	80-121	49.91	1.91	20	
Trichloroethene	58.72	1.0	50	0	117	80-120	57.43	2.21	20	
Vinyl chloride	54.84	1.0	50	0	110	75-125	53.66	2.17	20	
Xylenes, Total	151	1.0	150	0	101	80-124	148.5	1.7	20	
Surr: 1,2-Dichloroethane-d4	44.99	1.0	50	0	90	71-125	44.59	0.903	20	
Surr: 4-Bromofluorobenzene	50.73	1.0	50	0	101	70-125	50.99	0.509	20	
Surr: Dibromofluoromethane	50.29	1.0	50	0	101	74-125	49.65	1.28	20	
Surr: Toluene-d8	48.15	1.0	50	0	96.3	78-123	48.21	0.13	20	

The following samples were analyzed in this batch:

1301997-16A

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67583** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK Sample ID: **WBLKS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103414** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS Sample ID: **WLCSS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103415** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.05	2.0	10	0	90.5	80-120	0			

LCSD Sample ID: **WLCSDS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103437** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.9	2.0	10	0	89	80-120	9.05	1.67	30	

MS Sample ID: **1301997-09DMS** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: **MW- 115 (15)** Run ID: **UV-2450_130205C** SeqNo: **3103436** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.495	1.9	9.308	0.09611	101	75-125	0			

The following samples were analyzed in this batch:

1301997-01D	1301997-03D	1301997-06D
1301997-09D	1301997-12D	1301997-15D

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** (Dissolve)

MBLK Sample ID: **WBLKS1-67633** Units: **mg/Kg** Analysis Date: **2/5/2013 07:11 PM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103858** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	5.0								
Fluoride	0.64	1.0								J
Nitrogen, Nitrate (As N)	U	1.0								
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
<i>Surr: Selenate (surr)</i>	45.24	1.0	50	0	90.5	85-115	0			

LCS Sample ID: **WLCSS1-67633** Units: **mg/Kg** Analysis Date: **2/5/2013 07:25 PM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103859** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	219.8	5.0	200	0	110	90-110	0			
Fluoride	37.72	1.0	40	0	94.3	90-110	0			
Nitrogen, Nitrate (As N)	43.14	1.0	40	0	108	90-110	0			
Nitrogen, Nitrite (As N)	43.82	1.0	40	0	110	90-110	0			
Sulfate	208.7	5.0	200	0	104	90-110	0			
<i>Surr: Selenate (surr)</i>	47.79	1.0	50	0	95.6	85-115	0			

MS Sample ID: **1302026-21DMS** Units: **mg/Kg** Analysis Date: **2/6/2013 01:29 AM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103884** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	126.4	5.0	98.97	16.2	111	75-125	0			
Fluoride	20.19	0.99	19.79	2.638	88.7	75-125	0			
Nitrogen, Nitrate (As N)	20.76	0.99	19.79	0	105	75-125	0			
Nitrogen, Nitrite (As N)	21.36	0.99	19.79	0	108	75-125	0			
Sulfate	319.3	5.0	98.97	213.5	107	75-125	0			
<i>Surr: Selenate (surr)</i>	42.66	0.99	49.48	0	86.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD	Sample ID: 1302026-21DMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:43 AM			
Client ID:	Run ID: ICS2100_130205C				SeqNo: 3103885		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	124.6	4.9	98.65	16.2	110	75-125	126.4	1.49	20	
Fluoride	19.9	0.99	19.73	2.638	87.5	75-125	20.19	1.45	20	
Nitrogen, Nitrate (As N)	20.57	0.99	19.73	0	104	75-125	20.76	0.942	20	
Nitrogen, Nitrite (As N)	20.98	0.99	19.73	0	106	75-125	21.36	1.77	20	
Sulfate	315.2	4.9	98.65	213.5	103	75-125	319.3	1.29	20	
<i>Surr: Selenate (surr)</i>	42	0.99	49.33	0	85.1	80-120	42.66	1.58	20	

The following samples were analyzed in this batch:

1301997-01D	1301997-03D	1301997-06D
1301997-09D	1301997-12D	1301997-15D

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

Client: Navajo Refining Company
Work Order: 1301997
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142151** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1301997-15DDUP** Units: **wt%** Analysis Date: **2/4/2013 02:30 PM**

Client ID: **MW-115 (25)** Run ID: **BALANCE1_130204C** SeqNo: **3101859** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	21.35	0.010	0	0	0	0-0	20.91	2.09	20	

The following samples were analyzed in this batch:

1301997-01D	1301997-02A	1301997-03D
1301997-04A	1301997-05A	1301997-06D
1301997-07A	1301997-08A	1301997-09D
1301997-10A	1301997-11A	1301997-12D
1301997-13A	1301997-14A	1301997-15D

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1301997

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg-dry	Micrograms per Kilogram - Dry weight corrected
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **31-Jan-13 09:10**

Work Order: **1301997**

Received by: **RDH**

Checklist completed by Johanna B. Allen
eSignature

31-Jan-13
Date

Reviewed by: Patricia L. Lynch
eSignature

01-Feb-13
Date

Matrices: soil/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):	<u>1.2 C/uc</u> <u>IR 1</u>		
Cooler(s)/Kit(s):	<u>5414</u>		
Date/Time sample(s) sent to storage:	<u>1/31/13 14:50</u>		
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:	<u>-</u>		

Login Notes: Ra-226/228 & cyanide not on COC. Incorrect metals list on COC.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



Chain of Custody Form

Page 1 of 2

COC ID: **41202**

- ☐ Cincinnati, OH
+1 513 733 5336
- ☐ Everett, WA
+1 425 356 2600
- ☐ Fort Collins, CO
+1 970 490 1511

1301997

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



ALS Project Manager:

Customer Information		Project Information		Parameter/Method Request for Analysis										
Purchase Order		Project Name	RO Discharge / Sampling	A	VOC (8260) NW GW List									
Work Order		Project Number	128823	B	GRO (8015M)									
Company Name	Navajo Refining Co	Bill To Company	Navajo Refining Co	C	DRO (8015M)									
Send Report To	Robert Combs	Invoice Attn.	Robert Combs	D	ORO (8015M)									
Address	501 East Main	Address	501 East Main	E	1L SVOC (13270) NW GW List									
City/State/Zip	Artesia, NM	City/State/Zip	Artesia, NM	F	Total Metals (6020/7000) RCRA 8									
Phone		Phone	575-748-6733	G	Dissolved Metals (6020/7000) RCRA 8									
Fax		Fax	575-746-5421	H	TDS									
e-Mail Address		e-Mail Address		I	Moisture									
				J										

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW 115 (1)	1-29-13	1425	Soil	-	5	X	X	X	X	X	X	X		X		
2	MW 115 (3)		1430			1									X		
3	MW 115 (5)		1435			5	X	X	X	X	X	X	X		X		
4	MW 115 (7)		1502			1									X		
5	MW 115 (9)		1502			1									X		
6	MW 115 (10)		1610			5	X	X	X	X	X	X	X		X		
7	MW 115 (11)		1612			1									X		
8	MW 115 (13)		1612			1									X		
9	MW 115 (15)		1520			5	X	X	X	X	X	X	X		X		
10	MW 115 (17)		1522			1									X		

Sampler(s): Please Print & Sign <i>[Signature]</i>		Shipment Method:		Required Turnaround Time: ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour		Results Due Date:	
Relinquished by: <i>Eric Bergeresen</i>	Date: 1/30/13	Time: 1300	Received by: <i>[Signature]</i>		Notes: 10 Day TAT, Dissolved Metals Field Filtered		
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>ASR-1/31/13 0910</i>		QC Package: (Check Box Below)		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		☒ Level II: Standard QC ☐ Level III: Std QC + Raw Data ☐ Level IV: SW846 CLP-Like Other:		
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035							

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Chain of Custody Form

Page 2 of 2

COC ID: 72330

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information				Project Information				Parameter/Method Request for Analysis											
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List														
Work Order		Project Number	128823	B	GRO (8015M)														
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)														
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)														
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List														
				F	Total Metals (6020/7000) RCRA 8														
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	Dissolved Metals (6020/7000) RCRA 8														
Phone	(575) 748-6733	Phone	(575) 748-6733	H	TDS														
Fax	(575) 746-5421	Fax	(575) 746-5421	I	Moisture														
e-Mail Address		e-Mail Address		J	Fingerprint (PIANO/Sp Grav, Sim Dist)														

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW 115 (19)	1-29-13	1522	Soil	-	1									X		
2	MW 115 (20)		1600			5	X	X	X	X	X	X	X		X		
3	MW 115 (21)		1530			1									X		
4	MW 115 (23)		1530			1									X		
5	MW 115 (25)		1545			5	X	X	X	X	X	X	X		X		
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
<i>[Signature]</i>				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other _____				☐ 2 WK Days ☐ 24 Hour	
Relinquished by:	Date:	Time:	Received by:	Notes:					
Eric Bergersen	1/30/13	1300	<i>[Signature]</i>	10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
			<i>[Signature]</i>			☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD _____			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):						
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O 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.

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8013 7025 1525

THU - 31 JAN A1
STANDARD OVERNIGHT

AB SGRA

77099

TX-US
IAH



637368 30JAN13 ROWA 51501/0F24/6F83



ALS Environmental

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 1-30-2013 Time: 12:50
Name: B. McKenna
Company: ARCADIS

Seal Broken By:

Date: 1/31/13



13-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302026**

Dear Robert,

ALS Environmental received 22 samples on 31-Jan-2013 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 61.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink that reads "Sonia West".

Electronically approved by: Sonia West

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302026

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302026-01	MW-114 (1)	Soil		1/28/2013 14:30	1/31/2013 09:10	☐
1302026-02	MW-114 (3)	Soil		1/28/2013 14:40	1/31/2013 09:10	☐
1302026-03	MW-114 (5)	Soil		1/28/2013 14:45	1/31/2013 09:10	☐
1302026-04	MW-114 (7)	Soil		1/28/2013 15:30	1/31/2013 09:10	☐
1302026-05	MW-114 (9)	Soil		1/28/2013 15:45	1/31/2013 09:10	☐
1302026-06	MW-114 (10)	Soil		1/28/2013 15:30	1/31/2013 09:10	☐
1302026-07	MW-114 (11)	Soil		1/28/2013 15:30	1/31/2013 09:10	☐
1302026-08	MW-114 (13)	Soil		1/28/2013 15:50	1/31/2013 09:10	☐
1302026-09	MW-114 (15)	Soil		1/28/2013 15:50	1/31/2013 09:10	☐
1302026-10	MW-114 (17)	Soil		1/28/2013 16:00	1/31/2013 09:10	☐
1302026-11	MW-114 (19)	Soil		1/28/2013 16:05	1/31/2013 09:10	☐
1302026-12	MW-114 (20)	Soil		1/28/2013 16:10	1/31/2013 09:10	☐
1302026-13	MW-114 (21)	Soil		1/28/2013 16:15	1/31/2013 09:10	☐
1302026-14	MW-114 (23)	Soil		1/28/2013 16:15	1/31/2013 09:10	☐
1302026-15	MW-114 (25)	Soil		1/28/2013 16:20	1/31/2013 09:10	☐
1302026-16	MW-114 (27)	Soil		1/28/2013 16:25	1/31/2013 09:10	☐
1302026-17	MW-114 (29)	Soil		1/28/2013 16:27	1/31/2013 09:10	☐
1302026-18	MW-114 (30)	Soil		1/28/2013 16:00	1/31/2013 09:10	☐
1302026-19	MW-114 (31)	Soil		1/28/2013 16:40	1/31/2013 09:10	☐
1302026-20	MW-114 (33)	Soil		1/28/2013 16:40	1/31/2013 09:10	☐
1302026-21	MW-114 (35)	Soil		1/28/2013 16:50	1/31/2013 09:10	☐
1302026-22	Trip Blank 011813-19	Water		1/31/2013	1/31/2013 09:10	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302026

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302400.

Batch R98939, TPH DRO/ORO, Sample 1302018-01: MS/MSD is for an unrelated sample.

Batch 67523, Metals, Sample 13011005-01: MS/MSD is for an unrelated sample.

Batch 67523, Metals, Sample 13011005-01: Duplicate RPD is for an unrelated sample.

Batch 67565, Metals, Sample 1302050-13: MS/MSD is for an unrelated sample.

Batch 67565, Metals, Sample 1302050-13: MS/MSD RPD is for an unrelated sample.

Batch 67565, Metals, Sample 1302050-13: Duplicate RPD is for an unrelated sample.

Batch 67656, Low-Level Semivolatile Organics, Sample 1302140-04: MS/MSD is for an unrelated sample.

Batch 67656, Low-Level Semivolatile Organics, Sample 1302140-04: MS/MSD RPD is for an unrelated sample.

Batch R141995, Volatile Organics, Sample 1301997-01: MS/MSD is for an unrelated sample.

Batch R142113, Volatile Organics, Sample 1302069-01: MS/MSD is for an unrelated sample.

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (1)
Collection Date: 1/28/2013 02:30 PM

Work Order: 1302026
Lab ID: 1302026-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	0.83	J	0.61	4.1	mg/Kg-dry	1	2/6/2013 15:27
TPH (Diesel Range)	U		0.61	2.1	mg/Kg-dry	1	2/6/2013 15:27
Surr: 2-Fluorobiphenyl	61.5			60-135	%REC	1	2/6/2013 15:27
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW3541 / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.024	0.061	mg/Kg-dry	1	2/5/2013 17:26
Surr: 4-Bromofluorobenzene	89.0			70-130	%REC	1	2/5/2013 17:26
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	19.9		0.35	4.31	µg/Kg-dry	1	2/5/2013 16:27
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: SKS							
Aluminum	13,900		23	117	mg/Kg-dry	100	2/6/2013 15:45
Arsenic	4.67		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:44
Barium	115		0.093	0.584	mg/Kg-dry	1	2/5/2013 16:44
Boron	5.29		1.6	2.92	mg/Kg-dry	1	2/6/2013 13:30
Cadmium	0.403	J	0.058	0.584	mg/Kg-dry	1	2/5/2013 16:44
Calcium	58,900		1,200	5,840	mg/Kg-dry	100	2/6/2013 15:45
Chromium	14.3		0.11	0.584	mg/Kg-dry	1	2/6/2013 13:30
Cobalt	4.91		0.082	0.584	mg/Kg-dry	1	2/5/2013 16:44
Copper	26.4		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:44
Iron	9,110		12	58.4	mg/Kg-dry	1	2/5/2013 16:44
Lead	37.3		0.058	0.584	mg/Kg-dry	1	2/5/2013 16:44
Manganese	192		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:44
Molybdenum	0.580	J	0.18	0.584	mg/Kg-dry	1	2/5/2013 16:44
Nickel	10.7		0.11	0.584	mg/Kg-dry	1	2/5/2013 16:44
Potassium	3,520		15	58.4	mg/Kg-dry	1	2/5/2013 16:44
Selenium	1.12		0.21	0.584	mg/Kg-dry	1	2/5/2013 16:44
Silver	U		0.093	0.584	mg/Kg-dry	1	2/5/2013 16:44
Sodium	157		13	58.4	mg/Kg-dry	1	2/5/2013 16:44
Uranium	U		0.58	0.584	mg/Kg-dry	1	2/5/2013 16:44
Zinc	40.0		0.29	0.584	mg/Kg-dry	1	2/5/2013 16:44
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		1.9	8.0	µg/Kg-dry	1	2/8/2013 12:51
2-Methylnaphthalene	U		1.9	8.0	µg/Kg-dry	1	2/8/2013 12:51
Benzo(a)pyrene	U		1.9	8.0	µg/Kg-dry	1	2/8/2013 12:51
Naphthalene	U		1.9	8.0	µg/Kg-dry	1	2/8/2013 12:51
Surr: 2,4,6-Tribromophenol	76.0			36-126	%REC	1	2/8/2013 12:51
Surr: 2-Fluorobiphenyl	75.4			43-125	%REC	1	2/8/2013 12:51

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (1)
Collection Date: 1/28/2013 02:30 PM

Work Order: 1302026
Lab ID: 1302026-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<i>Surr: 2-Fluorophenol</i>	52.2			37-125	%REC	1	2/8/2013 12:51
<i>Surr: 4-Terphenyl-d14</i>	98.4			32-125	%REC	1	2/8/2013 12:51
<i>Surr: Nitrobenzene-d5</i>	76.0			37-125	%REC	1	2/8/2013 12:51
<i>Surr: Phenol-d6</i>	49.9			40-125	%REC	1	2/8/2013 12:51
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,1,2,2-Tetrachloroethane	U		0.61	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,1,2-Trichloroethane	U		2.4	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,1-Dichloroethane	U		0.61	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,1-Dichloroethene	U		1.8	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,2-Dibromoethane	U		0.85	6.1	µg/Kg-dry	1	2/1/2013 14:49
1,2-Dichloroethane	U		0.73	6.1	µg/Kg-dry	1	2/1/2013 14:49
Benzene	U		0.73	6.1	µg/Kg-dry	1	2/1/2013 14:49
Carbon tetrachloride	U		1.5	6.1	µg/Kg-dry	1	2/1/2013 14:49
Chloroform	U		2.2	6.1	µg/Kg-dry	1	2/1/2013 14:49
Ethylbenzene	U		1.1	6.1	µg/Kg-dry	1	2/1/2013 14:49
Methylene chloride	3.2	J	3.0	12	µg/Kg-dry	1	2/1/2013 14:49
Tetrachloroethene	U		1.2	6.1	µg/Kg-dry	1	2/1/2013 14:49
Toluene	U		0.85	6.1	µg/Kg-dry	1	2/1/2013 14:49
Trichloroethene	U		1.9	6.1	µg/Kg-dry	1	2/1/2013 14:49
Vinyl chloride	U		1.2	2.4	µg/Kg-dry	1	2/1/2013 14:49
Xylenes, Total	U		3.2	18	µg/Kg-dry	1	2/1/2013 14:49
<i>Surr: 1,2-Dichloroethane-d4</i>	86.5			70-128	%REC	1	2/1/2013 14:49
<i>Surr: 4-Bromofluorobenzene</i>	91.0			73-126	%REC	1	2/1/2013 14:49
<i>Surr: Dibromofluoromethane</i>	97.0			71-128	%REC	1	2/1/2013 14:49
<i>Surr: Toluene-d8</i>	96.5			73-127	%REC	1	2/1/2013 14:49
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	21.0		2.4	6.06	mg/Kg-dry	1	2/5/2013 23:03
Fluoride	11.1		0.36	1.21	mg/Kg-dry	1	2/5/2013 23:03
Nitrogen, Nitrate (As N)	U		0.36	1.21	mg/Kg-dry	1	2/5/2013 23:03
Nitrogen, Nitrite (As N)	U		0.36	1.21	mg/Kg-dry	1	2/5/2013 23:03
Sulfate	1,120		2.4	6.06	mg/Kg-dry	1	2/5/2013 23:03
<i>Surr: Selenate (surr)</i>	86.2			85-115	%REC	1	2/5/2013 23:03
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.72	2.41	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (3)
Collection Date: 1/28/2013 02:40 PM

Work Order: 1302026
Lab ID: 1302026-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	21.0		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (5)
Collection Date: 1/28/2013 02:45 PM

Work Order: 1302026
Lab ID: 1302026-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	U		0.38	4.71	µg/Kg-dry	1	2/5/2013 16:29
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	5,490		23	117	mg/Kg-dry	100	2/6/2013 15:47
Arsenic	2.19		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:46
Barium	99.2		0.094	0.584	mg/Kg-dry	1	2/5/2013 16:46
Boron	5.78	J	3.3	5.84	mg/Kg-dry	2	2/6/2013 13:33
Cadmium	0.0884	J	0.058	0.584	mg/Kg-dry	1	2/5/2013 16:46
Calcium	150,000		1,200	5,840	mg/Kg-dry	100	2/6/2013 15:47
Chromium	5.44		0.21	1.17	mg/Kg-dry	2	2/6/2013 13:33
Cobalt	1.30		0.082	0.584	mg/Kg-dry	1	2/5/2013 16:46
Copper	1.67		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:46
Iron	3,330		12	58.4	mg/Kg-dry	1	2/5/2013 16:46
Lead	2.59		0.058	0.584	mg/Kg-dry	1	2/5/2013 16:46
Manganese	45.8		0.12	0.584	mg/Kg-dry	1	2/5/2013 16:46
Molybdenum	0.273	J	0.18	0.584	mg/Kg-dry	1	2/5/2013 16:46
Nickel	3.16		0.11	0.584	mg/Kg-dry	1	2/5/2013 16:46
Potassium	1,060		15	58.4	mg/Kg-dry	1	2/5/2013 16:46
Selenium	0.307	J	0.21	0.584	mg/Kg-dry	1	2/5/2013 16:46
Silver	U		0.094	0.584	mg/Kg-dry	1	2/5/2013 16:46
Sodium	110		13	58.4	mg/Kg-dry	1	2/5/2013 16:46
Uranium	U		0.58	0.584	mg/Kg-dry	1	2/5/2013 16:46
Zinc	9.61		0.29	0.584	mg/Kg-dry	1	2/5/2013 16:46
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	24.9		2.8	6.93	mg/Kg-dry	1	2/5/2013 23:18
Fluoride	7.73		0.42	1.39	mg/Kg-dry	1	2/5/2013 23:18
Nitrogen, Nitrate (As N)	U		0.42	1.39	mg/Kg-dry	1	2/5/2013 23:18
Nitrogen, Nitrite (As N)	U		0.42	1.39	mg/Kg-dry	1	2/5/2013 23:18
Sulfate	796		2.8	6.93	mg/Kg-dry	1	2/5/2013 23:18
Surr: Selenate (surr)	85.8			85-115	%REC	1	2/5/2013 23:18
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/5/13		Analyst: EDG	
Cyanide	U		0.80	2.66	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	28.0		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (7)
Collection Date: 1/28/2013 03:30 PM

Work Order: 1302026
Lab ID: 1302026-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.9		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (9)
Collection Date: 1/28/2013 03:45 PM

Work Order: 1302026
Lab ID: 1302026-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	18.4		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (10)
Collection Date: 1/28/2013 03:30 PM

Work Order: 1302026
Lab ID: 1302026-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	3.71	J	0.39	4.74	µg/Kg-dry	1	2/5/2013 16:31
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	8,230		23	113	mg/Kg-dry	100	2/6/2013 15:55
Arsenic	3.10		0.11	0.564	mg/Kg-dry	1	2/5/2013 16:49
Barium	131		0.090	0.564	mg/Kg-dry	1	2/5/2013 16:49
Boron	6.34		3.2	5.64	mg/Kg-dry	2	2/6/2013 13:35
Cadmium	0.126	J	0.056	0.564	mg/Kg-dry	1	2/5/2013 16:49
Calcium	141,000		1,100	5,640	mg/Kg-dry	100	2/6/2013 15:55
Chromium	7.76		0.20	1.13	mg/Kg-dry	2	2/6/2013 13:35
Cobalt	2.14		0.079	0.564	mg/Kg-dry	1	2/5/2013 16:49
Copper	2.82		0.11	0.564	mg/Kg-dry	1	2/5/2013 16:49
Iron	4,890		11	56.4	mg/Kg-dry	1	2/5/2013 16:49
Lead	3.86		0.056	0.564	mg/Kg-dry	1	2/5/2013 16:49
Manganese	78.0		0.11	0.564	mg/Kg-dry	1	2/5/2013 16:49
Molybdenum	0.406	J	0.17	0.564	mg/Kg-dry	1	2/5/2013 16:49
Nickel	4.48		0.10	0.564	mg/Kg-dry	1	2/5/2013 16:49
Potassium	1,650		15	56.4	mg/Kg-dry	1	2/5/2013 16:49
Selenium	0.640		0.20	0.564	mg/Kg-dry	1	2/5/2013 16:49
Silver	U		0.090	0.564	mg/Kg-dry	1	2/5/2013 16:49
Sodium	136		12	56.4	mg/Kg-dry	1	2/5/2013 16:49
Uranium	U		0.56	0.564	mg/Kg-dry	1	2/5/2013 16:49
Zinc	14.9		0.28	0.564	mg/Kg-dry	1	2/5/2013 16:49
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	20.6		2.6	6.56	mg/Kg-dry	1	2/5/2013 23:33
Fluoride	5.02		0.39	1.31	mg/Kg-dry	1	2/5/2013 23:33
Nitrogen, Nitrate (As N)	U		0.39	1.31	mg/Kg-dry	1	2/5/2013 23:33
Nitrogen, Nitrite (As N)	U		0.39	1.31	mg/Kg-dry	1	2/5/2013 23:33
Sulfate	6,970		26	65.6	mg/Kg-dry	10	2/6/2013 10:33
Surr: Selenate (surr)	85.3			85-115	%REC	1	2/5/2013 23:33
Surr: Selenate (surr)	87.1			85-115	%REC	10	2/6/2013 10:33
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/5/13		Analyst: EDG	
Cyanide	U		0.74	2.46	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	25.2		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (11)
Collection Date: 1/28/2013 03:30 PM

Work Order: 1302026
Lab ID: 1302026-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.6		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (13)
Collection Date: 1/28/2013 03:50 PM

Work Order: 1302026
Lab ID: 1302026-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE							
			Method: SW3550				Analyst: KAH
Percent Moisture	23.4		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (15)
Collection Date: 1/28/2013 03:50 PM

Work Order: 1302026
Lab ID: 1302026-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	1.27	J	0.34	4.24	µg/Kg-dry	1	2/5/2013 16:33
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	8,150		20	99.8	mg/Kg-dry	100	2/6/2013 15:57
Arsenic	3.48		0.10	0.499	mg/Kg-dry	1	2/5/2013 16:51
Barium	50.7		0.080	0.499	mg/Kg-dry	1	2/5/2013 16:51
Boron	7.64		2.8	4.99	mg/Kg-dry	2	2/6/2013 13:42
Cadmium	0.149	J	0.050	0.499	mg/Kg-dry	1	2/5/2013 16:51
Calcium	146,000		1,000	4,990	mg/Kg-dry	100	2/6/2013 15:57
Chromium	9.03		0.18	0.998	mg/Kg-dry	2	2/6/2013 13:42
Cobalt	2.92		0.070	0.499	mg/Kg-dry	1	2/5/2013 16:51
Copper	3.34		0.10	0.499	mg/Kg-dry	1	2/5/2013 16:51
Iron	5,630		10	49.9	mg/Kg-dry	1	2/5/2013 16:51
Lead	4.96		0.050	0.499	mg/Kg-dry	1	2/5/2013 16:51
Manganese	129		0.10	0.499	mg/Kg-dry	1	2/5/2013 16:51
Molybdenum	0.808		0.15	0.499	mg/Kg-dry	1	2/5/2013 16:51
Nickel	6.38		0.090	0.499	mg/Kg-dry	1	2/5/2013 16:51
Potassium	1,240		13	49.9	mg/Kg-dry	1	2/5/2013 16:51
Selenium	0.537		0.18	0.499	mg/Kg-dry	1	2/5/2013 16:51
Silver	U		0.080	0.499	mg/Kg-dry	1	2/5/2013 16:51
Sodium	113		11	49.9	mg/Kg-dry	1	2/5/2013 16:51
Uranium	U		0.50	0.499	mg/Kg-dry	1	2/5/2013 16:51
Zinc	16.1		0.25	0.499	mg/Kg-dry	1	2/5/2013 16:51
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	27.8		2.5	6.22	mg/Kg-dry	1	2/5/2013 23:47
Fluoride	7.12		0.37	1.24	mg/Kg-dry	1	2/5/2013 23:47
Nitrogen, Nitrate (As N)	U		0.37	1.24	mg/Kg-dry	1	2/5/2013 23:47
Nitrogen, Nitrite (As N)	U		0.37	1.24	mg/Kg-dry	1	2/5/2013 23:47
Sulfate	1,270		2.5	6.22	mg/Kg-dry	1	2/5/2013 23:47
Surr: Selenate (surr)	85.4			85-115	%REC	1	2/5/2013 23:47
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/5/13		Analyst: EDG	
Cyanide	U		0.69	2.29	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
Method: SW3550						Analyst: KAH	
Percent Moisture	19.9		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (17)
Collection Date: 1/28/2013 04:00 PM

Work Order: 1302026
Lab ID: 1302026-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.1		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (19)
Collection Date: 1/28/2013 04:05 PM

Work Order: 1302026
Lab ID: 1302026-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.5		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (20)
Collection Date: 1/28/2013 04:10 PM

Work Order: 1302026
Lab ID: 1302026-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	U		0.37	4.58	µg/Kg-dry	1	2/5/2013 16:35
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	8,460		24	120	mg/Kg-dry	100	2/6/2013 15:59
Arsenic	2.97		0.12	0.600	mg/Kg-dry	1	2/5/2013 16:54
Barium	191		0.096	0.600	mg/Kg-dry	1	2/5/2013 16:54
Boron	3.21		1.7	3.00	mg/Kg-dry	1	2/6/2013 13:45
Cadmium	0.186	J	0.060	0.600	mg/Kg-dry	1	2/5/2013 16:54
Calcium	120,000		1,200	6,000	mg/Kg-dry	100	2/6/2013 15:59
Chromium	3.77		0.11	0.600	mg/Kg-dry	1	2/6/2013 13:45
Cobalt	2.65		0.084	0.600	mg/Kg-dry	1	2/5/2013 16:54
Copper	3.97		0.12	0.600	mg/Kg-dry	1	2/5/2013 16:54
Iron	5,630		12	60.0	mg/Kg-dry	1	2/5/2013 16:54
Lead	4.37		0.060	0.600	mg/Kg-dry	1	2/5/2013 16:54
Manganese	137		0.12	0.600	mg/Kg-dry	1	2/5/2013 16:54
Molybdenum	0.594	J	0.18	0.600	mg/Kg-dry	1	2/5/2013 16:54
Nickel	5.71		0.11	0.600	mg/Kg-dry	1	2/5/2013 16:54
Potassium	1,610		16	60.0	mg/Kg-dry	1	2/5/2013 16:54
Selenium	0.453	J	0.22	0.600	mg/Kg-dry	1	2/5/2013 16:54
Silver	U		0.096	0.600	mg/Kg-dry	1	2/5/2013 16:54
Sodium	108		13	60.0	mg/Kg-dry	1	2/5/2013 16:54
Uranium	U		0.60	0.600	mg/Kg-dry	1	2/5/2013 16:54
Zinc	18.2		0.30	0.600	mg/Kg-dry	1	2/5/2013 16:54
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	24.6		2.7	6.78	mg/Kg-dry	1	2/6/2013 00:02
Fluoride	4.19		0.41	1.36	mg/Kg-dry	1	2/6/2013 00:02
Nitrogen, Nitrate (As N)	U		0.41	1.36	mg/Kg-dry	1	2/6/2013 00:02
Nitrogen, Nitrite (As N)	U		0.41	1.36	mg/Kg-dry	1	2/6/2013 00:02
Sulfate	320		2.7	6.78	mg/Kg-dry	1	2/6/2013 00:02
Surr: Selenate (surr)	85.0			85-115	%REC	1	2/6/2013 00:02
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/5/13		Analyst: EDG	
Cyanide	U		0.75	2.50	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	27.0		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (21)
Collection Date: 1/28/2013 04:15 PM

Work Order: 1302026
Lab ID: 1302026-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	18.5		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (23)
Collection Date: 1/28/2013 04:15 PM

Work Order: 1302026
Lab ID: 1302026-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	16.9		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (25)
Collection Date: 1/28/2013 04:20 PM

Work Order: 1302026
Lab ID: 1302026-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	7.38		0.37	4.60	µg/Kg-dry	1	2/5/2013 16:41
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: ALR
Aluminum	10,100		25	124	mg/Kg-dry	100	2/7/2013 15:35
Arsenic	3.14		0.25	1.24	mg/Kg-dry	2	2/8/2013 12:29
Barium	27.0		0.099	0.618	mg/Kg-dry	1	2/6/2013 04:18
Boron	5.20	J	3.5	6.18	mg/Kg-dry	2	2/7/2013 22:58
Cadmium	0.279	J	0.062	0.618	mg/Kg-dry	1	2/6/2013 04:18
Calcium	138,000		1,200	6,180	mg/Kg-dry	100	2/6/2013 21:57
Chromium	11.2		0.22	1.24	mg/Kg-dry	2	2/8/2013 12:29
Cobalt	4.08		0.17	1.24	mg/Kg-dry	2	2/8/2013 12:29
Copper	3.57		0.25	1.24	mg/Kg-dry	2	2/8/2013 12:29
Iron	9,390		25	124	mg/Kg-dry	2	2/8/2013 12:29
Lead	6.42		0.062	0.618	mg/Kg-dry	1	2/6/2013 04:18
Manganese	125		0.25	1.24	mg/Kg-dry	2	2/8/2013 12:29
Molybdenum	0.592	J	0.19	0.618	mg/Kg-dry	1	2/6/2013 04:18
Nickel	5.62		0.22	1.24	mg/Kg-dry	2	2/8/2013 12:29
Potassium	1,660		16	61.8	mg/Kg-dry	1	2/6/2013 04:18
Selenium	U		0.45	1.24	mg/Kg-dry	2	2/8/2013 12:29
Silver	U		0.099	0.618	mg/Kg-dry	1	2/6/2013 04:18
Sodium	181		27	124	mg/Kg-dry	2	2/7/2013 22:58
Uranium	U		0.62	0.618	mg/Kg-dry	1	2/6/2013 04:18
Zinc	23.0		0.62	1.24	mg/Kg-dry	2	2/8/2013 12:29
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	19.8		2.6	6.52	mg/Kg-dry	1	2/6/2013 00:16
Fluoride	4.63		0.39	1.30	mg/Kg-dry	1	2/6/2013 00:16
Nitrogen, Nitrate (As N)	U		0.39	1.30	mg/Kg-dry	1	2/6/2013 00:16
Nitrogen, Nitrite (As N)	U		0.39	1.30	mg/Kg-dry	1	2/6/2013 00:16
Sulfate	390		2.6	6.52	mg/Kg-dry	1	2/6/2013 00:16
Surr: Selenate (surr)	86.4			85-115	%REC	1	2/6/2013 00:16
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.75	2.49	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	23.6		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (27)
Collection Date: 1/28/2013 04:25 PM

Work Order: 1302026
Lab ID: 1302026-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.9		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (29)
Collection Date: 1/28/2013 04:27 PM

Work Order: 1302026
Lab ID: 1302026-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		1.7	5.0	µg/Kg	1	2/1/2013 15:12
1,1,2,2-Tetrachloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 15:12
1,1,2-Trichloroethane	U		2.0	5.0	µg/Kg	1	2/1/2013 15:12
1,1-Dichloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 15:12
1,1-Dichloroethene	U		1.5	5.0	µg/Kg	1	2/1/2013 15:12
1,2-Dibromoethane	U		0.70	5.0	µg/Kg	1	2/1/2013 15:12
1,2-Dichloroethane	U		0.60	5.0	µg/Kg	1	2/1/2013 15:12
Benzene	U		0.60	5.0	µg/Kg	1	2/1/2013 15:12
Carbon tetrachloride	U		1.2	5.0	µg/Kg	1	2/1/2013 15:12
Chloroform	U		1.8	5.0	µg/Kg	1	2/1/2013 15:12
Ethylbenzene	U		0.90	5.0	µg/Kg	1	2/1/2013 15:12
Methylene chloride	2.5	J	2.5	10	µg/Kg	1	2/1/2013 15:12
Tetrachloroethene	U		1.0	5.0	µg/Kg	1	2/1/2013 15:12
Toluene	U		0.70	5.0	µg/Kg	1	2/1/2013 15:12
Trichloroethene	U		1.6	5.0	µg/Kg	1	2/1/2013 15:12
Vinyl chloride	U		1.0	2.0	µg/Kg	1	2/1/2013 15:12
Xylenes, Total	U		2.6	15	µg/Kg	1	2/1/2013 15:12
Surr: 1,2-Dichloroethane-d4	88.1			70-128	%REC	1	2/1/2013 15:12
Surr: 4-Bromofluorobenzene	89.7			73-126	%REC	1	2/1/2013 15:12
Surr: Dibromofluoromethane	96.9			71-128	%REC	1	2/1/2013 15:12
Surr: Toluene-d8	101			73-127	%REC	1	2/1/2013 15:12

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (30)
Collection Date: 1/28/2013 04:00 PM

Work Order: 1302026
Lab ID: 1302026-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	U		0.39	4.79	µg/Kg-dry	1	2/5/2013 16:43
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: ALR
Aluminum	11,100		24	118	mg/Kg-dry	100	2/7/2013 15:40
Arsenic	1.13	J	0.24	1.18	mg/Kg-dry	2	2/8/2013 12:31
Barium	111		0.095	0.592	mg/Kg-dry	1	2/6/2013 04:23
Boron	3.95	J	3.3	5.92	mg/Kg-dry	2	2/7/2013 23:03
Cadmium	0.183	J	0.059	0.592	mg/Kg-dry	1	2/6/2013 04:23
Calcium	146,000		1,200	5,920	mg/Kg-dry	100	2/6/2013 22:02
Chromium	11.4		0.21	1.18	mg/Kg-dry	2	2/8/2013 12:31
Cobalt	3.60		0.17	1.18	mg/Kg-dry	2	2/8/2013 12:31
Copper	5.59		0.24	1.18	mg/Kg-dry	2	2/8/2013 12:31
Iron	8,870		24	118	mg/Kg-dry	2	2/8/2013 12:31
Lead	5.54		0.059	0.592	mg/Kg-dry	1	2/6/2013 04:23
Manganese	217		12	59.2	mg/Kg-dry	100	2/6/2013 22:02
Molybdenum	0.289	J	0.18	0.592	mg/Kg-dry	1	2/6/2013 04:23
Nickel	6.90		0.21	1.18	mg/Kg-dry	2	2/8/2013 12:31
Potassium	1,840		15	59.2	mg/Kg-dry	1	2/6/2013 04:23
Selenium	U		0.43	1.18	mg/Kg-dry	2	2/8/2013 12:31
Silver	U		0.095	0.592	mg/Kg-dry	1	2/6/2013 04:23
Sodium	208		26	118	mg/Kg-dry	2	2/7/2013 23:03
Uranium	U		0.59	0.592	mg/Kg-dry	1	2/6/2013 04:23
Zinc	23.4		0.59	1.18	mg/Kg-dry	2	2/8/2013 12:31
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	20.8		2.7	6.87	mg/Kg-dry	1	2/6/2013 01:00
Fluoride	2.25		0.41	1.37	mg/Kg-dry	1	2/6/2013 01:00
Nitrogen, Nitrate (As N)	U		0.41	1.37	mg/Kg-dry	1	2/6/2013 01:00
Nitrogen, Nitrite (As N)	U		0.41	1.37	mg/Kg-dry	1	2/6/2013 01:00
Sulfate	338		2.7	6.87	mg/Kg-dry	1	2/6/2013 01:00
Surr: Selenate (surr)	85.2			85-115	%REC	1	2/6/2013 01:00
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.81	2.70	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	27.4		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (31)
Collection Date: 1/28/2013 04:40 PM

Work Order: 1302026
Lab ID: 1302026-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE							
			Method: SW3550				Analyst: KAH
Percent Moisture	33.7		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (33)
Collection Date: 1/28/2013 04:40 PM

Work Order: 1302026
Lab ID: 1302026-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	27.7		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (35)
Collection Date: 1/28/2013 04:50 PM

Work Order: 1302026
Lab ID: 1302026-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	0.63	J	0.61	4.1	mg/Kg-dry	1	2/6/2013 15:51
TPH (Diesel Range)	U		0.61	2.1	mg/Kg-dry	1	2/6/2013 15:51
Surr: 2-Fluorobiphenyl	65.4			60-135	%REC	1	2/6/2013 15:51
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW3541 / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.024	0.061	mg/Kg-dry	1	2/5/2013 17:45
Surr: 4-Bromofluorobenzene	88.7			70-130	%REC	1	2/5/2013 17:45
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	U		0.33	4.12	µg/Kg-dry	1	2/5/2013 16:45
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: ALR							
Aluminum	8,660		18	88.4	mg/Kg-dry	100	2/7/2013 15:45
Arsenic	1.09		0.088	0.442	mg/Kg-dry	1	2/6/2013 04:28
Barium	75.2		0.071	0.442	mg/Kg-dry	1	2/6/2013 04:28
Boron	2.39		1.2	2.21	mg/Kg-dry	1	2/7/2013 23:07
Cadmium	0.129	J	0.044	0.442	mg/Kg-dry	1	2/6/2013 04:28
Calcium	50,400		880	4,420	mg/Kg-dry	100	2/6/2013 22:07
Chromium	7.82		0.080	0.442	mg/Kg-dry	1	2/6/2013 04:28
Cobalt	2.38		0.062	0.442	mg/Kg-dry	1	2/6/2013 04:28
Copper	2.71		0.088	0.442	mg/Kg-dry	1	2/6/2013 04:28
Iron	5,410		8.8	44.2	mg/Kg-dry	1	2/6/2013 04:28
Lead	4.82		0.044	0.442	mg/Kg-dry	1	2/6/2013 04:28
Manganese	88.1		0.088	0.442	mg/Kg-dry	1	2/6/2013 04:28
Molybdenum	0.187	J	0.13	0.442	mg/Kg-dry	1	2/6/2013 04:28
Nickel	5.19		0.080	0.442	mg/Kg-dry	1	2/6/2013 04:28
Potassium	1,860		11	44.2	mg/Kg-dry	1	2/6/2013 04:28
Selenium	0.258	J	0.16	0.442	mg/Kg-dry	1	2/6/2013 04:28
Silver	U		0.071	0.442	mg/Kg-dry	1	2/6/2013 04:28
Sodium	125		9.7	44.2	mg/Kg-dry	1	2/7/2013 23:07
Uranium	U		0.44	0.442	mg/Kg-dry	1	2/6/2013 04:28
Zinc	14.4		0.22	0.442	mg/Kg-dry	1	2/6/2013 04:28
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		1.9	8.0	µg/Kg-dry	1	2/7/2013 18:53
2-Methylnaphthalene	U		1.9	8.0	µg/Kg-dry	1	2/7/2013 18:53
Benzo(a)pyrene	U		1.9	8.0	µg/Kg-dry	1	2/7/2013 18:53
Naphthalene	U		1.9	8.0	µg/Kg-dry	1	2/7/2013 18:53
Surr: 2,4,6-Tribromophenol	71.2			36-126	%REC	1	2/7/2013 18:53
Surr: 2-Fluorobiphenyl	74.6			43-125	%REC	1	2/7/2013 18:53

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (35)
Collection Date: 1/28/2013 04:50 PM

Work Order: 1302026
Lab ID: 1302026-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<i>Surr: 2-Fluorophenol</i>	57.2			37-125	%REC	1	2/7/2013 18:53
<i>Surr: 4-Terphenyl-d14</i>	101			32-125	%REC	1	2/7/2013 18:53
<i>Surr: Nitrobenzene-d5</i>	71.9			37-125	%REC	1	2/7/2013 18:53
<i>Surr: Phenol-d6</i>	67.5			40-125	%REC	1	2/7/2013 18:53
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,1,2,2-Tetrachloroethane	U		0.61	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,1,2-Trichloroethane	U		2.4	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,1-Dichloroethane	U		0.61	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,1-Dichloroethene	U		1.8	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,2-Dibromoethane	U		0.85	6.1	µg/Kg-dry	1	2/1/2013 15:35
1,2-Dichloroethane	U		0.73	6.1	µg/Kg-dry	1	2/1/2013 15:35
Benzene	U		0.73	6.1	µg/Kg-dry	1	2/1/2013 15:35
Carbon tetrachloride	U		1.5	6.1	µg/Kg-dry	1	2/1/2013 15:35
Chloroform	U		2.2	6.1	µg/Kg-dry	1	2/1/2013 15:35
Ethylbenzene	U		1.1	6.1	µg/Kg-dry	1	2/1/2013 15:35
Methylene chloride	3.8	J	3.0	12	µg/Kg-dry	1	2/1/2013 15:35
Tetrachloroethene	U		1.2	6.1	µg/Kg-dry	1	2/1/2013 15:35
Toluene	U		0.85	6.1	µg/Kg-dry	1	2/1/2013 15:35
Trichloroethene	U		1.9	6.1	µg/Kg-dry	1	2/1/2013 15:35
Vinyl chloride	U		1.2	2.4	µg/Kg-dry	1	2/1/2013 15:35
Xylenes, Total	U		3.2	18	µg/Kg-dry	1	2/1/2013 15:35
<i>Surr: 1,2-Dichloroethane-d4</i>	97.5			70-128	%REC	1	2/1/2013 15:35
<i>Surr: 4-Bromofluorobenzene</i>	89.3			73-126	%REC	1	2/1/2013 15:35
<i>Surr: Dibromofluoromethane</i>	96.7			71-128	%REC	1	2/1/2013 15:35
<i>Surr: Toluene-d8</i>	95.2			73-127	%REC	1	2/1/2013 15:35
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	19.6		2.4	6.01	mg/Kg-dry	1	2/6/2013 01:14
Fluoride	3.20		0.36	1.20	mg/Kg-dry	1	2/6/2013 01:14
Nitrogen, Nitrate (As N)	U		0.36	1.20	mg/Kg-dry	1	2/6/2013 01:14
Nitrogen, Nitrite (As N)	U		0.36	1.20	mg/Kg-dry	1	2/6/2013 01:14
Sulfate	259		2.4	6.01	mg/Kg-dry	1	2/6/2013 01:14
<i>Surr: Selenate (surr)</i>	88.0			85-115	%REC	1	2/6/2013 01:14
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.65	2.18	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	17.5		0.010	0.0100	wt%	1	2/5/2013 13:50

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: Trip Blank 011813-19
Collection Date: 1/31/2013

Work Order: 1302026
Lab ID: 1302026-22
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/4/2013 17:19
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/4/2013 17:19
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Benzene	U		0.00020	0.0010	mg/L	1	2/4/2013 17:19
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Chloroform	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/4/2013 17:19
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/4/2013 17:19
Toluene	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/4/2013 17:19
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/4/2013 17:19
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/4/2013 17:19
Surr: 1,2-Dichloroethane-d4	94.1			71-125	%REC	1	2/4/2013 17:19
Surr: 4-Bromofluorobenzene	95.1			70-125	%REC	1	2/4/2013 17:19
Surr: Dibromofluoromethane	101			74-125	%REC	1	2/4/2013 17:19
Surr: Toluene-d8	99.2			78-123	%REC	1	2/4/2013 17:19

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67579** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 11:56 AM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104153		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.092	0.10	3.33	0	62.8	60-135	0			

LCS	Sample ID: FLCSS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 12:19 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104154		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	27.05	3.4	33.33	0	81.2	70-130	0			
TPH (Diesel Range)	35.72	1.7	33.33	0	107	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.536	0.10	3.33	0	76.2	60-135	0			

MS	Sample ID: 1302018-01BMS				Units: mg/Kg		Analysis Date: 2/6/2013 01:06 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104156		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEO
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
<i>Surr: 2-Fluorobiphenyl</i>	2.284	0.10	3.32	0	68.8	60-135	0			

MSD	Sample ID: 1302018-01BMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:29 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104157		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEO
TPH (Diesel Range)	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
<i>Surr: 2-Fluorobiphenyl</i>	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

The following samples were analyzed in this batch:

1302026-01D	1302026-21D

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

QC Page: 1 of 28

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142225** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 01:02 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103619		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
Surr: 4-Bromofluorobenzene	0.08374	0.0050	0.1	0	83.7	70-130	0			

LCS	Sample ID: GLCSS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:25 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103613		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.942	0.050	1	0	94.2	70-130	0			
Surr: 4-Bromofluorobenzene	0.09701	0.0050	0.1	0	97	70-130	0			

LCSD	Sample ID: GLCSDS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:44 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103616		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9525	0.050	1	0	95.2	70-130	0.942	1.11	30	
Surr: 4-Bromofluorobenzene	0.09686	0.0050	0.1	0	96.9	70-130	0.09701	0.146	30	

MS	Sample ID: 1302018-04ZMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103628		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8005	0.050	1	0	80	70-130	0			
Surr: 4-Bromofluorobenzene	0.08728	0.0050	0.1	0	87.3	70-130	0			

MSD	Sample ID: 1302018-04ZMSD				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103632		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8125	0.050	1	0	81.2	70-130	0.8005	1.49	30	
Surr: 4-Bromofluorobenzene	0.08872	0.0050	0.1	0	88.7	70-130	0.08728	1.64	30	

The following samples were analyzed in this batch:

1302026-01B	1302026-21B

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/5/2013 03:05 PM**

Client ID: Run ID: **ICPMS05_130205A** SeqNo: **3102200** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4165	1.0								J
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Uranium	U	0.50								
Zinc	U	0.50								

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/6/2013 12:35 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3103603** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	2.5								
Sodium	U	50								

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

LCS Sample ID: **MLCSS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/5/2013 03:08 PM**

Client ID: Run ID: **ICPMS05_130205A** SeqNo: **3102201** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	10.68	1.0	10	0	107	80-120	0			
Arsenic	9.673	0.50	10	0	96.7	80-120	0			
Barium	10.35	0.50	10	0	104	80-120	0			
Cadmium	9.748	0.50	10	0	97.5	80-120	0			
Calcium	992.3	50	1000	0	99.2	80-120	0			
Chromium	9.832	0.50	10	0	98.3	80-120	0			
Cobalt	9.927	0.50	10	0	99.3	80-120	0			
Copper	10.12	0.50	10	0	101	80-120	0			
Iron	974.8	50	1000	0	97.5	80-120	0			
Lead	9.786	0.50	10	0	97.9	80-120	0			
Manganese	9.681	0.50	10	0	96.8	80-120	0			
Molybdenum	9.985	0.50	10	0	99.8	80-120	0			
Nickel	9.83	0.50	10	0	98.3	80-120	0			
Potassium	956.7	50	1000	0	95.7	80-120	0			
Selenium	9.813	0.50	10	0	98.1	80-120	0			
Silver	10.22	0.50	10	0	102	80-120	0			
Uranium	9.429	0.50	10	0	94.3	80-120	0			
Zinc	9.937	0.50	10	0	99.4	80-120	0			

LCS Sample ID: **MLCSS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/6/2013 12:38 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3103604** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	47.92	2.5	50	0	95.8	80-120	0			
Sodium	981.7	50	1000	0	98.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/5/2013 03:22 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102207		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13710	0.84	8.429	12570	13500	75-125	0			SEO
Arsenic	11.71	0.42	8.429	4.385	86.9	75-125	0			
Barium	138.7	0.42	8.429	129.6	107	75-125	0			O
Cadmium	8.001	0.42	8.429	0.4065	90.1	75-125	0			
Calcium	57470	42	842.9	57640	-19.7	75-125	0			SEO
Chromium	22.67	0.42	8.429	14.02	103	75-125	0			
Cobalt	13.02	0.42	8.429	5.519	89	75-125	0			
Copper	18.8	0.42	8.429	11.12	91.1	75-125	0			
Iron	11500	42	842.9	10120	164	75-125	0			SO
Lead	22.81	0.42	8.429	14.66	96.6	75-125	0			
Manganese	381.8	0.42	8.429	383.5	-20	75-125	0			SEO
Molybdenum	6.315	0.42	8.429	0.5853	68	75-125	0			S
Nickel	19.09	0.42	8.429	11.62	88.6	75-125	0			
Selenium	7.95	0.42	8.429	0.9501	83	75-125	0			
Silver	8.085	0.42	8.429	0.05106	95.3	75-125	0			
Uranium	8.095	0.42	8.429	0.408	91.2	75-125	0			
Zinc	46.05	0.42	8.429	37.34	103	75-125	0			O

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/6/2013 12:50 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103618		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	39.78	4.2	42.14	60.18	-48.4	75-125	0			S
Potassium	4808	84	842.9	3553	149	75-125	0			SO
Sodium	914.3	84	842.9	168.4	88.5	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/5/2013 03:25 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102208		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	12110	0.80	7.956	12570	-5790	75-125	13710	12.4	25	SEO
Arsenic	11.34	0.40	7.956	4.385	87.4	75-125	11.71	3.25	25	
Barium	134	0.40	7.956	129.6	54.7	75-125	138.7	3.43	25	SO
Cadmium	7.562	0.40	7.956	0.4065	89.9	75-125	8.001	5.64	25	
Calcium	52910	40	795.6	57640	-594	75-125	57470	8.27	25	SEO
Chromium	20.95	0.40	7.956	14.02	87.1	75-125	22.67	7.88	25	
Cobalt	12.38	0.40	7.956	5.519	86.3	75-125	13.02	5.05	25	
Copper	17.82	0.40	7.956	11.12	84.3	75-125	18.8	5.32	25	
Iron	10370	40	795.6	10120	31.2	75-125	11500	10.3	25	SO
Lead	22.24	0.40	7.956	14.66	95.2	75-125	22.81	2.51	25	
Manganese	389.4	0.40	7.956	383.5	74	75-125	381.8	1.96	25	SEO
Molybdenum	5.373	0.40	7.956	0.5853	60.2	75-125	6.315	16.1	25	S
Nickel	18.17	0.40	7.956	11.62	82.4	75-125	19.09	4.89	25	
Selenium	7.14	0.40	7.956	0.9501	77.8	75-125	7.95	10.7	25	
Silver	7.509	0.40	7.956	0.05106	93.7	75-125	8.085	7.4	25	
Uranium	7.518	0.40	7.956	0.408	89.4	75-125	8.095	7.39	25	
Zinc	44.04	0.40	7.956	37.34	84.2	75-125	46.05	4.46	25	O

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/6/2013 12:52 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103621		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	37.07	4.0	39.78	60.18	-58.1	75-125	39.78	7.06	25	S
Potassium	4552	80	795.6	3553	126	75-125	4808	5.48	25	SO
Sodium	855.4	80	795.6	168.4	86.4	75-125	914.3	6.65	25	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/5/2013 03:20 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102206		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.109	0.42	0	0	0	0-0	4.385	6.5	25	
Barium	122.9	0.42	0	0	0	0-0	129.6	5.34	25	
Cadmium	0.3587	0.42	0	0	0	0-0	0.4065	0	25	J
Chromium	13.06	0.42	0	0	0	0-0	14.02	7.09	25	
Cobalt	5.04	0.42	0	0	0	0-0	5.519	9.08	25	
Copper	10.23	0.42	0	0	0	0-0	11.12	8.3	25	
Iron	9434	42	0	0	0	0-0	10120	7.01	25	
Lead	14.13	0.42	0	0	0	0-0	14.66	3.72	25	
Molybdenum	0.5423	0.42	0	0	0	0-0	0.5853	7.63	25	
Nickel	10.65	0.42	0	0	0	0-0	11.62	8.76	25	
Selenium	0.8324	0.42	0	0	0	0-0	0.9501	13.2	25	
Silver	U	0.42	0	0	0	0-0	0.05106	0	25	
Uranium	U	0.42	0	0	0		0.408	0	25	
Zinc	34.3	0.42	0	0	0	0-0	37.34	8.48	25	

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/6/2013 12:47 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103614		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	6.159	4.2	0	0	0	0-0	60.18	163	25	R
Potassium	3479	83	0	0	0	0-0	3553	2.09	25	
Sodium	122.9	83	0	0	0	0-0	168.4	31.2	25	R

DUP		Sample ID: 13011005-01DDUP				Units: mg/Kg		Analysis Date: 2/6/2013 03:01 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103960		Prep Date: 2/4/2013		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13720	83	0	0	0	0-0	14570	6.05	25	
Calcium	56380	4,200	0	0	0	0-0	60800	7.55	25	
Manganese	355.2	42	0	0	0	0-0	374.9	5.4	25	

The following samples were analyzed in this batch:

1302026-01D	1302026-03D	1302026-06D
1302026-09D	1302026-12D	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67565** Instrument ID **ICP7500** Method: **SW6020**

MBLK Sample ID: **MBLKS2-020413-67565** Units: **mg/Kg** Analysis Date: **2/6/2013 03:58 AM**

Client ID: Run ID: **ICP7500_130205A** SeqNo: **3102916** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Zinc	U	0.50								

MBLK Sample ID: **MBLKS2-020413-67565** Units: **mg/Kg** Analysis Date: **2/6/2013 09:47 PM**

Client ID: Run ID: **ICP7500_130206A** SeqNo: **3104742** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1634	0.50								J
Sodium	U	50								
Uranium	U	0.50								

MBLK Sample ID: **MBLKS2-020413-67565** Units: **mg/Kg** Analysis Date: **2/7/2013 03:25 PM**

Client ID: Run ID: **ICP7500_130207A** SeqNo: **3105518** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3613	1.0								J
Boron	U	2.5								

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67565** Instrument ID **ICP7500** Method: **SW6020**

LCS		Sample ID: MLCSS2-020413-67565				Units: mg/Kg		Analysis Date: 2/6/2013 04:03 AM		
Client ID:		Run ID: ICP7500_130205A				SeqNo: 3102917		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.24	0.50	10	0	92.4	80-120	0			
Barium	8.495	0.50	10	0	85	80-120	0			
Cadmium	9.81	0.50	10	0	98.1	80-120	0			
Calcium	875.2	50	1000	0	87.5	80-120	0			
Chromium	9.483	0.50	10	0	94.8	80-120	0			
Cobalt	9.283	0.50	10	0	92.8	80-120	0			
Copper	9.733	0.50	10	0	97.3	80-120	0			
Iron	927.1	50	1000	0	92.7	80-120	0			
Lead	9.443	0.50	10	0	94.4	80-120	0			
Manganese	9.191	0.50	10	0	91.9	80-120	0			
Nickel	9.636	0.50	10	0	96.4	80-120	0			
Potassium	940.6	50	1000	0	94.1	80-120	0			
Selenium	8.974	0.50	10	0	89.7	80-120	0			
Silver	9.882	0.50	10	0	98.8	80-120	0			
Zinc	9.286	0.50	10	0	92.9	80-120	0			

LCS		Sample ID: MLCSS2-020413-67565				Units: mg/Kg		Analysis Date: 2/6/2013 09:52 PM		
Client ID:		Run ID: ICP7500_130206A				SeqNo: 3104743		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	9.772	0.50	10	0	97.7	80-120	0			
Sodium	995	50	1000	0	99.5	80-120	0			
Uranium	9.859	0.50	10	0	98.6	80-120	0			

LCS		Sample ID: MLCSS2-020413-67565				Units: mg/Kg		Analysis Date: 2/7/2013 03:30 PM		
Client ID:		Run ID: ICP7500_130207A				SeqNo: 3105519		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	11.13	1.0	10	0	111	80-120	0			
Boron	49.37	2.5	50	0	98.7	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67565** Instrument ID **ICP7500** Method: **SW6020**

MS		Sample ID: 1302050-13CMS				Units: mg/Kg		Analysis Date: 2/6/2013 06:33 AM		
Client ID:		Run ID: ICP7500_130205A				SeqNo: 3103165		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	9801	0.91	9.142	8799	11000	75-125	0			SEO
Arsenic	9.095	0.46	9.142	2.719	69.7	75-125	0			S
Barium	205.3	0.46	9.142	248.5	-472	75-125	0			SEO
Boron	74.89	2.3	45.71	43.78	68	75-125	0			S
Cadmium	6.168	0.46	9.142	0.1425	65.9	75-125	0			S
Calcium	57630	46	914.2	64440	-745	75-125	0			SEO
Chromium	11.99	0.46	9.142	4.839	78.3	75-125	0			
Cobalt	8.613	0.46	9.142	2.496	66.9	75-125	0			S
Copper	9.6	0.46	9.142	3.624	65.4	75-125	0			S
Iron	5014	46	914.2	3874	125	75-125	0			O
Lead	10.49	0.46	9.142	4.582	64.6	75-125	0			S
Manganese	111.9	0.46	9.142	112	-1.15	75-125	0			SO
Molybdenum	5.08	0.46	9.142	0.01985	55.3	75-125	0			S
Nickel	10.48	0.46	9.142	4.305	67.5	75-125	0			S
Potassium	2655	46	914.2	2072	63.7	75-125	0			S
Selenium	6.529	0.46	9.142	0.3095	68	75-125	0			S
Silver	6.245	0.46	9.142	-0.01784	68.5	75-125	0			S
Sodium	3053	46	914.2	2827	24.7	75-125	0			S
Uranium	6.374	0.46	9.142	0.1944	67.6	75-125	0			S
Zinc	17.28	0.46	9.142	10.13	78.2	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67565** Instrument ID **ICP7500** Method: **SW6020**

MSD		Sample ID: 1302050-13CMSD				Units: mg/Kg		Analysis Date: 2/6/2013 06:38 AM		
Client ID:		Run ID: ICP7500_130205A				SeqNo: 3103166		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	11950	0.90	9.049	8799	34900	75-125	9801	19.8	25	SEO
Arsenic	10.27	0.45	9.049	2.719	83.4	75-125	9.095	12.1	25	
Barium	274.2	0.45	9.049	248.5	283	75-125	205.3	28.7	25	SREO
Boron	90.29	2.3	45.24	43.78	103	75-125	74.89	18.7	25	
Cadmium	7.232	0.45	9.049	0.1425	78.3	75-125	6.168	15.9	25	
Calcium	66650	45	904.9	64440	245	75-125	57630	14.5	25	SEO
Chromium	14.5	0.45	9.049	4.839	107	75-125	11.99	18.9	25	
Cobalt	9.945	0.45	9.049	2.496	82.3	75-125	8.613	14.4	25	
Copper	11.46	0.45	9.049	3.624	86.6	75-125	9.6	17.6	25	
Iron	5992	45	904.9	3874	234	75-125	5014	17.8	25	SO
Lead	12.16	0.45	9.049	4.582	83.8	75-125	10.49	14.8	25	
Manganese	147.3	0.45	9.049	112	390	75-125	111.9	27.3	25	SRO
Molybdenum	6.265	0.45	9.049	0.01985	69	75-125	5.08	20.9	25	S
Nickel	12.57	0.45	9.049	4.305	91.3	75-125	10.48	18.2	25	
Potassium	3262	45	904.9	2072	132	75-125	2655	20.5	25	S
Selenium	7.642	0.45	9.049	0.3095	81	75-125	6.529	15.7	25	
Silver	7.141	0.45	9.049	-0.01784	79.1	75-125	6.245	13.4	25	
Sodium	3817	45	904.9	2827	109	75-125	3053	22.2	25	
Uranium	7.645	0.45	9.049	0.1944	82.3	75-125	6.374	18.1	25	
Zinc	20.65	0.45	9.049	10.13	116	75-125	17.28	17.8	25	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67565** Instrument ID **ICP7500** Method: **SW6020**

DUP		Sample ID: 1302050-13CDUP				Units: mg/Kg		Analysis Date: 2/6/2013 06:23 AM		
Client ID:		Run ID: ICP7500_130205A				SeqNo: 3103163		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.903	0.46	0	0	0	0-0	2.719	35.3	25	R
Boron	42.2	2.3	0	0	0	0-0	43.78	3.69	25	
Cadmium	0.1187	0.46	0	0	0	0-0	0.1425	0	25	J
Chromium	4.426	0.46	0	0	0	0-0	4.839	8.92	25	
Cobalt	1.8	0.46	0	0	0	0-0	2.496	32.4	25	R
Copper	3.169	0.46	0	0	0	0-0	3.624	13.4	25	
Iron	3705	46	0	0	0	0-0	3874	4.47	25	
Lead	3.826	0.46	0	0	0	0-0	4.582	18	25	
Manganese	98.83	0.46	0	0	0	0-0	112	12.5	25	
Molybdenum	U	0.46	0	0	0	0-0	0.01985	0	25	
Nickel	3.629	0.46	0	0	0	0-0	4.305	17	25	
Potassium	1900	46	0	0	0	0-0	2072	8.67	25	
Selenium	0.2105	0.46	0	0	0	0-0	0.3095	0	25	J
Silver	U	0.46	0	0	0	0-0	-0.01784	0	25	
Uranium	U	0.46	0	0	0		0.1944	0	25	
Zinc	9.735	0.46	0	0	0	0-0	10.13	3.94	25	

DUP		Sample ID: 1302050-13CDUP				Units: mg/Kg		Analysis Date: 2/6/2013 10:52 PM		
Client ID:		Run ID: ICP7500_130206A				SeqNo: 3104755		Prep Date: 2/4/2013		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	46320	4,600	0	0	0	0-0	55960	18.9	25	

DUP		Sample ID: 1302050-13CDUP				Units: mg/Kg		Analysis Date: 2/7/2013 12:48 AM		
Client ID:		Run ID: ICP7500_130206A				SeqNo: 3104778		Prep Date: 2/4/2013		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	213.4	4.6	0	0	0	0-0	222	3.94	25	
Sodium	2404	460	0	0	0	0-0	2630	8.98	25	

DUP		Sample ID: 1302050-13CDUP				Units: mg/Kg		Analysis Date: 2/7/2013 03:55 PM		
Client ID:		Run ID: ICP7500_130207A				SeqNo: 3105524		Prep Date: 2/4/2013		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	6715	92	0	0	0	0-0	6978	3.83	25	

The following samples were analyzed in this batch: | 1302026-15D | 1302026-18D | 1302026-21D |

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67585** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:01 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102354		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:03 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102355		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	332.7	3.3	333.3	0	99.8	85-115	0			

MS	Sample ID: 1301997-01DMS				Units: µg/Kg		Analysis Date: 2/5/2013 04:09 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102358		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	376.9	3.5	354.9	14.76	102	85-115	0			

MSD	Sample ID: 1301997-01DMSD				Units: µg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102359		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	375.1	3.5	354.5	14.76	102	85-115	376.9	0.484	20	

DUP	Sample ID: 1301997-01DDUP				Units: µg/Kg		Analysis Date: 2/5/2013 04:07 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102357		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	15.21	3.6	0	0	0		14.76	3.04	20	

The following samples were analyzed in this batch:

1302026-01D	1302026-03D	1302026-06D
1302026-09D	1302026-12D	1302026-15D
1302026-18D	1302026-21D	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MBLK		Sample ID: SBLKS2-130207-67656				Units: µg/Kg		Analysis Date: 2/7/2013 04:24 PM		
Client ID:		Run ID: SV-6_130207A				SeqNo: 3106635		Prep Date: 2/7/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
Surr: 2,4,6-Tribromophenol	104.3	6.6	166.7	0	62.6	36-126	0			
Surr: 2-Fluorobiphenyl	132.1	6.6	166.7	0	79.2	43-125	0			
Surr: 2-Fluorophenol	126.1	6.6	166.7	0	75.7	37-125	0			
Surr: 4-Terphenyl-d14	166.2	6.6	166.7	0	99.7	32-125	0			
Surr: Nitrobenzene-d5	134.1	6.6	166.7	0	80.4	37-125	0			
Surr: Phenol-d6	130.7	6.6	166.7	0	78.4	40-125	0			

LCS		Sample ID: SLCSS2-130207-67656				Units: µg/Kg		Analysis Date: 2/7/2013 04:45 PM		
Client ID:		Run ID: SV-6_130207A				SeqNo: 3106636		Prep Date: 2/7/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	131.8	6.6	166.7	0	79.1	50-120	0			
2-Methylnaphthalene	133.3	6.6	166.7	0	80	50-120	0			
Benzo(a)pyrene	148.1	6.6	166.7	0	88.8	50-130	0			
Naphthalene	128.1	6.6	166.7	0	76.9	50-125	0			
Surr: 2,4,6-Tribromophenol	125.4	6.6	166.7	0	75.2	36-126	0			
Surr: 2-Fluorobiphenyl	128.4	6.6	166.7	0	77	43-125	0			
Surr: 2-Fluorophenol	122.2	6.6	166.7	0	73.3	37-125	0			
Surr: 4-Terphenyl-d14	159.7	6.6	166.7	0	95.8	32-125	0			
Surr: Nitrobenzene-d5	126.5	6.6	166.7	0	75.9	37-125	0			
Surr: Phenol-d6	122.6	6.6	166.7	0	73.5	40-125	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MS Sample ID: 1302140-04DMS				Units: µg/Kg			Analysis Date: 2/7/2013 07:35 PM			
Client ID:		Run ID: SV-6_130207A			SeqNo: 3106643		Prep Date: 2/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	129.4	6.6	166.5	6.178	74	50-120	0			
2-Methylnaphthalene	107.7	6.6	166.5	6.039	61	50-120	0			
Benzo(a)pyrene	224.3	6.6	166.5	160.5	38.3	50-130	0			S
Naphthalene	102.2	6.6	166.5	5.73	57.9	50-125	0			
Surr: 2,4,6-Tribromophenol	91.94	6.6	166.5	0	55.2	36-126	0			
Surr: 2-Fluorobiphenyl	106.7	6.6	166.5	0	64.1	43-125	0			
Surr: 2-Fluorophenol	91.1	6.6	166.5	0	54.7	37-125	0			
Surr: 4-Terphenyl-d14	124.5	6.6	166.5	0	74.8	32-125	0			
Surr: Nitrobenzene-d5	105.2	6.6	166.5	0	63.2	37-125	0			
Surr: Phenol-d6	85.27	6.6	166.5	0	51.2	40-125	0			

MSD Sample ID: 1302140-04DMSD				Units: µg/Kg			Analysis Date: 2/7/2013 07:56 PM			
Client ID:		Run ID: SV-6_130207A			SeqNo: 3106644		Prep Date: 2/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	183.4	6.6	166.4	6.178	106	50-120	129.4	34.5	30	R
2-Methylnaphthalene	143.5	6.6	166.4	6.039	82.6	50-120	107.7	28.5	30	
Benzo(a)pyrene	307.6	6.6	166.4	160.5	88.4	50-130	224.3	31.3	30	R
Naphthalene	132.9	6.6	166.4	5.73	76.4	50-125	102.2	26.1	30	
Surr: 2,4,6-Tribromophenol	101.8	6.6	166.4	0	61.2	36-126	91.94	10.2	30	
Surr: 2-Fluorobiphenyl	123.6	6.6	166.4	0	74.2	43-125	106.7	14.6	30	
Surr: 2-Fluorophenol	108.3	6.6	166.4	0	65.1	37-125	91.1	17.3	30	
Surr: 4-Terphenyl-d14	150.5	6.6	166.4	0	90.4	32-125	124.5	18.9	30	
Surr: Nitrobenzene-d5	124.3	6.6	166.4	0	74.7	37-125	105.2	16.7	30	
Surr: Phenol-d6	101.4	6.6	166.4	0	60.9	40-125	85.27	17.3	30	

The following samples were analyzed in this batch:

1302026-01D	1302026-21D

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020113-R141995** Units: **µg/Kg** Analysis Date: **2/1/2013 09:52 AM**

Client ID: Run ID: **VOA5_130201A** SeqNo: **3098471** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	42.8	0	50	0	85.6	70-128	0			
Surr: 4-Bromofluorobenzene	46.86	0	50	0	93.7	73-126	0			
Surr: Dibromofluoromethane	48.11	0	50	0	96.2	71-128	0			
Surr: Toluene-d8	44.78	0	50	0	89.6	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

LCS Sample ID: **VLCSS1-020113-R141995** Units: **µg/Kg** Analysis Date: **2/1/2013 08:43 AM**

Client ID: Run ID: **VOA5_130201A** SeqNo: **3098470** 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	53.98	5.0	50	0	108	79-124	0			
1,1,2,2-Tetrachloroethane	53.32	5.0	50	0	107	75-123	0			
1,1,2-Trichloroethane	55.87	5.0	50	0	112	79-120	0			
1,1-Dichloroethane	52.6	5.0	50	0	105	75-124	0			
1,1-Dichloroethene	55.13	5.0	50	0	110	80-122	0			
1,2-Dibromoethane	57.09	5.0	50	0	114	79-120	0			
1,2-Dichloroethane	52.14	5.0	50	0	104	73-121	0			
Benzene	50.57	5.0	50	0	101	79-120	0			
Carbon tetrachloride	45.29	5.0	50	0	90.6	74-126	0			
Chloroform	55.04	5.0	50	0	110	78-120	0			
Ethylbenzene	54.99	5.0	50	0	110	80-122	0			
Methylene chloride	51.62	10	50	0	103	70-123	0			
Tetrachloroethene	47.09	5.0	50	0	94.2	80-121	0			
Toluene	49.54	5.0	50	0	99.1	79-120	0			
Trichloroethene	52.16	5.0	50	0	104	80-121	0			
Vinyl chloride	61.5	2.0	50	0	123	76-126	0			
Xylenes, Total	150.9	15	150	0	101	80-120	0			
Surr: 1,2-Dichloroethane-d4	51.49	0	50	0	103	70-128	0			
Surr: 4-Bromofluorobenzene	47.86	0	50	0	95.7	73-126	0			
Surr: Dibromofluoromethane	51.61	0	50	0	103	71-128	0			
Surr: Toluene-d8	43.85	0	50	0	87.7	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MS		Sample ID: 1301997-01AMS				Units: µg/Kg		Analysis Date: 2/1/2013 11:46 AM		
Client ID:		Run ID: VOA5_130201A				SeqNo: 3098546		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	51.53	5.0	50	0	103	79-124	0			
1,1,2,2-Tetrachloroethane	45.86	5.0	50	0	91.7	75-123	0			
1,1,2-Trichloroethane	56	5.0	50	0	112	79-120	0			
1,1-Dichloroethane	49.56	5.0	50	0	99.1	75-124	0			
1,1-Dichloroethene	54.01	5.0	50	0	108	80-122	0			
1,2-Dibromoethane	49.35	5.0	50	0	98.7	79-120	0			
1,2-Dichloroethane	51.25	5.0	50	0	103	73-121	0			
Benzene	52.11	5.0	50	0	104	79-120	0			
Carbon tetrachloride	46.06	5.0	50	0	92.1	74-126	0			
Chloroform	48.72	5.0	50	0	97.4	78-120	0			
Ethylbenzene	50.85	5.0	50	0	102	80-122	0			
Methylene chloride	48.37	10	50	0	96.7	70-123	0			
Tetrachloroethene	43.7	5.0	50	0	87.4	80-121	0			
Toluene	53.36	5.0	50	0	107	79-120	0			
Trichloroethene	51.31	5.0	50	0	103	80-121	0			
Vinyl chloride	55.22	2.0	50	0	110	76-126	0			
Xylenes, Total	146.8	15	150	0	97.9	80-120	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	49.29	0	50	0	98.6	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	49	0	50	0	98	73-126	0			
<i>Surr: Dibromofluoromethane</i>	49.78	0	50	0	99.6	71-128	0			
<i>Surr: Toluene-d8</i>	51.55	0	50	0	103	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MSD		Sample ID: 1301997-01AMSD				Units: µg/Kg		Analysis Date: 2/1/2013 12:09 PM		
Client ID:		Run ID: VOA5_130201A				SeqNo: 3098547		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	54.79	5.0	50	0	110	79-124	51.53	6.13	30	
1,1,2,2-Tetrachloroethane	44.09	5.0	50	0	88.2	75-123	45.86	3.93	30	
1,1,2-Trichloroethane	54.9	5.0	50	0	110	79-120	56	1.98	30	
1,1-Dichloroethane	51.87	5.0	50	0	104	75-124	49.56	4.56	30	
1,1-Dichloroethene	52.81	5.0	50	0	106	80-122	54.01	2.24	30	
1,2-Dibromoethane	48.8	5.0	50	0	97.6	79-120	49.35	1.12	30	
1,2-Dichloroethane	46.29	5.0	50	0	92.6	73-121	51.25	10.2	30	
Benzene	51.81	5.0	50	0	104	79-120	52.11	0.568	30	
Carbon tetrachloride	47.75	5.0	50	0	95.5	74-126	46.06	3.61	30	
Chloroform	53.56	5.0	50	0	107	78-120	48.72	9.45	30	
Ethylbenzene	55.58	5.0	50	0	111	80-122	50.85	8.9	30	
Methylene chloride	53.37	10	50	0	107	70-123	48.37	9.82	30	
Tetrachloroethene	45.21	5.0	50	0	90.4	80-121	43.7	3.39	30	
Toluene	61.14	5.0	50	0	122	79-120	53.36	13.6	30	S
Trichloroethene	51.76	5.0	50	0	104	80-121	51.31	0.863	30	
Vinyl chloride	58.35	2.0	50	0	117	76-126	55.22	5.51	30	
Xylenes, Total	157.7	15	150	0	105	80-120	146.8	7.13	30	
Surr: 1,2-Dichloroethane-d4	48.55	0	50	0	97.1	70-128	49.29	1.51	30	
Surr: 4-Bromofluorobenzene	46.51	0	50	0	93	73-126	49	5.21	30	
Surr: Dibromofluoromethane	48.96	0	50	0	97.9	71-128	49.78	1.67	30	
Surr: Toluene-d8	55.55	0	50	0	111	73-127	51.55	7.47	30	

The following samples were analyzed in this batch:

1302026-01A	1302026-17A	1302026-21A

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MBLK Sample ID: **VBLKW-130204-R142113** Units: **µg/L** Analysis Date: **2/4/2013 11:16 AM**

Client ID: Run ID: **VOA4_130204A** SeqNo: **3100918** 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	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Carbon tetrachloride	U	1.0								
Chloroform	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Trichloroethene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	43.85	1.0	50	0	87.7	71-125	0			
Surr: 4-Bromofluorobenzene	49.08	1.0	50	0	98.2	70-125	0			
Surr: Dibromofluoromethane	48.08	1.0	50	0	96.2	74-125	0			
Surr: Toluene-d8	48.41	1.0	50	0	96.8	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCS Sample ID: **VLCSW-130204-R142113** Units: **µg/L** Analysis Date: **2/4/2013 10:03 AM**

Client ID: Run ID: **VOA4_130204A** SeqNo: **3100916** 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	54.47	1.0	50	0	109	80-120	0			
1,1,2,2-Tetrachloroethane	46.02	1.0	50	0	92	74-123	0			
1,1,2-Trichloroethane	48.93	1.0	50	0	97.9	80-120	0			
1,1-Dichloroethane	46.62	1.0	50	0	93.2	80-120	0			
1,1-Dichloroethene	53.04	1.0	50	0	106	80-120	0			
1,2-Dibromoethane	53.39	1.0	50	0	107	80-120	0			
1,2-Dichloroethane	49.07	1.0	50	0	98.1	79-120	0			
Benzene	48.6	1.0	50	0	97.2	80-120	0			
Carbon tetrachloride	58.54	1.0	50	0	117	79-120	0			
Chloroform	46.57	1.0	50	0	93.1	80-120	0			
Ethylbenzene	48.8	1.0	50	0	97.6	80-120	0			
Methylene chloride	47.71	2.0	50	0	95.4	75-125	0			
Tetrachloroethene	53.4	1.0	50	0	107	80-120	0			
Toluene	48.37	1.0	50	0	96.7	80-121	0			
Trichloroethene	53.7	1.0	50	0	107	80-120	0			
Vinyl chloride	48.96	1.0	50	0	97.9	75-125	0			
Xylenes, Total	142.5	1.0	150	0	95	80-124	0			
Surr: 1,2-Dichloroethane-d4	44.17	1.0	50	0	88.3	71-125	0			
Surr: 4-Bromofluorobenzene	52.31	1.0	50	0	105	70-125	0			
Surr: Dibromofluoromethane	49.72	1.0	50	0	99.4	74-125	0			
Surr: Toluene-d8	48.59	1.0	50	0	97.2	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCSD		Sample ID: VLCSDW-130204-R142113				Units: µg/L		Analysis Date: 2/4/2013 10:27 AM		
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100917		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	51.78	1.0	50	0	104	80-120	54.47	5.06	20	
1,1,2,2-Tetrachloroethane	46.55	1.0	50	0	93.1	74-123	46.02	1.14	20	
1,1,2-Trichloroethane	48.97	1.0	50	0	97.9	80-120	48.93	0.0875	20	
1,1-Dichloroethane	44.74	1.0	50	0	89.5	80-120	46.62	4.11	20	
1,1-Dichloroethene	51.9	1.0	50	0	104	80-120	53.04	2.16	20	
1,2-Dibromoethane	53.91	1.0	50	0	108	80-120	53.39	0.979	20	
1,2-Dichloroethane	48.06	1.0	50	0	96.1	79-120	49.07	2.09	20	
Benzene	47	1.0	50	0	94	80-120	48.6	3.35	20	
Carbon tetrachloride	56.1	1.0	50	0	112	79-120	58.54	4.26	20	
Chloroform	45.18	1.0	50	0	90.4	80-120	46.57	3.02	20	
Ethylbenzene	46.79	1.0	50	0	93.6	80-120	48.8	4.2	20	
Methylene chloride	46.38	2.0	50	0	92.8	75-125	47.71	2.83	20	
Tetrachloroethene	50.41	1.0	50	0	101	80-120	53.4	5.75	20	
Toluene	46.08	1.0	50	0	92.2	80-121	48.37	4.84	20	
Trichloroethene	52.04	1.0	50	0	104	80-120	53.7	3.14	20	
Vinyl chloride	46.66	1.0	50	0	93.3	75-125	48.96	4.81	20	
Xylenes, Total	138	1.0	150	0	92	80-124	142.5	3.19	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	43.85	1.0	50	0	87.7	71-125	44.17	0.739	20	
<i>Surr: 4-Bromofluorobenzene</i>	51.57	1.0	50	0	103	70-125	52.31	1.41	20	
<i>Surr: Dibromofluoromethane</i>	48.7	1.0	50	0	97.4	74-125	49.72	2.09	20	
<i>Surr: Toluene-d8</i>	48.27	1.0	50	0	96.5	78-123	48.59	0.661	20	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MS Sample ID: **1302069-01AMS** Units: **µg/L** Analysis Date: **2/4/2013 01:41 PM**

Client ID: Run ID: **VOA4_130204A** SeqNo: **3100924** 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	56.87	1.0	50	0	114	80-120	0			
1,1,2,2-Tetrachloroethane	45.23	1.0	50	0	90.5	74-123	0			
1,1,2-Trichloroethane	50.26	1.0	50	0	101	80-120	0			
1,1-Dichloroethane	48.56	1.0	50	0	97.1	80-120	0			
1,1-Dichloroethene	57.49	1.0	50	0	115	80-120	0			
1,2-Dibromoethane	53.79	1.0	50	0	108	80-120	0			
1,2-Dichloroethane	50.8	1.0	50	0	102	79-120	0			
Benzene	51.17	1.0	50	0	102	80-120	0			
Carbon tetrachloride	61.34	1.0	50	0	123	79-120	0			S
Chloroform	49.2	1.0	50	0	98.4	80-120	0			
Ethylbenzene	50.6	1.0	50	0	101	80-120	0			
Methylene chloride	49.13	2.0	50	0	98.3	75-125	0			
Tetrachloroethene	55.78	1.0	50	0	112	80-120	0			
Toluene	49.91	1.0	50	0	99.8	80-121	0			
Trichloroethene	57.43	1.0	50	0	115	80-120	0			
Vinyl chloride	53.66	1.0	50	0	107	75-125	0			
Xylenes, Total	148.5	1.0	150	0	99	80-124	0			
Surr: 1,2-Dichloroethane-d4	44.59	1.0	50	0	89.2	71-125	0			
Surr: 4-Bromofluorobenzene	50.99	1.0	50	0	102	70-125	0			
Surr: Dibromofluoromethane	49.65	1.0	50	0	99.3	74-125	0			
Surr: Toluene-d8	48.21	1.0	50	0	96.4	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MSD		Sample ID: 1302069-01AMSD				Units: µg/L		Analysis Date: 2/4/2013 02:06 PM		
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100925		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	59.48	1.0	50	0	119	80-120	56.87	4.49	20	
1,1,2,2-Tetrachloroethane	47.09	1.0	50	0	94.2	74-123	45.23	4.04	20	
1,1,2-Trichloroethane	51.43	1.0	50	0	103	80-120	50.26	2.29	20	
1,1-Dichloroethane	50.19	1.0	50	0	100	80-120	48.56	3.31	20	
1,1-Dichloroethene	60.32	1.0	50	0	121	80-120	57.49	4.82	20	S
1,2-Dibromoethane	56.01	1.0	50	0	112	80-120	53.79	4.04	20	
1,2-Dichloroethane	52.53	1.0	50	0	105	79-120	50.8	3.34	20	
Benzene	52.17	1.0	50	0	104	80-120	51.17	1.94	20	
Carbon tetrachloride	63.38	1.0	50	0	127	79-120	61.34	3.27	20	S
Chloroform	50.81	1.0	50	0	102	80-120	49.2	3.21	20	
Ethylbenzene	51.95	1.0	50	0	104	80-120	50.6	2.63	20	
Methylene chloride	51.27	2.0	50	0	103	75-125	49.13	4.28	20	
Tetrachloroethene	57.11	1.0	50	0	114	80-120	55.78	2.36	20	
Toluene	50.87	1.0	50	0	102	80-121	49.91	1.91	20	
Trichloroethene	58.72	1.0	50	0	117	80-120	57.43	2.21	20	
Vinyl chloride	54.84	1.0	50	0	110	75-125	53.66	2.17	20	
Xylenes, Total	151	1.0	150	0	101	80-124	148.5	1.7	20	
Surr: 1,2-Dichloroethane-d4	44.99	1.0	50	0	90	71-125	44.59	0.903	20	
Surr: 4-Bromofluorobenzene	50.73	1.0	50	0	101	70-125	50.99	0.509	20	
Surr: Dibromofluoromethane	50.29	1.0	50	0	101	74-125	49.65	1.28	20	
Surr: Toluene-d8	48.15	1.0	50	0	96.3	78-123	48.21	0.13	20	

The following samples were analyzed in this batch:

1302026-22A

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67583** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK Sample ID: **WBLKS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103414** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS Sample ID: **WLCSS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103415** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.05	2.0	10	0	90.5	80-120	0			

LCSD Sample ID: **WLCSDS1-020513-67583** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103437** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.9	2.0	10	0	89	80-120	9.05	1.67	30	

MS Sample ID: **1301997-09DMS** Units: **mg/Kg** Analysis Date: **2/5/2013 04:30 PM**

Client ID: Run ID: **UV-2450_130205C** SeqNo: **3103436** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.495	1.9	9.308	0.09611	101	75-125	0			

The following samples were analyzed in this batch:

1302026-01D	1302026-03D	1302026-06D
1302026-09D	1302026-12D	1302026-15D
1302026-18D	1302026-21D	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKS1-67633** Units: **mg/Kg** Analysis Date: **2/5/2013 07:11 PM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103858** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	5.0								
Fluoride	0.64	1.0								J
Nitrogen, Nitrate (As N)	U	1.0								
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
Surr: Selenate (surr)	45.24	1.0	50	0	90.5	85-115	0			

LCS Sample ID: **WLCSS1-67633** Units: **mg/Kg** Analysis Date: **2/5/2013 07:25 PM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103859** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	219.8	5.0	200	0	110	90-110	0			
Fluoride	37.72	1.0	40	0	94.3	90-110	0			
Nitrogen, Nitrate (As N)	43.14	1.0	40	0	108	90-110	0			
Nitrogen, Nitrite (As N)	43.82	1.0	40	0	110	90-110	0			
Sulfate	208.7	5.0	200	0	104	90-110	0			
Surr: Selenate (surr)	47.79	1.0	50	0	95.6	85-115	0			

MS Sample ID: **1302026-21DMS** Units: **mg/Kg** Analysis Date: **2/6/2013 01:29 AM**

Client ID: **MW-114 (35)** Run ID: **ICS2100_130205C** SeqNo: **3103884** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	126.4	5.0	98.97	16.2	111	75-125	0			
Fluoride	20.19	0.99	19.79	2.638	88.7	75-125	0			
Nitrogen, Nitrate (As N)	20.76	0.99	19.79	0	105	75-125	0			
Nitrogen, Nitrite (As N)	21.36	0.99	19.79	0	108	75-125	0			
Sulfate	319.3	5.0	98.97	213.5	107	75-125	0			
Surr: Selenate (surr)	42.66	0.99	49.48	0	86.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD Sample ID: **1302026-21DMSD** Units: **mg/Kg** Analysis Date: **2/6/2013 01:43 AM**

Client ID: **MW-114 (35)** Run ID: **ICS2100_130205C** SeqNo: **3103885** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	124.6	4.9	98.65	16.2	110	75-125	126.4	1.49	20	
Fluoride	19.9	0.99	19.73	2.638	87.5	75-125	20.19	1.45	20	
Nitrogen, Nitrate (As N)	20.57	0.99	19.73	0	104	75-125	20.76	0.942	20	
Nitrogen, Nitrite (As N)	20.98	0.99	19.73	0	106	75-125	21.36	1.77	20	
Sulfate	315.2	4.9	98.65	213.5	103	75-125	319.3	1.29	20	
Surr: Selenate (surr)	42	0.99	49.33	0	85.1	80-120	42.66	1.58	20	

The following samples were analyzed in this batch:

1302026-01D	1302026-03D	1302026-06D
1302026-09D	1302026-12D	1302026-15D
1302026-18D	1302026-21D	

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

Client: Navajo Refining Company
Work Order: 1302026
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142216** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302026-21DDUP** Units: **wt%** Analysis Date: **2/5/2013 01:50 PM**

Client ID: **MW-114 (35)** Run ID: **BALANCE1_130205C** SeqNo: **3103371** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	17.43	0.010	0	0	0	0-0	17.52	0.523	20	

The following samples were analyzed in this batch:

1302026-01D	1302026-02A	1302026-03D
1302026-04A	1302026-05A	1302026-06D
1302026-07A	1302026-08A	1302026-09D
1302026-10A	1302026-11A	1302026-12D
1302026-13A	1302026-14A	1302026-15D
1302026-16A	1302026-18D	1302026-19A
1302026-20A	1302026-21D	

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302026

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram - Dry weight corrected
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **31-Jan-13 09:10**

Work Order: **1302026**

Received by: **RDH**

Checklist completed by Robert D. Harris 01-Feb-13
eSignature Date

Reviewed by: Patricia L. Lynch 13-Feb-13
eSignature Date

Matrices: soils

Carrier name: FedEx

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):	<u>1.8c c/u</u> <u>005</u>		
Cooler(s)/Kit(s):	<u>3725</u>		
Date/Time sample(s) sent to storage:	<u>2/1/13 14:50</u>		
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:	<u>-</u>		

Login Notes: COC and sample count received didn't match up. PL spoke with client and got everything corrected. Logged in by PL.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



Chain of Custody Form

Page 1 of 3

COC ID: 41198

☐ Cincinnati, OH
+1 513 733 5336☐ Everett, WA
+1 425 356 2600☐ Fort Collins, CO
+1 970 490 1511

1302026

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



ALS Project Manager:

Customer Information			Project Information				Parameter/Method Request for Analysis												
Purchase Order		Project Name	RO Discharge/Sampling		A	VOC (8260) NW GW List													
Work Order		Project Number	128823		B	GRO (8015M)													
Company Name	Navajo Refining	Bill To Company	Navajo Refining		C	DRO (8015M)													
Send Report To	Est Robert Combs	Invoice Attn.	Robert Combs		D	DRO (8015M)													
Address	501 East Main	Address	501 East Main		E	LLSVOC (8270) NM GW List													
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211		F	Total Metals (6020/7000) RCRA 8													
Phone	575-748-6733	Phone	575-748-6733		G	Dissolved Metals (6020/7000) RCRA 8													
Fax	575-746-5421	Fax	575-746-5421		H	TDS													
e-Mail Address		e-Mail Address			I	Moisture													
					J	Fingerprint (PIANO/SpGrav, S.M. Dist)													
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	MW-114(1)	1/28/13	1430	Soil	-	5	X	X	X	X	X	X	X		X				
2	MW-114(3)	1/28/13	1440	Soil		1									X				
3	MW-114(5)	1/28/13	1445	"		2	X	X	X	X	X	X	X		X				
4	MW-114(7)	1/28/13	1530	"		1									X				
5	MW-114(9)	1/28/13	1545	"		1									X				
6	MW-114(10)	1/28/13	1530	"		2	X	X	X	X	X	X	X		X				
7	MW-114(11)	1/28/13	1530	"		1									X				
8	MW-114(13)	1/28/13	1550	"		1									X				
9	MW-114(15)	1/28/13	1550	"		2	X	X	X	X	X	X	X		X				
10	MW-114(17)	1/28/13	1600	"		1									X				

Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:				Results Due Date:	
Eric Bergersen				☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour					
Relinquished by:	Date:	Time:	Received by:	Notes:					
Eric Bergersen	1/30/13	1300		10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date:	Time:	Received by (Laboratory):	QC Package: (Check Box Below)					
			ASR 1/31/13 0910	☒ Level II: Standard QC					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	☐ Level III: Std QC + Raw Data					
				☐ Level IV: SW846 CLP-Like					
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035				Other:					

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Chain of Custody Form

Page 2 of 3

COC ID: 72331

Houston, TX
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Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information				Project Information				Parameter/Method Request for Analysis											
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List														
Work Order		Project Number	128823	B	GRO (8015M)														
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)														
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)														
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List														
				F	Total Metals (6020/7000) RCRA 8														
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	Dissolved Metals (6020/7000) RCRA 8														
Phone	(575) 748-6733	Phone	(575) 748-6733	H	TDS														
Fax	(575) 746-5421	Fax	(575) 746-5421	I	Moisture														
e-Mail Address		e-Mail Address		J	Fingerprint (PIANO/Sp Grav, Sim Dist)														

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
59 of 61	MW 114 (19)	1/28/13	1605	Soil	---	1									X		
	MW 114 (20)	1/28/13	1610			2	R	R	R	R	R	X	R		X		
3	MW 114 (21)	1/28/13	1615			1									X		
4	MW 114 (23)	1/28/13	1615			1									X		
5	MW 114 (25)	1/28/13	1620			2	R	R	R	R	R	X	R		X		
6	MW 114 (27)	1/28/13	1625			1									X		
7	MW 114 (29)	1/28/13	1627			1									X		
8	MW 114 (30)	1/28/13	1600			2	R	R	R	R	R	X	R		X		
9	MW 114 (31)	1/28/13	1640			1									X		
10	MW 114 (33)	1/28/13	1640			1									X		

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
Eric Bergersen				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other 2 WK Days ☐ 24 Hour					
Relinquished by:	Date:	Time:	Received by:	Notes:					
Eric Bergersen	1/30/13	1300		10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
			AS-113/13 (910)			☒ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other / EOD			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):						

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 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.
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Chain of Custody Form

Page 3 of 3

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Customer Information			Project Information				Parameter/Method Request for Analysis													
Purchase Order			Project Name				A	VOC (8260) NW GW List												
Work Order			Project Number				B	GRO (8015 M)												
Company Name	Navajo Refining		Bill To Company	Navajo Refining			C	DRO (8015 M)												
Send Report To	Robert Combs		Invoice Attn.	Robert Combs			D	ORO (8015 M)												
Address	501 East Main		Address	501 East Main			E	LL SVOC (8270) NM GW List												
City/State/Zip	Artesia, NM 88211		City/State/Zip	Artesia, NM 88211			F	Total Metals (6020/7000) RCRA 8												
Phone	575-748-6733		Phone				G	Dissolved Metals (6020/7000) RCRA 8												
Fax	575-746-5421		Fax				H	TDS												
e-Mail Address			e-Mail Address				I	Moisture												
							J													
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	MW-114 (35)	1/28/13	1650	Soil	-	5	X	X	X	X	X	X	X	X	X					
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
Sampler(s): Please Print & Sign			Shipment Method:		Required Turnaround Time:				Other:				Results Due Date:							
Eric Bergersen					☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour															
Relinquished by:		Date:	Time:	Received by:		Notes:														
Eric Bergersen		1/30/13	1300	ALP		10 Day TAT, Dissolved Metal Field Filtered														
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler Temp:		QC Package: (Check Box Below)												
				1/31/13				☐ Level II: Standard QC ☐ Level III: Std QC + Raw Data ☐ Level IV: SW846 CLP-Like Other:												
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):																
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035																				

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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TRK# 8013 7025 1926
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STANDARD OVERNIGHT
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Emp# 637368 30JAN13 ROWA 515C1/DF24/6F03

	ALS Environmental
	10450 Stancliff Rd., Suite 210
	Houston, Texas 77099
	Tel. +1 281 530 5656 Fax. +1 281 530 5887

CUSTODY SEAL		Seal Broken By
Date: 1-30-2013	Time: 1250	 Date: 1/30/13
Name: Ken McElhiney		
Company: ARCADIS US		



13-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302079**

Dear Robert,

ALS Environmental received 16 samples on 02-Feb-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 50.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Sonia West".

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302079

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302079-01	MW-117 (1)	Soil		1/31/2013 08:55	2/2/2013 09:30	☐
1302079-02	MW-117 (3)	Soil		1/31/2013 09:00	2/2/2013 09:30	☐
1302079-03	MW-117 (5)	Soil		1/31/2013 09:15	2/2/2013 09:30	☐
1302079-04	MW-117 (7)	Soil		1/31/2013 10:15	2/2/2013 09:30	☐
1302079-05	MW-117 (9)	Soil		1/31/2013 10:00	2/2/2013 09:30	☐
1302079-06	MW-117 (10)	Soil		1/31/2013 10:30	2/2/2013 09:30	☐
1302079-07	MW-117 (11)	Soil		1/31/2013 15:15	2/2/2013 09:30	☐
1302079-08	MW-117 (13)	Soil		1/31/2013 15:20	2/2/2013 09:30	☐
1302079-09	MW-117 (15)	Soil		1/31/2013 15:20	2/2/2013 09:30	☐
1302079-10	MW-117 (17)	Soil		1/31/2013 15:20	2/2/2013 09:30	☐
1302079-11	MW-117 (19)	Soil		1/31/2013 15:25	2/2/2013 09:30	☐
1302079-12	MW-117 (20)	Soil		1/31/2013 15:25	2/2/2013 09:30	☐
1302079-13	MW-117 (21)	Soil		1/31/2013 15:30	2/2/2013 09:30	☐
1302079-14	MW-117 (23)	Soil		1/31/2013 15:30	2/2/2013 09:30	☐
1302079-15	MW-117 (25)	Soil		1/31/2013 15:40	2/2/2013 09:30	☐
1302079-16	Trip Blank	Water		1/31/2013	2/2/2013 09:30	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302079

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302192.

A Trip Blank sample was received but was not listed on the chain of custody. The laboratory analyzed this sample for VOC 8260.

Batch 67579, TPH DRO/ORO, Sample 1302018-01: MS/MSD is for an unrelated sample.

Batch 67584, Metals, Sample MW-117 (1): MS/MSD recoveries were outside the control limits for several analytes due to high concentration to the background sample. Results are flagged with an O as applicable. The associated LCS recoveries were within the control limits.

Batch 67584, Metals, Sample MW-117 (1): MS/MSD RPD was outside the control limits for Lead.

Batch 67584, Metals, Sample MW-117 (1): Duplicate RPD was outside the control limits for Barium and Boron.

Batch 67581, Low-Level Semivolatile Organics, Sample 1302050-06: MS/MSD is for an unrelated sample.

Batch R142091, Volatile Organics: LCS recovery was outside the control limits for 1,1,2-Trichloroethane. The associated results are Non Detect.

Batch R142091, Volatile Organics, Sample MW-117 (25): MS/MSD recoveries were outside the control limits for several analytes. The associated LCS recoveries were within the control limits.

Batch R142091, Volatile Organics, Sample MW-117 (25): MS/MSD RPD was outside the control limits for several analytes.

Batch 67697, Anions, Sample MW-117 (25): MS/MSD recoveries were outside the control limits for Sulfate. The associated LCS recoveries and MS/MSD RPD were within the control limits.

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (1)
Collection Date: 1/31/2013 08:55 AM

Work Order: 1302079
Lab ID: 1302079-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	U		0.65	4.4	mg/Kg-dry	1	2/12/2013 12:08
TPH (Diesel Range)	U		0.65	2.2	mg/Kg-dry	1	2/12/2013 12:08
Surr: 2-Fluorobiphenyl	61.0			60-135	%REC	1	2/12/2013 12:08
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW7471A / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.026	0.065	mg/Kg-dry	1	2/5/2013 19:01
Surr: 4-Bromofluorobenzene	88.8			70-130	%REC	1	2/5/2013 19:01
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	7.02		0.37	4.55	µg/Kg-dry	1	2/5/2013 17:32
METALS Method: SW6020 Prep: SW3050A / 2/5/13 Analyst: SKS							
Aluminum	15,200		25	127	mg/Kg-dry	100	2/6/2013 18:31
Arsenic	4.74		0.13	0.634	mg/Kg-dry	1	2/6/2013 17:17
Barium	182		0.10	0.634	mg/Kg-dry	1	2/6/2013 17:17
Boron	8.67		3.5	6.34	mg/Kg-dry	2	2/7/2013 15:33
Cadmium	0.374	J	0.063	0.634	mg/Kg-dry	1	2/6/2013 17:17
Calcium	83,700		1,300	6,340	mg/Kg-dry	100	2/6/2013 18:31
Chromium	15.4		0.11	0.634	mg/Kg-dry	1	2/6/2013 17:17
Cobalt	5.45		0.089	0.634	mg/Kg-dry	1	2/6/2013 17:17
Copper	9.70		0.13	0.634	mg/Kg-dry	1	2/6/2013 17:17
Iron	10,800		13	63.4	mg/Kg-dry	1	2/6/2013 17:17
Lead	11.9		0.063	0.634	mg/Kg-dry	1	2/6/2013 17:17
Manganese	410		13	63.4	mg/Kg-dry	100	2/6/2013 18:31
Molybdenum	1.01		0.19	0.634	mg/Kg-dry	1	2/6/2013 17:17
Nickel	11.4		0.11	0.634	mg/Kg-dry	1	2/6/2013 17:17
Potassium	3,310		16	63.4	mg/Kg-dry	1	2/6/2013 17:17
Selenium	0.980		0.23	0.634	mg/Kg-dry	1	2/6/2013 17:17
Silver	U		0.10	0.634	mg/Kg-dry	1	2/6/2013 17:17
Sodium	332		28	127	mg/Kg-dry	2	2/7/2013 15:33
Uranium	U		0.63	0.634	mg/Kg-dry	1	2/6/2013 17:17
Zinc	38.7		0.32	0.634	mg/Kg-dry	1	2/6/2013 17:17
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/5/13 Analyst: LG							
1-Methylnaphthalene	U		2.1	8.5	µg/Kg-dry	1	2/5/2013 20:21
2-Methylnaphthalene	U		2.1	8.5	µg/Kg-dry	1	2/5/2013 20:21
Benzo(a)pyrene	U		2.1	8.5	µg/Kg-dry	1	2/5/2013 20:21
Naphthalene	U		2.1	8.5	µg/Kg-dry	1	2/5/2013 20:21
Surr: 2,4,6-Tribromophenol	61.0			36-126	%REC	1	2/5/2013 20:21
Surr: 2-Fluorobiphenyl	76.3			43-125	%REC	1	2/5/2013 20:21

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (1)
Collection Date: 1/31/2013 08:55 AM

Work Order: 1302079
Lab ID: 1302079-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	60.2			37-125	%REC	1	2/5/2013 20:21
Surr: 4-Terphenyl-d14	99.7			32-125	%REC	1	2/5/2013 20:21
Surr: Nitrobenzene-d5	71.9			37-125	%REC	1	2/5/2013 20:21
Surr: Phenol-d6	42.2			40-125	%REC	1	2/5/2013 20:21
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.2	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,1,2,2-Tetrachloroethane	U		0.65	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,1,2-Trichloroethane	U		2.6	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,1-Dichloroethane	U		0.65	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,1-Dichloroethene	U		1.9	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,2-Dibromoethane	U		0.90	6.5	µg/Kg-dry	1	2/4/2013 14:43
1,2-Dichloroethane	U		0.77	6.5	µg/Kg-dry	1	2/4/2013 14:43
Benzene	U		0.77	6.5	µg/Kg-dry	1	2/4/2013 14:43
Carbon tetrachloride	U		1.5	6.5	µg/Kg-dry	1	2/4/2013 14:43
Chloroform	U		2.3	6.5	µg/Kg-dry	1	2/4/2013 14:43
Ethylbenzene	U		1.2	6.5	µg/Kg-dry	1	2/4/2013 14:43
Methylene chloride	8.6	J	3.2	13	µg/Kg-dry	1	2/4/2013 14:43
Tetrachloroethene	U		1.3	6.5	µg/Kg-dry	1	2/4/2013 14:43
Toluene	U		0.90	6.5	µg/Kg-dry	1	2/4/2013 14:43
Trichloroethene	U		2.1	6.5	µg/Kg-dry	1	2/4/2013 14:43
Vinyl chloride	U		1.3	2.6	µg/Kg-dry	1	2/4/2013 14:43
Xylenes, Total	U		3.4	19	µg/Kg-dry	1	2/4/2013 14:43
Surr: 1,2-Dichloroethane-d4	81.8			70-128	%REC	1	2/4/2013 14:43
Surr: 4-Bromofluorobenzene	93.4			73-126	%REC	1	2/4/2013 14:43
Surr: Dibromofluoromethane	97.7			71-128	%REC	1	2/4/2013 14:43
Surr: Toluene-d8	96.6			73-127	%REC	1	2/4/2013 14:43
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/7/13	
Chloride	81.1		2.6	6.38	mg/Kg-dry	1	2/7/2013 22:37
Fluoride	15.4		0.38	1.28	mg/Kg-dry	1	2/7/2013 22:37
Nitrogen, Nitrate (As N)	0.804	J	0.38	1.28	mg/Kg-dry	1	2/7/2013 22:37
Nitrogen, Nitrite (As N)	U		0.38	1.28	mg/Kg-dry	1	2/7/2013 22:37
Sulfate	777		2.6	6.38	mg/Kg-dry	1	2/7/2013 22:37
Surr: Selenate (surr)	93.6			85-115	%REC	1	2/7/2013 22:37
CYANIDE			Method: SW9014			Prep: SW9010C / 2/8/13	
Cyanide	U		0.75	2.52	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	22.5		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (3)
Collection Date: 1/31/2013 09:00 AM

Work Order: 1302079
Lab ID: 1302079-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.7		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (5)
Collection Date: 1/31/2013 09:15 AM

Work Order: 1302079
Lab ID: 1302079-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	U		0.34	4.17	µg/Kg-dry	1	2/5/2013 17:34
METALS		Method: SW6020		Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	5,020		24	119	mg/Kg-dry	100	2/7/2013 16:20
Arsenic	1.40		0.12	0.593	mg/Kg-dry	1	2/6/2013 17:32
Barium	62.2		0.095	0.593	mg/Kg-dry	1	2/6/2013 17:32
Boron	7.89		3.3	5.93	mg/Kg-dry	2	2/7/2013 15:52
Cadmium	0.133	J	0.059	0.593	mg/Kg-dry	1	2/6/2013 17:32
Calcium	151,000		1,200	5,930	mg/Kg-dry	100	2/7/2013 16:20
Chromium	7.26		0.11	0.593	mg/Kg-dry	1	2/6/2013 17:32
Cobalt	1.54		0.083	0.593	mg/Kg-dry	1	2/6/2013 17:32
Copper	2.51		0.12	0.593	mg/Kg-dry	1	2/6/2013 17:32
Iron	3,570		12	59.3	mg/Kg-dry	1	2/6/2013 17:32
Lead	2.90		0.059	0.593	mg/Kg-dry	1	2/6/2013 17:32
Manganese	105		0.12	0.593	mg/Kg-dry	1	2/6/2013 17:32
Molybdenum	0.457	J	0.18	0.593	mg/Kg-dry	1	2/6/2013 17:32
Nickel	3.48		0.11	0.593	mg/Kg-dry	1	2/6/2013 17:32
Potassium	1,110		15	59.3	mg/Kg-dry	1	2/6/2013 17:32
Selenium	0.415	J	0.21	0.593	mg/Kg-dry	1	2/6/2013 17:32
Silver	U		0.095	0.593	mg/Kg-dry	1	2/6/2013 17:32
Sodium	164		26	119	mg/Kg-dry	2	2/7/2013 15:52
Uranium	U		0.59	0.593	mg/Kg-dry	1	2/6/2013 17:32
Zinc	11.6		0.30	0.593	mg/Kg-dry	1	2/6/2013 17:32
ANIONS - EPA 300.0 (1993)		Method: E300		Prep: E300 / 2/7/13		Analyst: JKP	
Chloride	37.5		2.4	6.07	mg/Kg-dry	1	2/7/2013 22:51
Fluoride	8.01		0.36	1.21	mg/Kg-dry	1	2/7/2013 22:51
Nitrogen, Nitrate (As N)	U		0.36	1.21	mg/Kg-dry	1	2/7/2013 22:51
Nitrogen, Nitrite (As N)	U		0.36	1.21	mg/Kg-dry	1	2/7/2013 22:51
Sulfate	3,960		24	60.7	mg/Kg-dry	10	2/8/2013 11:41
Surr: Selenate (surr)	87.8			85-115	%REC	1	2/7/2013 22:51
Surr: Selenate (surr)	89.4			85-115	%REC	10	2/8/2013 11:41
CYANIDE		Method: SW9014		Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.66	2.20	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Method: SW3550				Analyst: KAH	
Percent Moisture	19.0		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (7)
Collection Date: 1/31/2013 10:15 AM

Work Order: 1302079
Lab ID: 1302079-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.7		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (9)
Collection Date: 1/31/2013 10:00 AM

Work Order: 1302079
Lab ID: 1302079-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	21.3		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (10)
Collection Date: 1/31/2013 10:30 AM

Work Order: 1302079
Lab ID: 1302079-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	2.01	J	0.39	4.76	µg/Kg-dry	1	2/5/2013 17:36
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	6,140		27	133	mg/Kg-dry	100	2/7/2013 16:23
Arsenic	2.48		0.13	0.665	mg/Kg-dry	1	2/6/2013 17:34
Barium	49.2		0.11	0.665	mg/Kg-dry	1	2/6/2013 17:34
Boron	5.92	J	3.7	6.65	mg/Kg-dry	2	2/7/2013 15:54
Cadmium	0.195	J	0.067	0.665	mg/Kg-dry	1	2/6/2013 17:34
Calcium	119,000		1,300	6,650	mg/Kg-dry	100	2/7/2013 16:23
Chromium	8.28		0.12	0.665	mg/Kg-dry	1	2/6/2013 17:34
Cobalt	2.23		0.093	0.665	mg/Kg-dry	1	2/6/2013 17:34
Copper	2.09		0.13	0.665	mg/Kg-dry	1	2/6/2013 17:34
Iron	5,340		13	66.5	mg/Kg-dry	1	2/6/2013 17:34
Lead	4.46		0.067	0.665	mg/Kg-dry	1	2/6/2013 17:34
Manganese	69.2		0.13	0.665	mg/Kg-dry	1	2/6/2013 17:34
Molybdenum	0.276	J	0.20	0.665	mg/Kg-dry	1	2/6/2013 17:34
Nickel	3.85		0.12	0.665	mg/Kg-dry	1	2/6/2013 17:34
Potassium	1,310		17	66.5	mg/Kg-dry	1	2/6/2013 17:34
Selenium	0.422	J	0.24	0.665	mg/Kg-dry	1	2/6/2013 17:34
Silver	U		0.11	0.665	mg/Kg-dry	1	2/6/2013 17:34
Sodium	119	J	29	133	mg/Kg-dry	2	2/7/2013 15:54
Uranium	U		0.67	0.665	mg/Kg-dry	1	2/6/2013 17:34
Zinc	12.2		0.33	0.665	mg/Kg-dry	1	2/6/2013 17:34
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/7/13		Analyst: JKP	
Chloride	28.7		2.7	6.76	mg/Kg-dry	1	2/7/2013 23:06
Fluoride	6.49		0.41	1.35	mg/Kg-dry	1	2/7/2013 23:06
Nitrogen, Nitrate (As N)	U		0.41	1.35	mg/Kg-dry	1	2/7/2013 23:06
Nitrogen, Nitrite (As N)	U		0.41	1.35	mg/Kg-dry	1	2/7/2013 23:06
Sulfate	1,790		27	67.6	mg/Kg-dry	10	2/8/2013 11:56
Surr: Selenate (surr)	90.5			85-115	%REC	1	2/7/2013 23:06
Surr: Selenate (surr)	86.6			85-115	%REC	10	2/8/2013 11:56
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.76	2.53	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	26.4		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (11)
Collection Date: 1/31/2013 03:15 PM

Work Order: 1302079
Lab ID: 1302079-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	36.2		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (13)
Collection Date: 1/31/2013 03:20 PM

Work Order: 1302079
Lab ID: 1302079-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	33.6		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (15)
Collection Date: 1/31/2013 03:20 PM

Work Order: 1302079
Lab ID: 1302079-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	1.10	J	0.37	4.58	µg/Kg-dry	1	2/5/2013 17:38
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	5,400		24	121	mg/Kg-dry	100	2/7/2013 16:25
Arsenic	7.29		0.12	0.607	mg/Kg-dry	1	2/6/2013 17:41
Barium	8.33		0.097	0.607	mg/Kg-dry	1	2/6/2013 17:41
Boron	2.96	J	1.7	3.03	mg/Kg-dry	1	2/7/2013 15:57
Cadmium	U		0.061	0.607	mg/Kg-dry	1	2/6/2013 17:41
Calcium	26,700		1,200	6,070	mg/Kg-dry	100	2/7/2013 16:25
Chromium	6.81		0.11	0.607	mg/Kg-dry	1	2/6/2013 17:41
Cobalt	3.54		0.085	0.607	mg/Kg-dry	1	2/6/2013 17:41
Copper	2.20		0.12	0.607	mg/Kg-dry	1	2/6/2013 17:41
Iron	8,050		12	60.7	mg/Kg-dry	1	2/6/2013 17:41
Lead	3.04		0.061	0.607	mg/Kg-dry	1	2/6/2013 17:41
Manganese	91.0		0.12	0.607	mg/Kg-dry	1	2/6/2013 17:41
Molybdenum	0.606	J	0.18	0.607	mg/Kg-dry	1	2/6/2013 17:41
Nickel	5.09		0.11	0.607	mg/Kg-dry	1	2/6/2013 17:41
Potassium	1,230		16	60.7	mg/Kg-dry	1	2/6/2013 17:41
Selenium	U		0.22	0.607	mg/Kg-dry	1	2/6/2013 17:41
Silver	U		0.097	0.607	mg/Kg-dry	1	2/6/2013 17:41
Sodium	154		13	60.7	mg/Kg-dry	1	2/6/2013 17:41
Uranium	U		0.61	0.607	mg/Kg-dry	1	2/6/2013 17:41
Zinc	10.1		0.30	0.607	mg/Kg-dry	1	2/6/2013 17:41
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/7/13		Analyst: JKP	
Chloride	33.5		2.6	6.54	mg/Kg-dry	1	2/7/2013 23:20
Fluoride	5.93		0.39	1.31	mg/Kg-dry	1	2/7/2013 23:20
Nitrogen, Nitrate (As N)	U		0.39	1.31	mg/Kg-dry	1	2/7/2013 23:20
Nitrogen, Nitrite (As N)	U		0.39	1.31	mg/Kg-dry	1	2/7/2013 23:20
Sulfate	2,100		26	65.4	mg/Kg-dry	10	2/8/2013 12:10
Surr: Selenate (surr)	88.1			85-115	%REC	1	2/7/2013 23:20
Surr: Selenate (surr)	91.0			85-115	%REC	10	2/8/2013 12:10
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.76	2.53	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	23.9		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (17)
Collection Date: 1/31/2013 03:20 PM

Work Order: 1302079
Lab ID: 1302079-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	18.9		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (19)
Collection Date: 1/31/2013 03:25 PM

Work Order: 1302079
Lab ID: 1302079-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	25.0		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (20)
Collection Date: 1/31/2013 03:25 PM

Work Order: 1302079
Lab ID: 1302079-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	3.30	J	0.36	4.45	µg/Kg-dry	1	2/5/2013 17:40
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	11,200		24	121	mg/Kg-dry	100	2/7/2013 16:28
Arsenic	1.12		0.12	0.603	mg/Kg-dry	1	2/6/2013 17:44
Barium	23.2		0.096	0.603	mg/Kg-dry	1	2/6/2013 17:44
Boron	2.45	J	1.7	3.01	mg/Kg-dry	1	2/7/2013 15:59
Cadmium	0.234	J	0.060	0.603	mg/Kg-dry	1	2/6/2013 17:44
Calcium	95,400		1,200	6,030	mg/Kg-dry	100	2/7/2013 16:28
Chromium	11.9		0.11	0.603	mg/Kg-dry	1	2/6/2013 17:44
Cobalt	3.43		0.084	0.603	mg/Kg-dry	1	2/6/2013 17:44
Copper	4.44		0.12	0.603	mg/Kg-dry	1	2/6/2013 17:44
Iron	6,600		12	60.3	mg/Kg-dry	1	2/6/2013 17:44
Lead	7.99		0.060	0.603	mg/Kg-dry	1	2/6/2013 17:44
Manganese	72.0		0.12	0.603	mg/Kg-dry	1	2/6/2013 17:44
Molybdenum	U		0.18	0.603	mg/Kg-dry	1	2/6/2013 17:44
Nickel	6.31		0.11	0.603	mg/Kg-dry	1	2/6/2013 17:44
Potassium	1,760		16	60.3	mg/Kg-dry	1	2/6/2013 17:44
Selenium	0.699		0.22	0.603	mg/Kg-dry	1	2/6/2013 17:44
Silver	U		0.096	0.603	mg/Kg-dry	1	2/6/2013 17:44
Sodium	208		13	60.3	mg/Kg-dry	1	2/6/2013 17:44
Uranium	U		0.60	0.603	mg/Kg-dry	1	2/6/2013 17:44
Zinc	22.0		0.30	0.603	mg/Kg-dry	1	2/6/2013 17:44
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/7/13		Analyst: JKP	
Chloride	24.4		2.5	6.29	mg/Kg-dry	1	2/7/2013 23:35
Fluoride	5.11		0.38	1.26	mg/Kg-dry	1	2/7/2013 23:35
Nitrogen, Nitrate (As N)	0.415	J	0.38	1.26	mg/Kg-dry	1	2/7/2013 23:35
Nitrogen, Nitrite (As N)	U		0.38	1.26	mg/Kg-dry	1	2/7/2013 23:35
Sulfate	349		2.5	6.29	mg/Kg-dry	1	2/7/2013 23:35
Surr: Selenate (surr)	92.5			85-115	%REC	1	2/7/2013 23:35
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.73	2.45	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	20.7		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (21)
Collection Date: 1/31/2013 03:30 PM

Work Order: 1302079
Lab ID: 1302079-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	21.5		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (23)
Collection Date: 1/31/2013 03:30 PM

Work Order: 1302079
Lab ID: 1302079-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.4		0.010	0.0100	wt%	1	2/6/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (25)
Collection Date: 1/31/2013 03:40 PM

Work Order: 1302079
Lab ID: 1302079-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	U		0.63	4.3	mg/Kg-dry	1	2/11/2013 18:56
TPH (Diesel Range)	U		0.63	2.1	mg/Kg-dry	1	2/11/2013 18:56
Surr: 2-Fluorobiphenyl	60.3			60-135	%REC	1	2/11/2013 18:56
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW7471A / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.025	0.063	mg/Kg-dry	1	2/5/2013 19:20
Surr: 4-Bromofluorobenzene	89.6			70-130	%REC	1	2/5/2013 19:20
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	U		0.36	4.40	µg/Kg-dry	1	2/5/2013 17:42
METALS Method: SW6020 Prep: SW3050A / 2/5/13 Analyst: SKS							
Aluminum	8,180		25	126	mg/Kg-dry	100	2/7/2013 16:30
Arsenic	0.526	J	0.13	0.631	mg/Kg-dry	1	2/6/2013 17:46
Barium	6.58		0.10	0.631	mg/Kg-dry	1	2/6/2013 17:46
Boron	U		1.8	3.16	mg/Kg-dry	1	2/7/2013 16:02
Cadmium	U		0.063	0.631	mg/Kg-dry	1	2/6/2013 17:46
Calcium	2,810		13	63.1	mg/Kg-dry	1	2/6/2013 17:46
Chromium	7.67		0.11	0.631	mg/Kg-dry	1	2/6/2013 17:46
Cobalt	2.05		0.088	0.631	mg/Kg-dry	1	2/6/2013 17:46
Copper	3.35		0.13	0.631	mg/Kg-dry	1	2/6/2013 17:46
Iron	4,590		13	63.1	mg/Kg-dry	1	2/6/2013 17:46
Lead	4.74		0.063	0.631	mg/Kg-dry	1	2/6/2013 17:46
Manganese	37.5		0.13	0.631	mg/Kg-dry	1	2/6/2013 17:46
Molybdenum	U		0.19	0.631	mg/Kg-dry	1	2/6/2013 17:46
Nickel	4.40		0.11	0.631	mg/Kg-dry	1	2/6/2013 17:46
Potassium	1,490		16	63.1	mg/Kg-dry	1	2/6/2013 17:46
Selenium	U		0.23	0.631	mg/Kg-dry	1	2/6/2013 17:46
Silver	U		0.10	0.631	mg/Kg-dry	1	2/6/2013 17:46
Sodium	153		14	63.1	mg/Kg-dry	1	2/6/2013 17:46
Uranium	U		0.63	0.631	mg/Kg-dry	1	2/6/2013 17:46
Zinc	14.5		0.32	0.631	mg/Kg-dry	1	2/6/2013 17:46
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/5/13 Analyst: LG							
1-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/5/2013 20:42
2-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/5/2013 20:42
Benzo(a)pyrene	U		2.0	8.3	µg/Kg-dry	1	2/5/2013 20:42
Naphthalene	U		2.0	8.3	µg/Kg-dry	1	2/5/2013 20:42
Surr: 2,4,6-Tribromophenol	65.6			36-126	%REC	1	2/5/2013 20:42
Surr: 2-Fluorobiphenyl	81.0			43-125	%REC	1	2/5/2013 20:42

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (25)
Collection Date: 1/31/2013 03:40 PM

Work Order: 1302079
Lab ID: 1302079-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	60.0			37-125	%REC	1	2/5/2013 20:42
Surr: 4-Terphenyl-d14	95.7			32-125	%REC	1	2/5/2013 20:42
Surr: Nitrobenzene-d5	71.1			37-125	%REC	1	2/5/2013 20:42
Surr: Phenol-d6	58.7			40-125	%REC	1	2/5/2013 20:42
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.2	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,1,2,2-Tetrachloroethane	U		0.63	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,1,2-Trichloroethane	U		2.5	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,1-Dichloroethane	U		0.63	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,1-Dichloroethene	U		1.9	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,2-Dibromoethane	U		0.89	6.3	µg/Kg-dry	1	2/4/2013 15:05
1,2-Dichloroethane	U		0.76	6.3	µg/Kg-dry	1	2/4/2013 15:05
Benzene	U		0.76	6.3	µg/Kg-dry	1	2/4/2013 15:05
Carbon tetrachloride	U		1.5	6.3	µg/Kg-dry	1	2/4/2013 15:05
Chloroform	U		2.3	6.3	µg/Kg-dry	1	2/4/2013 15:05
Ethylbenzene	U		1.1	6.3	µg/Kg-dry	1	2/4/2013 15:05
Methylene chloride	6.9	J	3.2	13	µg/Kg-dry	1	2/4/2013 15:05
Tetrachloroethene	U		1.3	6.3	µg/Kg-dry	1	2/4/2013 15:05
Toluene	U		0.89	6.3	µg/Kg-dry	1	2/4/2013 15:05
Trichloroethene	U		2.0	6.3	µg/Kg-dry	1	2/4/2013 15:05
Vinyl chloride	U		1.3	2.5	µg/Kg-dry	1	2/4/2013 15:05
Xylenes, Total	U		3.3	19	µg/Kg-dry	1	2/4/2013 15:05
Surr: 1,2-Dichloroethane-d4	103			70-128	%REC	1	2/4/2013 15:05
Surr: 4-Bromofluorobenzene	103			73-126	%REC	1	2/4/2013 15:05
Surr: Dibromofluoromethane	93.0			71-128	%REC	1	2/4/2013 15:05
Surr: Toluene-d8	104			73-127	%REC	1	2/4/2013 15:05
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/7/13	
Chloride	26.3		2.5	6.29	mg/Kg-dry	1	2/7/2013 23:50
Fluoride	5.18		0.38	1.26	mg/Kg-dry	1	2/7/2013 23:50
Nitrogen, Nitrate (As N)	0.566	J	0.38	1.26	mg/Kg-dry	1	2/7/2013 23:50
Nitrogen, Nitrite (As N)	U		0.38	1.26	mg/Kg-dry	1	2/7/2013 23:50
Sulfate	396		2.5	6.29	mg/Kg-dry	1	2/7/2013 23:50
Surr: Selenate (surr)	92.0			85-115	%REC	1	2/7/2013 23:50
CYANIDE			Method: SW9014			Prep: SW9010C / 2/8/13	
Cyanide	U		0.67	2.23	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	21.0		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: Trip Blank
Collection Date: 1/31/2013

Work Order: 1302079
Lab ID: 1302079-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/5/2013 15:16
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/5/2013 15:16
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Benzene	U		0.00020	0.0010	mg/L	1	2/5/2013 15:16
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Chloroform	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/5/2013 15:16
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/5/2013 15:16
Toluene	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/5/2013 15:16
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/5/2013 15:16
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/5/2013 15:16
Surr: 1,2-Dichloroethane-d4	92.8			71-125	%REC	1	2/5/2013 15:16
Surr: 4-Bromofluorobenzene	94.3			70-125	%REC	1	2/5/2013 15:16
Surr: Dibromofluoromethane	101			74-125	%REC	1	2/5/2013 15:16
Surr: Toluene-d8	97.0			78-123	%REC	1	2/5/2013 15:16

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67579** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 11:56 AM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104153		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.092	0.10	3.33	0	62.8	60-135	0			

LCS	Sample ID: FLCSS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 12:19 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104154		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	27.05	3.4	33.33	0	81.2	70-130	0			
TPH (Diesel Range)	35.72	1.7	33.33	0	107	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.536	0.10	3.33	0	76.2	60-135	0			

MS	Sample ID: 1302018-01BMS				Units: mg/Kg		Analysis Date: 2/6/2013 01:06 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104156		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEO
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
<i>Surr: 2-Fluorobiphenyl</i>	2.284	0.10	3.32	0	68.8	60-135	0			

MSD	Sample ID: 1302018-01BMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:29 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104157		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEO
TPH (Diesel Range)	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
<i>Surr: 2-Fluorobiphenyl</i>	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

The following samples were analyzed in this batch:

1302079-01D	1302079-15D

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

QC Page: 1 of 24

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142225** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 01:02 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103619		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
Surr: 4-Bromofluorobenzene	0.08374	0.0050	0.1	0	83.7	70-130	0			

LCS	Sample ID: GLCSS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:25 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103613		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.942	0.050	1	0	94.2	70-130	0			
Surr: 4-Bromofluorobenzene	0.09701	0.0050	0.1	0	97	70-130	0			

LCSD	Sample ID: GLCSDS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:44 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103616		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9525	0.050	1	0	95.2	70-130	0.942	1.11	30	
Surr: 4-Bromofluorobenzene	0.09686	0.0050	0.1	0	96.9	70-130	0.09701	0.146	30	

MS	Sample ID: 1302018-04ZMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103628		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8005	0.050	1	0	80	70-130	0			
Surr: 4-Bromofluorobenzene	0.08728	0.0050	0.1	0	87.3	70-130	0			

MSD	Sample ID: 1302018-04ZMSD				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103632		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8125	0.050	1	0	81.2	70-130	0.8005	1.49	30	
Surr: 4-Bromofluorobenzene	0.08872	0.0050	0.1	0	88.7	70-130	0.08728	1.64	30	

The following samples were analyzed in this batch:

1302079-01B 1302079-15B

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020513-67584** Units: **mg/Kg** Analysis Date: **2/8/2013 12:22 PM**

Client ID: Run ID: **ICPMS05_130208A** SeqNo: **3106572** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	1.0								
Arsenic	U	0.50								
Barium	U	0.50								
Boron	U	2.5								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Sodium	U	50								
Uranium	U	0.50								
Zinc	U	0.50								

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

LCS Sample ID: **MLCSS1-020513-67584** Units: **mg/Kg** Analysis Date: **2/6/2013 05:15 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3104261** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	11.63	1.0	10	0	116	80-120	0			
Arsenic	10.09	0.50	10	0	101	80-120	0			
Barium	10.49	0.50	10	0	105	80-120	0			
Boron	55.62	2.5	50	0	111	80-120	0			
Cadmium	10.17	0.50	10	0	102	80-120	0			
Calcium	1031	50	1000	0	103	80-120	0			
Chromium	10.57	0.50	10	0	106	80-120	0			
Cobalt	10.08	0.50	10	0	101	80-120	0			
Copper	10.5	0.50	10	0	105	80-120	0			
Iron	1021	50	1000	0	102	80-120	0			
Lead	10.22	0.50	10	0	102	80-120	0			
Manganese	10.18	0.50	10	0	102	80-120	0			
Molybdenum	10.14	0.50	10	0	101	80-120	0			
Nickel	10.22	0.50	10	0	102	80-120	0			
Potassium	1020	50	1000	0	102	80-120	0			
Selenium	10.63	0.50	10	0	106	80-120	0			
Silver	10.11	0.50	10	0	101	80-120	0			
Sodium	1065	50	1000	0	106	80-120	0			
Uranium	9.751	0.50	10	0	97.5	80-120	0			
Zinc	10.48	0.50	10	0	105	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MS Sample ID: **1302079-01CMS** Units: **mg/Kg** Analysis Date: **2/6/2013 05:22 PM**
 Client ID: **MW-117 (1)** Run ID: **ICPMS05_130206A** SeqNo: **3104264** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	10850	0.95	9.479	10650	2130	75-125	0			SEO
Arsenic	11.05	0.47	9.479	3.675	77.8	75-125	0			
Barium	119.3	0.47	9.479	140.7	-226	75-125	0			SO
Cadmium	8.126	0.47	9.479	0.2899	82.7	75-125	0			
Calcium	58010	47	947.9	63280	-555	75-125	0			SEO
Chromium	19.97	0.47	9.479	11.93	84.9	75-125	0			
Cobalt	12.3	0.47	9.479	4.223	85.2	75-125	0			
Copper	16.19	0.47	9.479	7.518	91.5	75-125	0			
Iron	8984	47	947.9	8371	64.7	75-125	0			SO
Lead	22.47	0.47	9.479	9.213	140	75-125	0			S
Manganese	313.3	0.47	9.479	323.3	-106	75-125	0			SEO
Molybdenum	7.01	0.47	9.479	0.782	65.7	75-125	0			S
Nickel	16.57	0.47	9.479	8.837	81.6	75-125	0			
Potassium	3413	47	947.9	2567	89.3	75-125	0			
Selenium	8.236	0.47	9.479	0.7589	78.9	75-125	0			
Silver	7.989	0.47	9.479	0.04949	83.8	75-125	0			
Uranium	8.144	0.47	9.479	0.4497	81.2	75-125	0			
Zinc	39.14	0.47	9.479	30	96.4	75-125	0			

MS Sample ID: **1302079-01CMS** Units: **mg/Kg** Analysis Date: **2/7/2013 03:38 PM**
 Client ID: **MW-117 (1)** Run ID: **ICPMS05_130207A** SeqNo: **3105768** Prep Date: **2/5/2013** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	44.25	4.7	47.39	6.718	79.2	75-125	0			
Sodium	1077	95	947.9	257.4	86.4	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 1302079-01CMSD				Units: mg/Kg		Analysis Date: 2/6/2013 05:25 PM		
Client ID: MW-117 (1)		Run ID: ICPMS05_130206A				SeqNo: 3104265		Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	12260	0.94	9.414	10650	17200	75-125	10850	12.2	25	SEO
Arsenic	11.58	0.47	9.414	3.675	84	75-125	11.05	4.7	25	
Barium	137.2	0.47	9.414	140.7	-36.9	75-125	119.3	14	25	SO
Cadmium	8.231	0.47	9.414	0.2899	84.4	75-125	8.126	1.29	25	
Calcium	69590	47	941.4	63280	670	75-125	58010	18.1	25	SEO
Chromium	21.3	0.47	9.414	11.93	99.5	75-125	19.97	6.43	25	
Cobalt	12.66	0.47	9.414	4.223	89.6	75-125	12.3	2.86	25	
Copper	15.66	0.47	9.414	7.518	86.5	75-125	16.19	3.36	25	
Iron	9940	47	941.4	8371	167	75-125	8984	10.1	25	SO
Lead	15.81	0.47	9.414	9.213	70.1	75-125	22.47	34.8	25	SR
Manganese	389.5	0.47	9.414	323.3	703	75-125	313.3	21.7	25	SEO
Molybdenum	7.48	0.47	9.414	0.782	71.2	75-125	7.01	6.49	25	S
Nickel	17.56	0.47	9.414	8.837	92.6	75-125	16.57	5.76	25	
Potassium	3553	47	941.4	2567	105	75-125	3413	4	25	
Selenium	8.862	0.47	9.414	0.7589	86.1	75-125	8.236	7.33	25	
Silver	8.142	0.47	9.414	0.04949	86	75-125	7.989	1.89	25	
Uranium	8.356	0.47	9.414	0.4497	84	75-125	8.144	2.57	25	
Zinc	39.15	0.47	9.414	30	97.2	75-125	39.14	0.0385	25	

MSD		Sample ID: 1302079-01CMSD				Units: mg/Kg		Analysis Date: 2/7/2013 03:40 PM		
Client ID: MW-117 (1)		Run ID: ICPMS05_130207A				SeqNo: 3105769		Prep Date: 2/5/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	42.5	4.7	47.07	6.718	76	75-125	44.25	4.05	25	
Sodium	1054	94	941.4	257.4	84.7	75-125	1077	2.08	25	

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

DUP				Sample ID: 1302079-01CDUP		Units: mg/Kg		Analysis Date: 2/6/2013 05:20 PM			
Client ID: MW-117 (1)				Run ID: ICPMS05_130206A		SeqNo: 3104263		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	3.417	0.48	0	0	0	0-0	3.675	7.25	25		
Barium	104.4	0.48	0	0	0	0-0	140.7	29.6	25	R	
Cadmium	0.2602	0.48	0	0	0	0-0	0.2899	0	25	J	
Chromium	11.21	0.48	0	0	0	0-0	11.93	6.26	25		
Cobalt	4.016	0.48	0	0	0	0-0	4.223	5.03	25		
Copper	7.396	0.48	0	0	0	0-0	7.518	1.64	25		
Iron	7861	48	0	0	0	0-0	8371	6.29	25		
Lead	8.881	0.48	0	0	0	0-0	9.213	3.66	25		
Molybdenum	0.6964	0.48	0	0	0	0-0	0.782	11.6	25		
Nickel	8.596	0.48	0	0	0	0-0	8.837	2.76	25		
Potassium	2446	48	0	0	0	0-0	2567	4.83	25		
Selenium	0.8408	0.48	0	0	0	0-0	0.7589	10.2	25		
Silver	U	0.48	0	0	0	0-0	0.04949	0	25		
Uranium	U	0.48	0	0	0		0.4497	0	25		
Zinc	27.76	0.48	0	0	0	0-0	30	7.75	25		

DUP				Sample ID: 1302079-01CDUP			Units: mg/Kg		Analysis Date: 2/6/2013 06:38 PM		
Client ID: MW-117 (1)				Run ID: ICPMS05_130206A			SeqNo: 3104419		Prep Date: 2/5/2013		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Aluminum	9534	96	0	0	0	0-0	11780	21.1	25		
Calcium	58170	4,800	0	0	0	0-0	64880	10.9	25		
Manganese	291.2	48	0	0	0	0-0	317.5	8.63	25		

DUP				Sample ID: 1302079-01CDUP			Units: mg/Kg		Analysis Date: 2/7/2013 03:35 PM		
Client ID: MW-117 (1)				Run ID: ICPMS05_130207A			SeqNo: 3105767		Prep Date: 2/5/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Boron	5.198	4.8	0	0	0	0-0	6.718	25.5	25	R	
Sodium	236.7	96	0	0	0	0-0	257.4	8.37	25		

The following samples were analyzed in this batch:

1302079-01C	1302079-03A	1302079-06A
1302079-09A	1302079-12A	1302079-15C

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67586** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS2-020513-67586				Units: µg/Kg			Analysis Date: 2/5/2013 05:08 PM		
Client ID:	Run ID: HG02_130205A				SeqNo: 3102385			Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS2-020513-67586				Units: µg/Kg			Analysis Date: 2/5/2013 05:10 PM		
Client ID:	Run ID: HG02_130205A				SeqNo: 3102386			Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	342.7	3.3	333.3	0	103	85-115	0			

MS	Sample ID: 1302097-02AMS				Units: µg/Kg			Analysis Date: 2/5/2013 05:16 PM		
Client ID:	Run ID: HG02_130205A				SeqNo: 3102389			Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	318.7	3.4	344.1	2.743	91.8	85-115	0			

MSD	Sample ID: 1302097-02AMSD				Units: µg/Kg			Analysis Date: 2/5/2013 05:18 PM		
Client ID:	Run ID: HG02_130205A				SeqNo: 3102390			Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	311.1	3.4	336.7	2.743	91.6	85-115	318.7	2.39	20	

DUP	Sample ID: 1302097-02ADUP				Units: µg/Kg			Analysis Date: 2/5/2013 05:14 PM		
Client ID:	Run ID: HG02_130205A				SeqNo: 3102388			Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	3.425	3.5	0	0	0		2.743	0	20	J

The following samples were analyzed in this batch:

1302079-01C	1302079-03A	1302079-06A
1302079-09A	1302079-12A	1302079-15C

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67581** Instrument ID **SV-4** Method: **SW8270**

MBLK Sample ID: **SBLKS1-130205-67581** Units: **µg/Kg** Analysis Date: **2/5/2013 01:55 PM**

Client ID: Run ID: **SV-4_130205B** SeqNo: **3102442** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
<i>Surr: 2,4,6-Tribromophenol</i>	115.2	6.6	166.7	0	69.1	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	135.8	6.6	166.7	0	81.5	43-125	0			
<i>Surr: 2-Fluorophenol</i>	116.8	6.6	166.7	0	70.1	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	161.5	6.6	166.7	0	96.9	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	129.6	6.6	166.7	0	77.7	37-125	0			
<i>Surr: Phenol-d6</i>	120.6	6.6	166.7	0	72.4	40-125	0			

LCS Sample ID: **SLCSS1-130205-67581** Units: **µg/Kg** Analysis Date: **2/5/2013 02:15 PM**

Client ID: Run ID: **SV-4_130205B** SeqNo: **3102443** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	152.5	6.6	166.7	0	91.5	50-120	0			
2-Methylnaphthalene	153.8	6.6	166.7	0	92.3	50-120	0			
Benzo(a)pyrene	136.8	6.6	166.7	0	82.1	50-130	0			
Naphthalene	149.2	6.6	166.7	0	89.5	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	142.1	6.6	166.7	0	85.3	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	150.5	6.6	166.7	0	90.3	43-125	0			
<i>Surr: 2-Fluorophenol</i>	117.9	6.6	166.7	0	70.8	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	170.9	6.6	166.7	0	103	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	136.3	6.6	166.7	0	81.8	37-125	0			
<i>Surr: Phenol-d6</i>	120.3	6.6	166.7	0	72.2	40-125	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67581** Instrument ID **SV-4** Method: **SW8270**

MS		Sample ID: 1302050-06CMS				Units: µg/Kg		Analysis Date: 2/5/2013 05:39 PM		
Client ID:		Run ID: SV-4_130205B				SeqNo: 3102445		Prep Date: 2/5/2013		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4344	66	166.3	1316	1820	50-120	0			SEO
2-Methylnaphthalene	5004	66	166.3	1528	2090	50-120	0			SEO
Benzo(a)pyrene	123.5	66	166.3	2.558	72.8	50-130	0			
Naphthalene	147.1	66	166.3	0	88.5	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	102.1	66	166.3	0	61.4	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	176.2	66	166.3	0	106	43-125	0			
<i>Surr: 2-Fluorophenol</i>	89.44	66	166.3	0	53.8	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	126.1	66	166.3	0	75.9	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	131.6	66	166.3	0	79.1	37-125	0			
<i>Surr: Phenol-d6</i>	101.7	66	166.3	0	61.2	40-125	0			

MSD		Sample ID: 1302050-06CMSD				Units: µg/Kg		Analysis Date: 2/5/2013 05:59 PM		
Client ID:		Run ID: SV-4_130205B				SeqNo: 3102446		Prep Date: 2/5/2013		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4603	66	166.2	1316	1980	50-120	4344	5.78	30	SEO
2-Methylnaphthalene	5426	66	166.2	1528	2350	50-120	5004	8.09	30	SEO
Benzo(a)pyrene	104.2	66	166.2	2.558	61.2	50-130	123.5	17	30	
Naphthalene	181.7	66	166.2	0	109	50-125	147.1	21.1	30	
<i>Surr: 2,4,6-Tribromophenol</i>	113	66	166.2	0	68	36-126	102.1	10.1	30	
<i>Surr: 2-Fluorobiphenyl</i>	171.2	66	166.2	0	103	43-125	176.2	2.92	30	
<i>Surr: 2-Fluorophenol</i>	87.26	66	166.2	0	52.5	37-125	89.44	2.47	30	
<i>Surr: 4-Terphenyl-d14</i>	171.5	66	166.2	0	103	32-125	126.1	30.5	30	R
<i>Surr: Nitrobenzene-d5</i>	141.5	66	166.2	0	85.1	37-125	131.6	7.27	30	
<i>Surr: Phenol-d6</i>	121.6	66	166.2	0	73.2	40-125	101.7	17.8	30	

The following samples were analyzed in this batch:

1302079-01D 1302079-15D

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020413-R142091** Units: **µg/Kg** Analysis Date: **2/4/2013 02:20 PM**

Client ID: Run ID: **VOA5_130204A** SeqNo: **3101239** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	43.64	0	50	0	87.3	70-128	0			
Surr: 4-Bromofluorobenzene	46.3	0	50	0	92.6	73-126	0			
Surr: Dibromofluoromethane	48.2	0	50	0	96.4	71-128	0			
Surr: Toluene-d8	51.1	0	50	0	102	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

LCS				Sample ID: VLCSS1-020413-R142091			Units: µg/Kg		Analysis Date: 2/4/2013 12:48 PM		
Client ID:		Run ID: VOA5_130204A			SeqNo: 3101238		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	56.36	5.0	50	0	113	79-124	0				
1,1,2,2-Tetrachloroethane	55.2	5.0	50	0	110	75-123	0				
1,1,2-Trichloroethane	60.76	5.0	50	0	122	79-120	0			S	
1,1-Dichloroethane	57.8	5.0	50	0	116	75-124	0				
1,1-Dichloroethene	58.39	5.0	50	0	117	80-122	0				
1,2-Dibromoethane	55.86	5.0	50	0	112	79-120	0				
1,2-Dichloroethane	53.68	5.0	50	0	107	73-121	0				
Benzene	56.68	5.0	50	0	113	79-120	0				
Carbon tetrachloride	54.78	5.0	50	0	110	74-126	0				
Chloroform	51.07	5.0	50	0	102	78-120	0				
Ethylbenzene	59.14	5.0	50	0	118	80-122	0				
Methylene chloride	57.27	10	50	0	115	70-123	0				
Tetrachloroethene	55.19	5.0	50	0	110	80-121	0				
Toluene	59.27	5.0	50	0	119	79-120	0				
Trichloroethene	59.99	5.0	50	0	120	80-121	0				
Vinyl chloride	58.95	2.0	50	0	118	76-126	0				
Xylenes, Total	169.3	15	150	0	113	80-120	0				
Surr: 1,2-Dichloroethane-d4	45.09	0	50	0	90.2	70-128	0				
Surr: 4-Bromofluorobenzene	48.08	0	50	0	96.2	73-126	0				
Surr: Dibromofluoromethane	49.73	0	50	0	99.5	71-128	0				
Surr: Toluene-d8	50.18	0	50	0	100	73-127	0				

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MS		Sample ID: 1302079-15AMS				Units: µg/Kg		Analysis Date: 2/4/2013 04:14 PM		
Client ID: MW-117 (25)		Run ID: VOA5_130204A				SeqNo: 3101244		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	45.09	5.0	50	0	90.2	79-124	0			
1,1,2,2-Tetrachloroethane	40.5	5.0	50	0	81	75-123	0			
1,1,2-Trichloroethane	47.23	5.0	50	0	94.5	79-120	0			
1,1-Dichloroethane	43.45	5.0	50	0	86.9	75-124	0			
1,1-Dichloroethene	51.45	5.0	50	0	103	80-122	0			
1,2-Dibromoethane	42.06	5.0	50	0	84.1	79-120	0			
1,2-Dichloroethane	38.83	5.0	50	0	77.7	73-121	0			
Benzene	44.11	5.0	50	0	88.2	79-120	0			
Carbon tetrachloride	42.94	5.0	50	0	85.9	74-126	0			
Chloroform	42.73	5.0	50	0	85.5	78-120	0			
Ethylbenzene	47.73	5.0	50	0	95.5	80-122	0			
Methylene chloride	51.41	10	50	5.438	92	70-123	0			
Tetrachloroethene	45.2	5.0	50	0	90.4	80-121	0			
Toluene	46.35	5.0	50	0	92.7	79-120	0			
Trichloroethene	49	5.0	50	0	98	80-121	0			
Vinyl chloride	53.2	2.0	50	0	106	76-126	0			
Xylenes, Total	136.9	15	150	0	91.3	80-120	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	41.91	0	50	0	83.8	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	47.54	0	50	0	95.1	73-126	0			
<i>Surr: Dibromofluoromethane</i>	48.39	0	50	0	96.8	71-128	0			
<i>Surr: Toluene-d8</i>	46.26	0	50	0	92.5	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MSD	Sample ID: 1302079-15AMSD					Units: µg/Kg		Analysis Date: 2/4/2013 04:37 PM		
Client ID: MW-117 (25)		Run ID: VOA5_130204A			SeqNo: 3101245		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	58.61	5.0	50	0	117	79-124	45.09	26.1	30	
1,1,2,2-Tetrachloroethane	55.12	5.0	50	0	110	75-123	40.5	30.6	30	R
1,1,2-Trichloroethane	59.39	5.0	50	0	119	79-120	47.23	22.8	30	
1,1-Dichloroethane	60.52	5.0	50	0	121	75-124	43.45	32.8	30	R
1,1-Dichloroethene	59.58	5.0	50	0	119	80-122	51.45	14.6	30	
1,2-Dibromoethane	51.67	5.0	50	0	103	79-120	42.06	20.5	30	
1,2-Dichloroethane	50.73	5.0	50	0	101	73-121	38.83	26.6	30	
Benzene	56.02	5.0	50	0	112	79-120	44.11	23.8	30	
Carbon tetrachloride	47.91	5.0	50	0	95.8	74-126	42.94	10.9	30	
Chloroform	54.38	5.0	50	0	109	78-120	42.73	24	30	
Ethylbenzene	59.74	5.0	50	0	119	80-122	47.73	22.3	30	
Methylene chloride	67.26	10	50	5.438	124	70-123	51.41	26.7	30	S
Tetrachloroethene	71.23	5.0	50	0	142	80-121	45.2	44.7	30	SR
Toluene	60.02	5.0	50	0	120	79-120	46.35	25.7	30	S
Trichloroethene	61.37	5.0	50	0	123	80-121	49	22.4	30	S
Vinyl chloride	65.39	2.0	50	0	131	76-126	53.2	20.6	30	S
Xylenes, Total	171.4	15	150	0	114	80-120	136.9	22.4	30	
Surr: 1,2-Dichloroethane-d4	51.28	0	50	0	103	70-128	41.91	20.1	30	
Surr: 4-Bromofluorobenzene	49.44	0	50	0	98.9	73-126	47.54	3.91	30	
Surr: Dibromofluoromethane	51.14	0	50	0	102	71-128	48.39	5.54	30	
Surr: Toluene-d8	49.69	0	50	0	99.4	73-127	46.26	7.15	30	

The following samples were analyzed in this batch:

1302079-01A 1302079-15A

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MBLK Sample ID: **VBLKW-130205-R142161** Units: **µg/L** Analysis Date: **2/5/2013 10:49 AM**

Client ID: Run ID: **VOA4_130205A** SeqNo: **3102121** 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	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Carbon tetrachloride	U	1.0								
Chloroform	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Trichloroethene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	47.14	1.0	50	0	94.3	71-125	0			
Surr: 4-Bromofluorobenzene	47.73	1.0	50	0	95.5	70-125	0			
Surr: Dibromofluoromethane	50.94	1.0	50	0	102	74-125	0			
Surr: Toluene-d8	49.25	1.0	50	0	98.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

LCS		Sample ID: VLCSW-130205-R142161				Units: µg/L		Analysis Date: 2/5/2013 09:37 AM		
Client ID:		Run ID: VOA4_130205A				SeqNo: 3102119		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	55.03	1.0	50	0	110	80-120	0			
1,1,2,2-Tetrachloroethane	45.4	1.0	50	0	90.8	74-123	0			
1,1,2-Trichloroethane	48.9	1.0	50	0	97.8	80-120	0			
1,1-Dichloroethane	46.19	1.0	50	0	92.4	80-120	0			
1,1-Dichloroethene	53.85	1.0	50	0	108	80-120	0			
1,2-Dibromoethane	52.93	1.0	50	0	106	80-120	0			
1,2-Dichloroethane	48.97	1.0	50	0	97.9	79-120	0			
Benzene	48.6	1.0	50	0	97.2	80-120	0			
Carbon tetrachloride	59.17	1.0	50	0	118	79-120	0			
Chloroform	47.16	1.0	50	0	94.3	80-120	0			
Ethylbenzene	48.68	1.0	50	0	97.4	80-120	0			
Methylene chloride	47.36	2.0	50	0	94.7	75-125	0			
Tetrachloroethene	52.99	1.0	50	0	106	80-120	0			
Toluene	47.82	1.0	50	0	95.6	80-121	0			
Trichloroethene	54.22	1.0	50	0	108	80-120	0			
Vinyl chloride	50.08	1.0	50	0	100	75-125	0			
Xylenes, Total	142.4	1.0	150	0	94.9	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	44.33	1.0	50	0	88.7	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	50.11	1.0	50	0	100	70-125	0			
<i>Surr: Dibromofluoromethane</i>	49.8	1.0	50	0	99.6	74-125	0			
<i>Surr: Toluene-d8</i>	48.26	1.0	50	0	96.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

LCSD	Sample ID: VLCSDW-130205-R142161					Units: µg/L		Analysis Date: 2/5/2013 10:01 AM		
Client ID:	Run ID: VOA4_130205A				SeqNo: 3102120		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	52.78	1.0	50	0	106	80-120	55.03	4.17	20	
1,1,2,2-Tetrachloroethane	44.75	1.0	50	0	89.5	74-123	45.4	1.45	20	
1,1,2-Trichloroethane	48.98	1.0	50	0	98	80-120	48.9	0.168	20	
1,1-Dichloroethane	44.95	1.0	50	0	89.9	80-120	46.19	2.71	20	
1,1-Dichloroethene	51.05	1.0	50	0	102	80-120	53.85	5.34	20	
1,2-Dibromoethane	52.56	1.0	50	0	105	80-120	52.93	0.693	20	
1,2-Dichloroethane	48.06	1.0	50	0	96.1	79-120	48.97	1.89	20	
Benzene	46.95	1.0	50	0	93.9	80-120	48.6	3.45	20	
Carbon tetrachloride	57.13	1.0	50	0	114	79-120	59.17	3.51	20	
Chloroform	45.5	1.0	50	0	91	80-120	47.16	3.58	20	
Ethylbenzene	47.06	1.0	50	0	94.1	80-120	48.68	3.38	20	
Methylene chloride	46.64	2.0	50	0	93.3	75-125	47.36	1.54	20	
Tetrachloroethene	52.04	1.0	50	0	104	80-120	52.99	1.82	20	
Toluene	47	1.0	50	0	94	80-121	47.82	1.73	20	
Trichloroethene	52.61	1.0	50	0	105	80-120	54.22	3.01	20	
Vinyl chloride	46.94	1.0	50	0	93.9	75-125	50.08	6.46	20	
Xylenes, Total	140.3	1.0	150	0	93.5	80-124	142.4	1.5	20	
Surr: 1,2-Dichloroethane-d4	44.11	1.0	50	0	88.2	71-125	44.33	0.493	20	
Surr: 4-Bromofluorobenzene	51.13	1.0	50	0	102	70-125	50.11	2.03	20	
Surr: Dibromofluoromethane	48.61	1.0	50	0	97.2	74-125	49.8	2.42	20	
Surr: Toluene-d8	48.17	1.0	50	0	96.3	78-123	48.26	0.187	20	

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MS	Sample ID: 1302056-09AMS				Units: µg/L		Analysis Date: 2/5/2013 11:14 AM			
Client ID:	Run ID: VOA4_130205A				SeqNo: 3102122		Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	537.7	10	500	0	108	80-120	0			
1,1,2,2-Tetrachloroethane	439.8	10	500	0	88	74-123	0			
1,1,2-Trichloroethane	477.2	10	500	0	95.4	80-120	0			
1,1-Dichloroethane	459.9	10	500	0	92	80-120	0			
1,1-Dichloroethene	525.1	10	500	0	105	80-120	0			
1,2-Dibromoethane	510.6	10	500	0	102	80-120	0			
1,2-Dichloroethane	487.4	10	500	0	97.5	79-120	0			
Benzene	485.1	10	500	0	97	80-120	0			
Carbon tetrachloride	581.9	10	500	0	116	79-120	0			
Chloroform	469.7	10	500	0	93.9	80-120	0			
Ethylbenzene	475	10	500	0	95	80-120	0			
Methylene chloride	473.5	20	500	0	94.7	75-125	0			
Tetrachloroethene	524.4	10	500	0	105	80-120	0			
Toluene	476.7	10	500	0	95.3	80-121	0			
Trichloroethene	544.7	10	500	0	109	80-120	0			
Vinyl chloride	495.6	10	500	0	99.1	75-125	0			
Xylenes, Total	1405	10	1500	0	93.7	80-124	0			
Surr: 1,2-Dichloroethane-d4	449.3	10	500	0	89.9	71-125	0			
Surr: 4-Bromofluorobenzene	505	10	500	0	101	70-125	0			
Surr: Dibromofluoromethane	495.3	10	500	0	99.1	74-125	0			
Surr: Toluene-d8	482.7	10	500	0	96.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MSD	Sample ID: 1302056-09AMSD				Units: µg/L		Analysis Date: 2/5/2013 11:38 AM			
Client ID:	Run ID: VOA4_130205A				SeqNo: 3102123		Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	520.1	10	500	0	104	80-120	537.7	3.31	20	
1,1,2,2-Tetrachloroethane	434.1	10	500	0	86.8	74-123	439.8	1.3	20	
1,1,2-Trichloroethane	469.5	10	500	0	93.9	80-120	477.2	1.62	20	
1,1-Dichloroethane	440.8	10	500	0	88.2	80-120	459.9	4.23	20	
1,1-Dichloroethene	509.2	10	500	0	102	80-120	525.1	3.07	20	
1,2-Dibromoethane	506.6	10	500	0	101	80-120	510.6	0.775	20	
1,2-Dichloroethane	478	10	500	0	95.6	79-120	487.4	1.96	20	
Benzene	470	10	500	0	94	80-120	485.1	3.17	20	
Carbon tetrachloride	560.3	10	500	0	112	79-120	581.9	3.77	20	
Chloroform	451.7	10	500	0	90.3	80-120	469.7	3.89	20	
Ethylbenzene	462.6	10	500	0	92.5	80-120	475	2.64	20	
Methylene chloride	460.8	20	500	0	92.2	75-125	473.5	2.72	20	
Tetrachloroethene	504.2	10	500	0	101	80-120	524.4	3.92	20	
Toluene	462.7	10	500	0	92.5	80-121	476.7	2.98	20	
Trichloroethene	516.9	10	500	0	103	80-120	544.7	5.23	20	
Vinyl chloride	471	10	500	0	94.2	75-125	495.6	5.1	20	
Xylenes, Total	1361	10	1500	0	90.7	80-124	1405	3.17	20	
Surr: 1,2-Dichloroethane-d4	442.1	10	500	0	88.4	71-125	449.3	1.62	20	
Surr: 4-Bromofluorobenzene	501	10	500	0	100	70-125	505	0.777	20	
Surr: Dibromofluoromethane	494.6	10	500	0	98.9	74-125	495.3	0.14	20	
Surr: Toluene-d8	477.4	10	500	0	95.5	78-123	482.7	1.1	20	

The following samples were analyzed in this batch:

1302079-16A

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67667** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK Sample ID: **WBLKS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107315** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS Sample ID: **WLCSS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107316** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.65	2.0	10	0	96.5	80-120	0			

LCSD Sample ID: **WLCSDS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107332** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.35	2.0	10	0	93.5	80-120	9.65	3.16	30	

MS Sample ID: **1302079-15CMS** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: **MW-117 (25)** Run ID: **UV-2450_130208F** SeqNo: **3107331** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.287	1.9	9.364	0.352	84.7	75-125	0			

The following samples were analyzed in this batch:

1302079-01C	1302079-03B	1302079-06B
1302079-09B	1302079-12B	1302079-15C

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67697** Instrument ID **ICS2100** Method: **E300** (Dissolve)

MBLK Sample ID: **WBLKS2-67697** Units: **mg/Kg** Analysis Date: **2/7/2013 10:08 PM**

Client ID: Run ID: **ICS2100_130207B** SeqNo: **3106617** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	5.0								
Fluoride	U	1.0								
Nitrogen, Nitrate (As N)	U	1.0								
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
Surr: Selenate (surr)	45.54	1.0	50	0	91.1	85-115	0			

LCS Sample ID: **WLCSS2-67697** Units: **mg/Kg** Analysis Date: **2/7/2013 10:22 PM**

Client ID: Run ID: **ICS2100_130207B** SeqNo: **3106618** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	208.6	5.0	200	0	104	90-110	0			
Fluoride	36.01	1.0	40	0	90	90-110	0			
Nitrogen, Nitrate (As N)	40.36	1.0	40	0	101	90-110	0			
Nitrogen, Nitrite (As N)	43.96	1.0	40	0	110	90-110	0			
Sulfate	194.8	5.0	200	0	97.4	90-110	0			
Surr: Selenate (surr)	44.44	1.0	50	0	88.9	85-115	0			

MS Sample ID: **1302079-15CMS** Units: **mg/Kg** Analysis Date: **2/8/2013 12:04 AM**

Client ID: **MW-117 (25)** Run ID: **ICS2100_130207B** SeqNo: **3106625** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	128.1	5.0	99.77	20.8	108	75-125	0			
Fluoride	25.76	1.0	19.95	4.095	109	75-125	0			
Nitrogen, Nitrate (As N)	18.89	1.0	19.95	0.4473	92.4	75-125	0			
Nitrogen, Nitrite (As N)	21.5	1.0	19.95	0	108	75-125	0			
Sulfate	496.6	5.0	99.77	313	184	75-125	0			S
Surr: Selenate (surr)	43.75	1.0	49.89	0	87.7	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67697** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD Sample ID: **1302079-15CMSD** Units: **mg/Kg** Analysis Date: **2/8/2013 12:19 AM**

Client ID: **MW-117 (25)** Run ID: **ICS2100_130207B** SeqNo: **3106626** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125	5.0	99.59	20.8	105	75-125	128.1	2.4	20	
Fluoride	24.56	1.0	19.92	4.095	103	75-125	25.76	4.77	20	
Nitrogen, Nitrate (As N)	18.41	1.0	19.92	0.4473	90.2	75-125	18.89	2.53	20	
Nitrogen, Nitrite (As N)	20.9	1.0	19.92	0	105	75-125	21.5	2.81	20	
Sulfate	484.8	5.0	99.59	313	172	75-125	496.6	2.41	20	S
Surr: Selenate (surr)	44.19	1.0	49.8	0	88.7	80-120	43.75	1	20	

The following samples were analyzed in this batch:

1302079-01C	1302079-03B	1302079-06B
1302079-09B	1302079-12B	1302079-15C

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142287** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302079-15ADUP** Units: **wt%** Analysis Date: **2/6/2013 03:40 PM**

Client ID: **MW-117 (25)** Run ID: **BALANCE1_130206C** SeqNo: **3104936** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	24.04	0.010	0	0	0	0-0	24.71	2.76	20	

The following samples were analyzed in this batch:

1302079-01C	1302079-02A	1302079-03A
1302079-04A	1302079-05A	1302079-06A
1302079-07A	1302079-08A	1302079-09A
1302079-10A	1302079-11A	1302079-12A
1302079-13A	1302079-14A	1302079-15A

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

Client: Navajo Refining Company
Work Order: 1302079
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142356** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302082-16ADUP** Units: **wt%** Analysis Date: **2/7/2013 03:15 PM**

Client ID: Run ID: **BALANCE1_130207C** SeqNo: **3106553** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	18.28	0.010	0	0	0	0-0	18.79	2.77	20	

The following samples were analyzed in this batch:

1302079-15C

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302079

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg-dry	Micrograms per Kilogram - Dry weight corrected
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**Date/Time Received: **02-Feb-13 09:30**Work Order: **1302079**Received by: **RDH**Checklist completed by Rishel D. Naran
eSignature04-Feb-13
DateReviewed by: Sonia West
eSignature05-Feb-13
DateMatrices: **SOIL**Carrier name: **FedEx**

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):	<u>2.7C U/C</u> <u>005</u>		
Cooler(s)/Kit(s):	<u>7034</u>		
Date/Time sample(s) sent to storage:	<u>2/4/13 09:32</u>		
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:	<u>-</u>		

Login Notes: A Trip Blank sample was received but was not listed on the chain of custody. The laboratory analyzed this sample for VOC 8260.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



Chain of Custody Form

Page 1 of 2

COC ID: 41201

ALS Project Manager:

1302079

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



Customer Information			Project Information				Parameters/Methodology													
Purchase Order		Project Name					A	VOC (8260) NW GW List												
Work Order		Project Number					B	GRO (8015M)												
Company Name	Navajo Refining Co	Bill To Company	Navajo Refining Co				C	DRO (8015M)												
Send Report To	Robert Combs	Invoice Attn.	Robert Combs				D	ORO (8015M) Long List												
Address	501 East Main	Address	501 East Main				E	Total Metals (6020/7000) ~~RCRA 8~~												
City/State/Zip	Artesia, NM	City/State/Zip	Artesia, NM				F	LL SVOC (B270B) NW GW List												
Phone		Phone	575-748-6733				G													
Fax		Fax	575-746-5421				H	Cyanide + Arsenic												
e-Mail Address		e-Mail Address					I	Moisture												
							J	Radon												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	MW-117 (1)	1/31/13	0855	Soil	-	5	X	X	X	X	X	X		X	X	X				
2	MW-117 (3)		0900			1									X					
3	MW-117 (5)		0915			3					X	X		X	X	X				
4	MW-117 (7)		1015			1									X					
5	MW-117 (9)		1000			1									X					
6	MW-117 (10)		1515 1033			3				X	X			X	X	X				
7	MW-117 (11)		1515			1									X					
8	MW-117 (13)		1515			1									X					
9	MW-117 (15)		1520			3				X	X			X	X	X				
10	MW-117 (17)		1520			1									X					
Sampler(s): Please Print & Sign			Shipment Method:		Required Turnaround Time:			☐ Other			Results Due Date:									
					☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour															
Relinquished by:		Date:	Time:	Received by:		Notes:														
Eric Bergerson		2/1/13	1200	ASR - 2/2/13 0830		10 Day TAT, Dissolved Metals Field Filtered														
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler Temp.														
						QC Package: (Check Box Below)														
						☒ Level II: Standard QC														
						☐ Level III: Std QC + Raw Data														
						☐ Level IV: SW846 CLP-Like														
						Other:														
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035																				

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Chain of Custody Form

Page 2 of 2

COC ID: 41214

☐ Cincinnati, OH
+1 513 733 5336

☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

☐ Holland, MI
+1 616 399 6070

☐ Houston, TX
+1 281 530 5656

☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7700

☐ Spring City, PA
+1 610 948 4903

☐ York, PA
+1 717 505 5280

ALS Project Manager:

Work Order #: 130209

Customer Information			Project Information				Parameter/Method Request for Analysis												
Purchase Order		Project Name	RO Discharge/Sampling				A	VOC (8260) NW GW List											
Work Order		Project Number	128823				B	GRO (8015M)											
Company Name	Navajo Refining	Bill To Company	Navajo Refining				C	DRO (8015M)											
Send Report To	Robert Combs	Invoice Attn.	Robert Combs				D	ORO (8015M)											
Address		Address	501 East Main				E	LLSVOC (B270B) NW GW List											
City/State/Zip		City/State/Zip	Artesia, NM				F	Total Metals Long List											
Phone		Phone	575-748-6733				G												
Fax		Fax	575-746-5421				H	Cyanide + Anions											
e-Mail Address		e-Mail Address					I	Moisture											
							J	Radium											
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	MW-117 (19)	1/31/13	1525	Soil	-	1						X		X	X	X			
2	MW-117 (20)		1525			3						X		X	X	X			
3	MW-117 (21)		1530			1									X				
4	MW-117 (23)		1530			1									X				
5	MW-117 (25)		1540			5	X	X	X	X	X	X		X	X	X			
6																			
7																			
8																			
9																			
10																			

Sampler(s): Please Print & Sign <i>[Signature]</i>		Shipment Method:		Required Turnaround Time: ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour		Results Due Date:	
Relinquished by: <i>Eric Bergersen</i>	Date: 2/1/13	Time: 1200	Received by:		Notes: 10 Day TAT, Dissolved Metals Field Filtered		
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>[Signature]</i> 2/1/13 830		QC Package: (Check Box Below)		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		☒ Level II: Standard QC ☐ Level III: Std QC + Raw Data ☐ Level IV: SW846 CLP-Like Other:		
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035							

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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1302079 -

FedEx

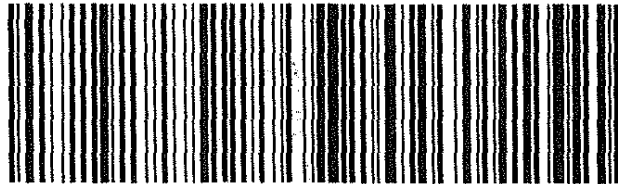
TRK#
0215

8013 7025 1558

SATURDAY ### A1
PRIORITY OVERNIGHT

X0 SGRA

77099
TX-US
IAH



Emp# 637368 01FEB13 ROWA 515C1/DF24/6F03



ALS Environmental

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date:
Name:
Company:

CUSTODY SEAL

Date: 2-1-2013 Time: 1150

Name: R. McKeen

Company: ARCADY U.S.

Seal Broken By:

Date: 2/2/13



13-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302082**

Dear Robert,

ALS Environmental received 22 samples on 02-Feb-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 62.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Sonia West".

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302082

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302082-01	RO-SB-1 (1)	Soil		1/31/2013 11:45	2/2/2013 09:30	☐
1302082-02	RO-SB-1 (3)	Soil		1/31/2013 11:50	2/2/2013 09:30	☐
1302082-03	RO-SB-1 (5)	Soil		1/31/2013 12:00	2/2/2013 09:30	☐
1302082-04	RO-SB-1 (7)	Soil		1/31/2013 12:30	2/2/2013 09:30	☐
1302082-05	RO-SB-1 (9)	Soil		1/31/2013 12:45	2/2/2013 09:30	☐
1302082-06	RO-SB-1 (10)	Soil		1/31/2013 12:50	2/2/2013 09:30	☐
1302082-07	RO-SB-1 (11)	Soil		2/1/2013 09:53	2/2/2013 09:30	☐
1302082-08	RO-SB-1 (13)	Soil		2/1/2013 09:53	2/2/2013 09:30	☐
1302082-09	RO-SB-1 (15)	Soil		2/1/2013 09:57	2/2/2013 09:30	☐
1302082-10	RO-SB-1 (17)	Soil		2/1/2013 09:47	2/2/2013 09:30	☐
1302082-11	RO-SB-1 (19)	Soil		2/1/2013 09:47	2/2/2013 09:30	☐
1302082-12	RO-SB-1 (20)	Soil		2/1/2013 09:40	2/2/2013 09:30	☐
1302082-13	RO-SB-1 (21)	Soil		2/1/2013 10:18	2/2/2013 09:30	☐
1302082-14	RO-SB-1 (23)	Soil		2/1/2013 10:18	2/2/2013 09:30	☐
1302082-15	RO-SB-1 (25)	Soil		2/1/2013 10:18	2/2/2013 09:30	☐
1302082-16	RO-SB-1 (27)	Soil		2/1/2013 10:10	2/2/2013 09:30	☐
1302082-17	RO-SB-1 (29)	Soil		2/1/2013 10:10	2/2/2013 09:30	☐
1302082-18	RO-SB-1 (30)	Soil		2/1/2013 10:10	2/2/2013 09:30	☐
1302082-19	RO-SB-1 (31)	Soil		2/1/2013 10:05	2/2/2013 09:30	☐
1302082-20	RO-SB-1 (33)	Soil		2/1/2013 10:05	2/2/2013 09:30	☐
1302082-21	RO-SB-1 (35)	Soil		2/1/2013 10:05	2/2/2013 09:30	☐
1302082-22	Trip Blank	Water		2/1/2013	2/2/2013 09:30	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302082

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302223.

Batch 67579, TPH DRO/ORO, Sample 1302018-01: MS/MSD is for an unrelated sample.

Batch 67584, Metals, Sample 1302079-01: MS/MSD is for an unrelated sample.

Batch 67584, Metals, Sample 1302079-01: MS/MSD RPD is for an unrelated sample.

Batch 67584, Metals, Sample 1302079-01: Duplicate RPD is for an unrelated sample.

Batch 67614, Metals, Sample 1302140-04: MS/MSD is for an unrelated sample.

Batch 67614, Metals, Sample 1302140-04: MS/MSD RPD is for an unrelated sample.

Batch 67614, Metals, Sample 1302140-04: Duplicate RPD is for an unrelated sample.

Batch 67581, Low-Level Semivolatile Organics, Sample 1302050-06: MS/MSD is for an unrelated sample.

Batch R142091, Volatile Organics: LCS recovery was outside the control limits for 1,1,2-Trichloroethane. The associated results are Non Detect.

Batch R142091, Volatile Organics, Sample 1302079-15: MS/MSD is for an unrelated sample.

Batch 67763, Anions, Sample RO-SB-1 (35): MS/MSD recoveries were outside the control limits for Sulfate. The associated LCS recoveries and MS/MSD RPD were within the control limits.

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (1)
Collection Date: 1/31/2013 11:45 AM

Work Order: 1302082
Lab ID: 1302082-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	U		0.60	4.1	mg/Kg-dry	1	2/11/2013 19:20
TPH (Diesel Range)	U		0.60	2.1	mg/Kg-dry	1	2/11/2013 19:20
Surr: 2-Fluorobiphenyl	60.8			60-135	%REC	1	2/11/2013 19:20
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW7471A / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.024	0.061	mg/Kg-dry	1	2/5/2013 19:39
Surr: 4-Bromofluorobenzene	89.1			70-130	%REC	1	2/5/2013 19:39
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	9.79		0.34	4.25	µg/Kg-dry	1	2/5/2013 17:44
METALS Method: SW6020 Prep: SW3050A / 2/5/13 Analyst: SKS							
Aluminum	10,800		23	117	mg/Kg-dry	100	2/7/2013 16:32
Arsenic	4.07		0.12	0.583	mg/Kg-dry	1	2/6/2013 17:49
Barium	149		0.093	0.583	mg/Kg-dry	1	2/6/2013 17:49
Boron	6.67		1.6	2.92	mg/Kg-dry	1	2/7/2013 16:04
Cadmium	0.266	J	0.058	0.583	mg/Kg-dry	1	2/6/2013 17:49
Calcium	105,000		1,200	5,830	mg/Kg-dry	100	2/7/2013 16:32
Chromium	10.6		0.11	0.583	mg/Kg-dry	1	2/6/2013 17:49
Cobalt	4.17		0.082	0.583	mg/Kg-dry	1	2/6/2013 17:49
Copper	8.25		0.12	0.583	mg/Kg-dry	1	2/6/2013 17:49
Iron	8,020		12	58.3	mg/Kg-dry	1	2/6/2013 17:49
Lead	10.6		0.058	0.583	mg/Kg-dry	1	2/6/2013 17:49
Manganese	236		12	58.3	mg/Kg-dry	100	2/7/2013 16:32
Molybdenum	0.495	J	0.18	0.583	mg/Kg-dry	1	2/6/2013 17:49
Nickel	8.27		0.11	0.583	mg/Kg-dry	1	2/6/2013 17:49
Potassium	2,690		15	58.3	mg/Kg-dry	1	2/6/2013 17:49
Selenium	0.655		0.21	0.583	mg/Kg-dry	1	2/6/2013 17:49
Silver	U		0.093	0.583	mg/Kg-dry	1	2/6/2013 17:49
Sodium	132		13	58.3	mg/Kg-dry	1	2/6/2013 17:49
Uranium	U		0.58	0.583	mg/Kg-dry	1	2/6/2013 17:49
Zinc	31.7		0.29	0.583	mg/Kg-dry	1	2/6/2013 17:49
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/5/13 Analyst: LG							
1-Methylnaphthalene	7.4	J	1.9	8.0	µg/Kg-dry	1	2/5/2013 21:02
2-Methylnaphthalene	8.0	J	1.9	8.0	µg/Kg-dry	1	2/5/2013 21:02
Benzo(a)pyrene	U		1.9	8.0	µg/Kg-dry	1	2/5/2013 21:02
Naphthalene	U		1.9	8.0	µg/Kg-dry	1	2/5/2013 21:02
Surr: 2,4,6-Tribromophenol	53.6			36-126	%REC	1	2/5/2013 21:02
Surr: 2-Fluorobiphenyl	75.5			43-125	%REC	1	2/5/2013 21:02

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (1)
Collection Date: 1/31/2013 11:45 AM

Work Order: 1302082
Lab ID: 1302082-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	62.5			37-125	%REC	1	2/5/2013 21:02
Surr: 4-Terphenyl-d14	115			32-125	%REC	1	2/5/2013 21:02
Surr: Nitrobenzene-d5	75.0			37-125	%REC	1	2/5/2013 21:02
Surr: Phenol-d6	50.4			40-125	%REC	1	2/5/2013 21:02
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,1,2,2-Tetrachloroethane	U		0.61	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,1,2-Trichloroethane	U		2.4	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,1-Dichloroethane	U		0.61	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,1-Dichloroethene	U		1.8	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,2-Dibromoethane	U		0.85	6.1	µg/Kg-dry	1	2/4/2013 15:28
1,2-Dichloroethane	U		0.73	6.1	µg/Kg-dry	1	2/4/2013 15:28
Benzene	U		0.73	6.1	µg/Kg-dry	1	2/4/2013 15:28
Carbon tetrachloride	U		1.5	6.1	µg/Kg-dry	1	2/4/2013 15:28
Chloroform	U		2.2	6.1	µg/Kg-dry	1	2/4/2013 15:28
Ethylbenzene	U		1.1	6.1	µg/Kg-dry	1	2/4/2013 15:28
Methylene chloride	7.0	J	3.0	12	µg/Kg-dry	1	2/4/2013 15:28
Tetrachloroethene	U		1.2	6.1	µg/Kg-dry	1	2/4/2013 15:28
Toluene	U		0.85	6.1	µg/Kg-dry	1	2/4/2013 15:28
Trichloroethene	U		1.9	6.1	µg/Kg-dry	1	2/4/2013 15:28
Vinyl chloride	U		1.2	2.4	µg/Kg-dry	1	2/4/2013 15:28
Xylenes, Total	U		3.2	18	µg/Kg-dry	1	2/4/2013 15:28
Surr: 1,2-Dichloroethane-d4	105			70-128	%REC	1	2/4/2013 15:28
Surr: 4-Bromofluorobenzene	104			73-126	%REC	1	2/4/2013 15:28
Surr: Dibromofluoromethane	102			71-128	%REC	1	2/4/2013 15:28
Surr: Toluene-d8	106			73-127	%REC	1	2/4/2013 15:28
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/10/13	
Chloride	6.56		2.4	6.06	mg/Kg-dry	1	2/11/2013 16:34
Fluoride	16.4		0.36	1.21	mg/Kg-dry	1	2/11/2013 16:34
Nitrogen, Nitrate (As N)	U		0.36	1.21	mg/Kg-dry	1	2/11/2013 16:34
Nitrogen, Nitrite (As N)	U		0.36	1.21	mg/Kg-dry	1	2/11/2013 16:34
Sulfate	204		2.4	6.06	mg/Kg-dry	1	2/11/2013 16:34
Surr: Selenate (surr)	115			85-115	%REC	1	2/11/2013 16:34
CYANIDE			Method: SW9014			Prep: SW9010C / 2/8/13	
Cyanide	U		0.71	2.36	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	17.7		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (3)
Collection Date: 1/31/2013 11:50 AM

Work Order: 1302082
Lab ID: 1302082-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.5		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (5)
Collection Date: 1/31/2013 12:00 PM

Work Order: 1302082
Lab ID: 1302082-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	3.95	J	0.36	4.38	µg/Kg-dry	1	2/5/2013 17:46
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	7,110		24	122	mg/Kg-dry	100	2/7/2013 16:35
Arsenic	3.42		0.12	0.612	mg/Kg-dry	1	2/6/2013 17:51
Barium	180		0.098	0.612	mg/Kg-dry	1	2/6/2013 17:51
Boron	4.30		1.7	3.06	mg/Kg-dry	1	2/7/2013 16:06
Cadmium	0.0850	J	0.061	0.612	mg/Kg-dry	1	2/6/2013 17:51
Calcium	87,900		1,200	6,120	mg/Kg-dry	100	2/7/2013 16:35
Chromium	6.49		0.11	0.612	mg/Kg-dry	1	2/6/2013 17:51
Cobalt	2.59		0.086	0.612	mg/Kg-dry	1	2/6/2013 17:51
Copper	2.64		0.12	0.612	mg/Kg-dry	1	2/6/2013 17:51
Iron	4,780		12	61.2	mg/Kg-dry	1	2/6/2013 17:51
Lead	3.75		0.061	0.612	mg/Kg-dry	1	2/6/2013 17:51
Manganese	55.2		0.12	0.612	mg/Kg-dry	1	2/6/2013 17:51
Molybdenum	0.205	J	0.18	0.612	mg/Kg-dry	1	2/6/2013 17:51
Nickel	4.83		0.11	0.612	mg/Kg-dry	1	2/6/2013 17:51
Potassium	1,430		16	61.2	mg/Kg-dry	1	2/6/2013 17:51
Selenium	0.542	J	0.22	0.612	mg/Kg-dry	1	2/6/2013 17:51
Silver	U		0.098	0.612	mg/Kg-dry	1	2/6/2013 17:51
Sodium	183		13	61.2	mg/Kg-dry	1	2/6/2013 17:51
Uranium	U		0.61	0.612	mg/Kg-dry	1	2/6/2013 17:51
Zinc	14.4		0.31	0.612	mg/Kg-dry	1	2/6/2013 17:51
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	247		2.6	6.44	mg/Kg-dry	1	2/11/2013 16:56
Fluoride	12.5		0.39	1.29	mg/Kg-dry	1	2/11/2013 16:56
Nitrogen, Nitrate (As N)	0.515	J	0.39	1.29	mg/Kg-dry	1	2/11/2013 16:56
Nitrogen, Nitrite (As N)	U		0.39	1.29	mg/Kg-dry	1	2/11/2013 16:56
Sulfate	2,350		13	32.2	mg/Kg-dry	5	2/12/2013 10:30
Surr: Selenate (surr)	114			85-115	%REC	1	2/11/2013 16:56
Surr: Selenate (surr)	113			85-115	%REC	5	2/12/2013 10:30
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.72	2.39	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	22.7		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (7)
Collection Date: 1/31/2013 12:30 PM

Work Order: 1302082
Lab ID: 1302082-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	25.9		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (9)
Collection Date: 1/31/2013 12:45 PM

Work Order: 1302082
Lab ID: 1302082-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	32.7		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (10)
Collection Date: 1/31/2013 12:50 PM

Work Order: 1302082
Lab ID: 1302082-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	1.67	J	0.40	4.89	µg/Kg-dry	1	2/5/2013 17:48
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	4,110		25	127	mg/Kg-dry	100	2/7/2013 16:37
Arsenic	2.03		0.13	0.635	mg/Kg-dry	1	2/6/2013 17:53
Barium	186		0.10	0.635	mg/Kg-dry	1	2/6/2013 17:53
Boron	4.47	J	3.6	6.35	mg/Kg-dry	2	2/7/2013 16:09
Cadmium	0.103	J	0.063	0.635	mg/Kg-dry	1	2/6/2013 17:53
Calcium	184,000		1,300	6,350	mg/Kg-dry	100	2/7/2013 16:37
Chromium	5.94		0.11	0.635	mg/Kg-dry	1	2/6/2013 17:53
Cobalt	1.28		0.089	0.635	mg/Kg-dry	1	2/6/2013 17:53
Copper	2.52		0.13	0.635	mg/Kg-dry	1	2/6/2013 17:53
Iron	2,390		13	63.5	mg/Kg-dry	1	2/6/2013 17:53
Lead	2.02		0.063	0.635	mg/Kg-dry	1	2/6/2013 17:53
Manganese	32.3		0.13	0.635	mg/Kg-dry	1	2/6/2013 17:53
Molybdenum	U		0.19	0.635	mg/Kg-dry	1	2/6/2013 17:53
Nickel	2.40		0.11	0.635	mg/Kg-dry	1	2/6/2013 17:53
Potassium	808		16	63.5	mg/Kg-dry	1	2/6/2013 17:53
Selenium	0.276	J	0.23	0.635	mg/Kg-dry	1	2/6/2013 17:53
Silver	U		0.10	0.635	mg/Kg-dry	1	2/6/2013 17:53
Sodium	125		14	63.5	mg/Kg-dry	1	2/6/2013 17:53
Uranium	U		0.63	0.635	mg/Kg-dry	1	2/6/2013 17:53
Zinc	9.11		0.32	0.635	mg/Kg-dry	1	2/6/2013 17:53
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	180		2.9	7.15	mg/Kg-dry	1	2/11/2013 17:17
Fluoride	21.5		0.43	1.43	mg/Kg-dry	1	2/11/2013 17:17
Nitrogen, Nitrate (As N)	U		0.43	1.43	mg/Kg-dry	1	2/11/2013 17:17
Nitrogen, Nitrite (As N)	U		0.43	1.43	mg/Kg-dry	1	2/11/2013 17:17
Sulfate	1,900		14	35.7	mg/Kg-dry	5	2/12/2013 11:05
Surr: Selenate (surr)	114			85-115	%REC	1	2/11/2013 17:17
Surr: Selenate (surr)	111			85-115	%REC	5	2/12/2013 11:05
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.81	2.71	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	31.0		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (11)
Collection Date: 2/1/2013 09:53 AM

Work Order: 1302082
Lab ID: 1302082-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	13.9		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (13)
Collection Date: 2/1/2013 09:53 AM

Work Order: 1302082
Lab ID: 1302082-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	19.2		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (15)
Collection Date: 2/1/2013 09:57 AM

Work Order: 1302082
Lab ID: 1302082-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	3.35	J	0.37	4.51	µg/Kg-dry	1	2/5/2013 17:50
METALS							
Method: SW6020				Prep: SW3050A / 2/5/13		Analyst: SKS	
Aluminum	8,520		22	110	mg/Kg-dry	100	2/7/2013 16:44
Arsenic	1.68		0.11	0.549	mg/Kg-dry	1	2/6/2013 17:56
Barium	95.7		0.088	0.549	mg/Kg-dry	1	2/6/2013 17:56
Boron	5.80		3.1	5.49	mg/Kg-dry	2	2/7/2013 16:16
Cadmium	0.262	J	0.055	0.549	mg/Kg-dry	1	2/6/2013 17:56
Calcium	204,000		1,100	5,490	mg/Kg-dry	100	2/7/2013 16:44
Chromium	6.96		0.099	0.549	mg/Kg-dry	1	2/6/2013 17:56
Cobalt	3.65		0.077	0.549	mg/Kg-dry	1	2/6/2013 17:56
Copper	3.94		0.11	0.549	mg/Kg-dry	1	2/6/2013 17:56
Iron	5,050		11	54.9	mg/Kg-dry	1	2/6/2013 17:56
Lead	7.03		0.055	0.549	mg/Kg-dry	1	2/6/2013 17:56
Manganese	76.1		0.11	0.549	mg/Kg-dry	1	2/6/2013 17:56
Molybdenum	0.165	J	0.16	0.549	mg/Kg-dry	1	2/6/2013 17:56
Nickel	5.53		0.099	0.549	mg/Kg-dry	1	2/6/2013 17:56
Potassium	1,740		14	54.9	mg/Kg-dry	1	2/6/2013 17:56
Selenium	0.943		0.20	0.549	mg/Kg-dry	1	2/6/2013 17:56
Silver	U		0.088	0.549	mg/Kg-dry	1	2/6/2013 17:56
Sodium	123		12	54.9	mg/Kg-dry	1	2/6/2013 17:56
Uranium	U		0.55	0.549	mg/Kg-dry	1	2/6/2013 17:56
Zinc	20.0		0.27	0.549	mg/Kg-dry	1	2/6/2013 17:56
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	80.6		2.6	6.52	mg/Kg-dry	1	2/11/2013 17:39
Fluoride	15.3		0.39	1.30	mg/Kg-dry	1	2/11/2013 17:39
Nitrogen, Nitrate (As N)	0.940	J	0.39	1.30	mg/Kg-dry	1	2/11/2013 17:39
Nitrogen, Nitrite (As N)	U		0.39	1.30	mg/Kg-dry	1	2/11/2013 17:39
Sulfate	832		2.6	6.52	mg/Kg-dry	1	2/11/2013 17:39
Surr: Selenate (surr)	114			85-115	%REC	1	2/11/2013 17:39
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.71	2.35	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	23.5		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (17)
Collection Date: 2/1/2013 09:47 AM

Work Order: 1302082
Lab ID: 1302082-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.0		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (19)
Collection Date: 2/1/2013 09:47 AM

Work Order: 1302082
Lab ID: 1302082-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.8		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (20)
Collection Date: 2/1/2013 09:40 AM

Work Order: 1302082
Lab ID: 1302082-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	1.02	J	0.35	4.25	µg/Kg-dry	1	2/5/2013 17:56
METALS							
Method: SW6020				Prep: SW3050A / 2/6/13		Analyst: ALR	
Aluminum	6,090		24	121	mg/Kg-dry	100	2/11/2013 21:29
Arsenic	2.91		0.12	0.606	mg/Kg-dry	1	2/9/2013 05:22
Barium	268		9.7	60.6	mg/Kg-dry	100	2/11/2013 21:29
Boron	3.56		1.7	3.03	mg/Kg-dry	1	2/9/2013 05:22
Cadmium	0.245	J	0.061	0.606	mg/Kg-dry	1	2/9/2013 05:22
Calcium	252,000		1,200	6,060	mg/Kg-dry	100	2/11/2013 21:29
Chromium	6.61		0.11	0.606	mg/Kg-dry	1	2/9/2013 05:22
Cobalt	1.20		0.085	0.606	mg/Kg-dry	1	2/9/2013 05:22
Copper	2.38		0.12	0.606	mg/Kg-dry	1	2/9/2013 05:22
Iron	3,230		12	60.6	mg/Kg-dry	1	2/9/2013 05:22
Lead	4.04		0.061	0.606	mg/Kg-dry	1	2/9/2013 05:22
Manganese	35.3		0.12	0.606	mg/Kg-dry	1	2/9/2013 05:22
Molybdenum	U		0.18	0.606	mg/Kg-dry	1	2/9/2013 05:22
Nickel	3.95		0.11	0.606	mg/Kg-dry	1	2/9/2013 05:22
Potassium	1,250		16	60.6	mg/Kg-dry	1	2/9/2013 05:22
Selenium	0.620		0.22	0.606	mg/Kg-dry	1	2/9/2013 05:22
Silver	U		0.097	0.606	mg/Kg-dry	1	2/9/2013 05:22
Sodium	101		13	60.6	mg/Kg-dry	1	2/9/2013 05:22
Uranium	U		0.61	0.606	mg/Kg-dry	1	2/9/2013 05:22
Zinc	9.84		0.30	0.606	mg/Kg-dry	1	2/9/2013 05:22
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	71.5		2.5	6.18	mg/Kg-dry	1	2/11/2013 18:01
Fluoride	9.85		0.37	1.24	mg/Kg-dry	1	2/11/2013 18:01
Nitrogen, Nitrate (As N)	0.840	J	0.37	1.24	mg/Kg-dry	1	2/11/2013 18:01
Nitrogen, Nitrite (As N)	U		0.37	1.24	mg/Kg-dry	1	2/11/2013 18:01
Sulfate	703		2.5	6.18	mg/Kg-dry	1	2/11/2013 18:01
Surr: Selenate (surr)	113			85-115	%REC	1	2/11/2013 18:01
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	0.788	J	0.73	2.42	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	20.3		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (21)
Collection Date: 2/1/2013 10:18 AM

Work Order: 1302082
Lab ID: 1302082-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	28.8		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (23)
Collection Date: 2/1/2013 10:18 AM

Work Order: 1302082
Lab ID: 1302082-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	19.9		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (25)
Collection Date: 2/1/2013 10:18 AM

Work Order: 1302082
Lab ID: 1302082-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	27.4		0.35	4.26	µg/Kg-dry	1	2/5/2013 17:58
METALS							
Method: SW6020				Prep: SW3050A / 2/6/13		Analyst: ALR	
Aluminum	18,600		25	124	mg/Kg-dry	100	2/11/2013 21:34
Arsenic	3.12		0.12	0.621	mg/Kg-dry	1	2/9/2013 05:27
Barium	16.5		0.099	0.621	mg/Kg-dry	1	2/9/2013 05:27
Boron	3.76		1.7	3.10	mg/Kg-dry	1	2/9/2013 05:27
Cadmium	U		0.062	0.621	mg/Kg-dry	1	2/9/2013 05:27
Calcium	11,500		12	62.1	mg/Kg-dry	1	2/9/2013 05:27
Chromium	9.20		0.11	0.621	mg/Kg-dry	1	2/9/2013 05:27
Cobalt	6.52		0.087	0.621	mg/Kg-dry	1	2/9/2013 05:27
Copper	6.56		0.12	0.621	mg/Kg-dry	1	2/9/2013 05:27
Iron	9,750		12	62.1	mg/Kg-dry	1	2/9/2013 05:27
Lead	12.0		0.062	0.621	mg/Kg-dry	1	2/9/2013 05:27
Manganese	193		0.12	0.621	mg/Kg-dry	1	2/9/2013 05:27
Molybdenum	0.420	J	0.19	0.621	mg/Kg-dry	1	2/9/2013 05:27
Nickel	10.4		0.11	0.621	mg/Kg-dry	1	2/9/2013 05:27
Potassium	3,560		16	62.1	mg/Kg-dry	1	2/9/2013 05:27
Selenium	0.414	J	0.22	0.621	mg/Kg-dry	1	2/9/2013 05:27
Silver	U		0.099	0.621	mg/Kg-dry	1	2/9/2013 05:27
Sodium	105		14	62.1	mg/Kg-dry	1	2/9/2013 05:27
Uranium	U		0.62	0.621	mg/Kg-dry	1	2/9/2013 05:27
Zinc	30.7		0.31	0.621	mg/Kg-dry	1	2/9/2013 05:27
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	108		2.5	6.27	mg/Kg-dry	1	2/11/2013 18:23
Fluoride	14.6		0.38	1.25	mg/Kg-dry	1	2/11/2013 18:23
Nitrogen, Nitrate (As N)	U		0.38	1.25	mg/Kg-dry	1	2/11/2013 18:23
Nitrogen, Nitrite (As N)	U		0.38	1.25	mg/Kg-dry	1	2/11/2013 18:23
Sulfate	851		2.5	6.27	mg/Kg-dry	1	2/11/2013 18:23
Surr: Selenate (surr)	114			85-115	%REC	1	2/11/2013 18:23
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	0.747	J	0.75	2.49	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (27)
Collection Date: 2/1/2013 10:10 AM

Work Order: 1302082
Lab ID: 1302082-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	18.8		0.010	0.0100	wt%	1	2/7/2013 15:15

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (29)
Collection Date: 2/1/2013 10:10 AM

Work Order: 1302082
Lab ID: 1302082-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/8/2013 14:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (30)
Collection Date: 2/1/2013 10:10 AM

Work Order: 1302082
Lab ID: 1302082-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	0.638	J	0.37	4.54	µg/Kg-dry	1	2/5/2013 18:00
METALS							
Method: SW6020				Prep: SW3050A / 2/6/13		Analyst: ALR	
Aluminum	7,810		27	134	mg/Kg-dry	100	2/11/2013 21:39
Arsenic	2.01		0.13	0.669	mg/Kg-dry	1	2/9/2013 05:32
Barium	40.7		0.11	0.669	mg/Kg-dry	1	2/9/2013 05:32
Boron	3.67		1.9	3.35	mg/Kg-dry	1	2/9/2013 05:32
Cadmium	0.151	J	0.067	0.669	mg/Kg-dry	1	2/9/2013 05:32
Calcium	95,500		1,300	6,690	mg/Kg-dry	100	2/11/2013 21:39
Chromium	6.41		0.12	0.669	mg/Kg-dry	1	2/9/2013 05:32
Cobalt	1.97		0.094	0.669	mg/Kg-dry	1	2/9/2013 05:32
Copper	2.72		0.13	0.669	mg/Kg-dry	1	2/9/2013 05:32
Iron	4,870		13	66.9	mg/Kg-dry	1	2/9/2013 05:32
Lead	4.05		0.067	0.669	mg/Kg-dry	1	2/9/2013 05:32
Manganese	78.8		0.13	0.669	mg/Kg-dry	1	2/9/2013 05:32
Molybdenum	0.220	J	0.20	0.669	mg/Kg-dry	1	2/9/2013 05:32
Nickel	4.51		0.12	0.669	mg/Kg-dry	1	2/9/2013 05:32
Potassium	1,450		17	66.9	mg/Kg-dry	1	2/9/2013 05:32
Selenium	0.539	J	0.24	0.669	mg/Kg-dry	1	2/9/2013 05:32
Silver	U		0.11	0.669	mg/Kg-dry	1	2/9/2013 05:32
Sodium	100		15	66.9	mg/Kg-dry	1	2/9/2013 05:32
Uranium	U		0.67	0.669	mg/Kg-dry	1	2/9/2013 05:32
Zinc	14.9		0.33	0.669	mg/Kg-dry	1	2/9/2013 05:32
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/10/13		Analyst: JKP	
Chloride	134		2.7	6.72	mg/Kg-dry	1	2/11/2013 18:44
Fluoride	5.24		0.40	1.34	mg/Kg-dry	1	2/11/2013 18:44
Nitrogen, Nitrate (As N)	U		0.40	1.34	mg/Kg-dry	1	2/11/2013 18:44
Nitrogen, Nitrite (As N)	U		0.40	1.34	mg/Kg-dry	1	2/11/2013 18:44
Sulfate	763		2.7	6.72	mg/Kg-dry	1	2/11/2013 18:44
Surr: Selenate (surr)	113			85-115	%REC	1	2/11/2013 18:44
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/8/13		Analyst: EDG	
Cyanide	U		0.74	2.48	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	26.6		0.010	0.0100	wt%	1	2/8/2013 14:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (31)
Collection Date: 2/1/2013 10:05 AM

Work Order: 1302082
Lab ID: 1302082-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.7		0.010	0.0100	wt%	1	2/8/2013 14:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (33)
Collection Date: 2/1/2013 10:05 AM

Work Order: 1302082
Lab ID: 1302082-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	16.1		0.010	0.0100	wt%	1	2/8/2013 14:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (35)
Collection Date: 2/1/2013 10:05 AM

Work Order: 1302082
Lab ID: 1302082-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	U		0.59	4.0	mg/Kg-dry	1	2/11/2013 19:43
TPH (Diesel Range)	U		0.59	2.0	mg/Kg-dry	1	2/11/2013 19:43
Surr: 2-Fluorobiphenyl	60.5			60-135	%REC	1	2/11/2013 19:43
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW3541 / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.024	0.059	mg/Kg-dry	1	2/5/2013 19:58
Surr: 4-Bromofluorobenzene	92.6			70-130	%REC	1	2/5/2013 19:58
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	U		0.33	4.09	µg/Kg-dry	1	2/5/2013 18:02
METALS Method: SW6020 Prep: SW3050A / 2/6/13 Analyst: ALR							
Aluminum	4,280		23	113	mg/Kg-dry	100	2/11/2013 21:44
Arsenic	1.82		0.11	0.564	mg/Kg-dry	1	2/9/2013 05:37
Barium	72.7		0.090	0.564	mg/Kg-dry	1	2/9/2013 05:37
Boron	2.01	J	1.6	2.82	mg/Kg-dry	1	2/9/2013 05:37
Cadmium	0.0817	J	0.056	0.564	mg/Kg-dry	1	2/9/2013 05:37
Calcium	73,200		1,100	5,640	mg/Kg-dry	100	2/11/2013 21:44
Chromium	4.22		0.10	0.564	mg/Kg-dry	1	2/9/2013 05:37
Cobalt	1.87		0.079	0.564	mg/Kg-dry	1	2/9/2013 05:37
Copper	1.70		0.11	0.564	mg/Kg-dry	1	2/9/2013 05:37
Iron	3,220		11	56.4	mg/Kg-dry	1	2/9/2013 05:37
Lead	2.92		0.056	0.564	mg/Kg-dry	1	2/9/2013 05:37
Manganese	58.1		0.11	0.564	mg/Kg-dry	1	2/9/2013 05:37
Molybdenum	0.198	J	0.17	0.564	mg/Kg-dry	1	2/9/2013 05:37
Nickel	3.34		0.10	0.564	mg/Kg-dry	1	2/9/2013 05:37
Potassium	932		15	56.4	mg/Kg-dry	1	2/9/2013 05:37
Selenium	0.332	J	0.20	0.564	mg/Kg-dry	1	2/9/2013 05:37
Silver	U		0.090	0.564	mg/Kg-dry	1	2/9/2013 05:37
Sodium	53.7	J	12	56.4	mg/Kg-dry	1	2/9/2013 05:37
Uranium	U		0.56	0.564	mg/Kg-dry	1	2/9/2013 05:37
Zinc	8.89		0.28	0.564	mg/Kg-dry	1	2/9/2013 05:37
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/5/13 Analyst: LG							
1-Methylnaphthalene	U		1.9	7.8	µg/Kg-dry	1	2/5/2013 21:22
2-Methylnaphthalene	U		1.9	7.8	µg/Kg-dry	1	2/5/2013 21:22
Benzo(a)pyrene	U		1.9	7.8	µg/Kg-dry	1	2/5/2013 21:22
Naphthalene	U		1.9	7.8	µg/Kg-dry	1	2/5/2013 21:22
Surr: 2,4,6-Tribromophenol	60.2			36-126	%REC	1	2/5/2013 21:22
Surr: 2-Fluorobiphenyl	79.2			43-125	%REC	1	2/5/2013 21:22

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (35)
Collection Date: 2/1/2013 10:05 AM

Work Order: 1302082
Lab ID: 1302082-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	63.8			37-125	%REC	1	2/5/2013 21:22
Surr: 4-Terphenyl-d14	119			32-125	%REC	1	2/5/2013 21:22
Surr: Nitrobenzene-d5	72.4			37-125	%REC	1	2/5/2013 21:22
Surr: Phenol-d6	64.0			40-125	%REC	1	2/5/2013 21:22
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.0	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,1,2,2-Tetrachloroethane	U		0.59	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,1,2-Trichloroethane	U		2.4	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,1-Dichloroethane	U		0.59	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,1-Dichloroethene	U		1.8	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,2-Dibromoethane	U		0.83	5.9	µg/Kg-dry	1	2/4/2013 15:51
1,2-Dichloroethane	U		0.71	5.9	µg/Kg-dry	1	2/4/2013 15:51
Benzene	U		0.71	5.9	µg/Kg-dry	1	2/4/2013 15:51
Carbon tetrachloride	U		1.4	5.9	µg/Kg-dry	1	2/4/2013 15:51
Chloroform	U		2.1	5.9	µg/Kg-dry	1	2/4/2013 15:51
Ethylbenzene	U		1.1	5.9	µg/Kg-dry	1	2/4/2013 15:51
Methylene chloride	5.6	J	3.0	12	µg/Kg-dry	1	2/4/2013 15:51
Tetrachloroethene	U		1.2	5.9	µg/Kg-dry	1	2/4/2013 15:51
Toluene	U		0.83	5.9	µg/Kg-dry	1	2/4/2013 15:51
Trichloroethene	U		1.9	5.9	µg/Kg-dry	1	2/4/2013 15:51
Vinyl chloride	U		1.2	2.4	µg/Kg-dry	1	2/4/2013 15:51
Xylenes, Total	U		3.1	18	µg/Kg-dry	1	2/4/2013 15:51
Surr: 1,2-Dichloroethane-d4	87.4			70-128	%REC	1	2/4/2013 15:51
Surr: 4-Bromofluorobenzene	94.6			73-126	%REC	1	2/4/2013 15:51
Surr: Dibromofluoromethane	97.1			71-128	%REC	1	2/4/2013 15:51
Surr: Toluene-d8	94.4			73-127	%REC	1	2/4/2013 15:51
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/10/13	
Chloride	46.7		2.3	5.87	mg/Kg-dry	1	2/11/2013 19:06
Fluoride	5.80		0.35	1.17	mg/Kg-dry	1	2/11/2013 19:06
Nitrogen, Nitrate (As N)	U		0.35	1.17	mg/Kg-dry	1	2/11/2013 19:06
Nitrogen, Nitrite (As N)	U		0.35	1.17	mg/Kg-dry	1	2/11/2013 19:06
Sulfate	614		2.3	5.87	mg/Kg-dry	1	2/11/2013 19:06
Surr: Selenate (surr)	115			85-115	%REC	1	2/11/2013 19:06
CYANIDE			Method: SW9014			Prep: SW9010C / 2/8/13	
Cyanide	0.672	J	0.67	2.24	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	16.0		0.010	0.0100	wt%	1	2/8/2013 14:55

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: Trip Blank
Collection Date: 2/1/2013

Work Order: 1302082
Lab ID: 1302082-22
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/5/2013 15:40
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/5/2013 15:40
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Benzene	U		0.00020	0.0010	mg/L	1	2/5/2013 15:40
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Chloroform	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/5/2013 15:40
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/5/2013 15:40
Toluene	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/5/2013 15:40
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/5/2013 15:40
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/5/2013 15:40
Surr: 1,2-Dichloroethane-d4	95.2			71-125	%REC	1	2/5/2013 15:40
Surr: 4-Bromofluorobenzene	95.3			70-125	%REC	1	2/5/2013 15:40
Surr: Dibromofluoromethane	103			74-125	%REC	1	2/5/2013 15:40
Surr: Toluene-d8	98.5			78-123	%REC	1	2/5/2013 15:40

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67579** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 11:56 AM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104153		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.092	0.10	3.33	0	62.8	60-135	0			

LCS	Sample ID: FLCSS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 12:19 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104154		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	27.05	3.4	33.33	0	81.2	70-130	0			
TPH (Diesel Range)	35.72	1.7	33.33	0	107	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.536	0.10	3.33	0	76.2	60-135	0			

MS	Sample ID: 1302018-01BMS				Units: mg/Kg		Analysis Date: 2/6/2013 01:06 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104156		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEO
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
<i>Surr: 2-Fluorobiphenyl</i>	2.284	0.10	3.32	0	68.8	60-135	0			

MSD	Sample ID: 1302018-01BMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:29 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104157		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEO
TPH (Diesel Range)	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
<i>Surr: 2-Fluorobiphenyl</i>	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

The following samples were analyzed in this batch:

1302082-01D	1302082-21D

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

QC Page: 1 of 29

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142225** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 01:02 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103619		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
Surr: 4-Bromofluorobenzene	0.08374	0.0050	0.1	0	83.7	70-130	0			

LCS	Sample ID: GLCSS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:25 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103613		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.942	0.050	1	0	94.2	70-130	0			
Surr: 4-Bromofluorobenzene	0.09701	0.0050	0.1	0	97	70-130	0			

LCSD	Sample ID: GLCSDS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:44 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103616		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9525	0.050	1	0	95.2	70-130	0.942	1.11	30	
Surr: 4-Bromofluorobenzene	0.09686	0.0050	0.1	0	96.9	70-130	0.09701	0.146	30	

MS	Sample ID: 1302018-04ZMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103628		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8005	0.050	1	0	80	70-130	0			
Surr: 4-Bromofluorobenzene	0.08728	0.0050	0.1	0	87.3	70-130	0			

MSD	Sample ID: 1302018-04ZMSD				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103632		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8125	0.050	1	0	81.2	70-130	0.8005	1.49	30	
Surr: 4-Bromofluorobenzene	0.08872	0.0050	0.1	0	88.7	70-130	0.08728	1.64	30	

The following samples were analyzed in this batch:

1302082-01B 1302082-21B

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020513-67584** Units: **mg/Kg** Analysis Date: **2/8/2013 12:22 PM**

Client ID: Run ID: **ICPMS05_130208A** SeqNo: **3106572** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	1.0								
Arsenic	U	0.50								
Barium	U	0.50								
Boron	U	2.5								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Sodium	U	50								
Uranium	U	0.50								
Zinc	U	0.50								

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

LCS Sample ID: **MLCSS1-020513-67584** Units: **mg/Kg** Analysis Date: **2/6/2013 05:15 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3104261** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	11.63	1.0	10	0	116	80-120	0			
Arsenic	10.09	0.50	10	0	101	80-120	0			
Barium	10.49	0.50	10	0	105	80-120	0			
Boron	55.62	2.5	50	0	111	80-120	0			
Cadmium	10.17	0.50	10	0	102	80-120	0			
Calcium	1031	50	1000	0	103	80-120	0			
Chromium	10.57	0.50	10	0	106	80-120	0			
Cobalt	10.08	0.50	10	0	101	80-120	0			
Copper	10.5	0.50	10	0	105	80-120	0			
Iron	1021	50	1000	0	102	80-120	0			
Lead	10.22	0.50	10	0	102	80-120	0			
Manganese	10.18	0.50	10	0	102	80-120	0			
Molybdenum	10.14	0.50	10	0	101	80-120	0			
Nickel	10.22	0.50	10	0	102	80-120	0			
Potassium	1020	50	1000	0	102	80-120	0			
Selenium	10.63	0.50	10	0	106	80-120	0			
Silver	10.11	0.50	10	0	101	80-120	0			
Sodium	1065	50	1000	0	106	80-120	0			
Uranium	9.751	0.50	10	0	97.5	80-120	0			
Zinc	10.48	0.50	10	0	105	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 1302079-01CMS				Units: mg/Kg		Analysis Date: 2/6/2013 05:22 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3104264		Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	10850	0.95	9.479	10650	2130	75-125	0			SEO
Arsenic	11.05	0.47	9.479	3.675	77.8	75-125	0			
Barium	119.3	0.47	9.479	140.7	-226	75-125	0			SO
Cadmium	8.126	0.47	9.479	0.2899	82.7	75-125	0			
Calcium	58010	47	947.9	63280	-555	75-125	0			SEO
Chromium	19.97	0.47	9.479	11.93	84.9	75-125	0			
Cobalt	12.3	0.47	9.479	4.223	85.2	75-125	0			
Copper	16.19	0.47	9.479	7.518	91.5	75-125	0			
Iron	8984	47	947.9	8371	64.7	75-125	0			SO
Lead	22.47	0.47	9.479	9.213	140	75-125	0			S
Manganese	313.3	0.47	9.479	323.3	-106	75-125	0			SEO
Molybdenum	7.01	0.47	9.479	0.782	65.7	75-125	0			S
Nickel	16.57	0.47	9.479	8.837	81.6	75-125	0			
Potassium	3413	47	947.9	2567	89.3	75-125	0			
Selenium	8.236	0.47	9.479	0.7589	78.9	75-125	0			
Silver	7.989	0.47	9.479	0.04949	83.8	75-125	0			
Uranium	8.144	0.47	9.479	0.4497	81.2	75-125	0			
Zinc	39.14	0.47	9.479	30	96.4	75-125	0			

MS		Sample ID: 1302079-01CMS				Units: mg/Kg		Analysis Date: 2/7/2013 03:38 PM		
Client ID:		Run ID: ICPMS05_130207A				SeqNo: 3105768		Prep Date: 2/5/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	44.25	4.7	47.39	6.718	79.2	75-125	0			
Sodium	1077	95	947.9	257.4	86.4	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 1302079-01CMSD				Units: mg/Kg		Analysis Date: 2/6/2013 05:25 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3104265		Prep Date: 2/5/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	12260	0.94	9.414	10650	17200	75-125	10850	12.2	25	SEO
Arsenic	11.58	0.47	9.414	3.675	84	75-125	11.05	4.7	25	
Barium	137.2	0.47	9.414	140.7	-36.9	75-125	119.3	14	25	SO
Cadmium	8.231	0.47	9.414	0.2899	84.4	75-125	8.126	1.29	25	
Calcium	69590	47	941.4	63280	670	75-125	58010	18.1	25	SEO
Chromium	21.3	0.47	9.414	11.93	99.5	75-125	19.97	6.43	25	
Cobalt	12.66	0.47	9.414	4.223	89.6	75-125	12.3	2.86	25	
Copper	15.66	0.47	9.414	7.518	86.5	75-125	16.19	3.36	25	
Iron	9940	47	941.4	8371	167	75-125	8984	10.1	25	SO
Lead	15.81	0.47	9.414	9.213	70.1	75-125	22.47	34.8	25	SR
Manganese	389.5	0.47	9.414	323.3	703	75-125	313.3	21.7	25	SEO
Molybdenum	7.48	0.47	9.414	0.782	71.2	75-125	7.01	6.49	25	S
Nickel	17.56	0.47	9.414	8.837	92.6	75-125	16.57	5.76	25	
Potassium	3553	47	941.4	2567	105	75-125	3413	4	25	
Selenium	8.862	0.47	9.414	0.7589	86.1	75-125	8.236	7.33	25	
Silver	8.142	0.47	9.414	0.04949	86	75-125	7.989	1.89	25	
Uranium	8.356	0.47	9.414	0.4497	84	75-125	8.144	2.57	25	
Zinc	39.15	0.47	9.414	30	97.2	75-125	39.14	0.0385	25	

MSD		Sample ID: 1302079-01CMSD				Units: mg/Kg		Analysis Date: 2/7/2013 03:40 PM		
Client ID:		Run ID: ICPMS05_130207A				SeqNo: 3105769		Prep Date: 2/5/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	42.5	4.7	47.07	6.718	76	75-125	44.25	4.05	25	
Sodium	1054	94	941.4	257.4	84.7	75-125	1077	2.08	25	

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67584** Instrument ID **ICPMS05** Method: **SW6020**

DUP	Sample ID: 1302079-01CDUP					Units: mg/Kg		Analysis Date: 2/6/2013 05:20 PM		
Client ID:	Run ID: ICPMS05_130206A				SeqNo: 3104263		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	3.417	0.48	0	0	0	0-0	3.675	7.25	25	
Barium	104.4	0.48	0	0	0	0-0	140.7	29.6	25	R
Cadmium	0.2602	0.48	0	0	0	0-0	0.2899	0	25	J
Chromium	11.21	0.48	0	0	0	0-0	11.93	6.26	25	
Cobalt	4.016	0.48	0	0	0	0-0	4.223	5.03	25	
Copper	7.396	0.48	0	0	0	0-0	7.518	1.64	25	
Iron	7861	48	0	0	0	0-0	8371	6.29	25	
Lead	8.881	0.48	0	0	0	0-0	9.213	3.66	25	
Molybdenum	0.6964	0.48	0	0	0	0-0	0.782	11.6	25	
Nickel	8.596	0.48	0	0	0	0-0	8.837	2.76	25	
Potassium	2446	48	0	0	0	0-0	2567	4.83	25	
Selenium	0.8408	0.48	0	0	0	0-0	0.7589	10.2	25	
Silver	U	0.48	0	0	0	0-0	0.04949	0	25	
Uranium	U	0.48	0	0	0		0.4497	0	25	
Zinc	27.76	0.48	0	0	0	0-0	30	7.75	25	

DUP	Sample ID: 1302079-01CDUP					Units: mg/Kg		Analysis Date: 2/6/2013 06:38 PM		
Client ID:	Run ID: ICPMS05_130206A				SeqNo: 3104419		Prep Date: 2/5/2013		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	9534	96	0	0	0	0-0	11780	21.1	25	
Calcium	58170	4,800	0	0	0	0-0	64880	10.9	25	
Manganese	291.2	48	0	0	0	0-0	317.5	8.63	25	

DUP	Sample ID: 1302079-01CDUP					Units: mg/Kg		Analysis Date: 2/7/2013 03:35 PM		
Client ID:	Run ID: ICPMS05_130207A				SeqNo: 3105767		Prep Date: 2/5/2013		DF: 2	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	5.198	4.8	0	0	0	0-0	6.718	25.5	25	R
Sodium	236.7	96	0	0	0	0-0	257.4	8.37	25	

The following samples were analyzed in this batch:

1302082-01C	1302082-03A	1302082-06A
1302082-09A		

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67586** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS2-020513-67586				Units: µg/Kg		Analysis Date: 2/5/2013 05:08 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102385		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS2-020513-67586				Units: µg/Kg		Analysis Date: 2/5/2013 05:10 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102386		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	342.7	3.3	333.3	0	103	85-115	0			

MS	Sample ID: 1302097-02AMS				Units: µg/Kg		Analysis Date: 2/5/2013 05:16 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102389		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	318.7	3.4	344.1	2.743	91.8	85-115	0			

MSD	Sample ID: 1302097-02AMSD				Units: µg/Kg		Analysis Date: 2/5/2013 05:18 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102390		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	311.1	3.4	336.7	2.743	91.6	85-115	318.7	2.39	20	

DUP	Sample ID: 1302097-02ADUP				Units: µg/Kg		Analysis Date: 2/5/2013 05:14 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102388		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	3.425	3.5	0	0	0		2.743	0	20	J

The following samples were analyzed in this batch:

1302082-01C	1302082-03A	1302082-06A
1302082-09A	1302082-12A	1302082-15A
1302082-18A	1302082-21C	

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67614** Instrument ID **ICP7500** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020613-67614** Units: **mg/Kg** Analysis Date: **2/9/2013 04:32 AM**

Client ID: Run ID: **ICP7500_130208A** SeqNo: **3108631** Prep Date: **2/6/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	1.0								
Arsenic	U	0.50								
Barium	U	0.50								
Boron	U	2.5								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Sodium	12.79	50								J
Uranium	U	0.50								
Zinc	U	0.50								

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67614** Instrument ID **ICP7500** Method: **SW6020**

LCS Sample ID: **MLCSS1-020613-67614** Units: **mg/Kg** Analysis Date: **2/9/2013 04:37 AM**

Client ID: Run ID: **ICP7500_130208A** SeqNo: **3108632** Prep Date: **2/6/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	9.744	1.0	10	0	97.4	80-120	0			
Arsenic	9.261	0.50	10	0	92.6	80-120	0			
Barium	9.774	0.50	10	0	97.7	80-120	0			
Boron	50.49	2.5	50	0	101	80-120	0			
Cadmium	9.714	0.50	10	0	97.1	80-120	0			
Calcium	945.9	50	1000	0	94.6	80-120	0			
Chromium	9.611	0.50	10	0	96.1	80-120	0			
Cobalt	9.612	0.50	10	0	96.1	80-120	0			
Copper	9.754	0.50	10	0	97.5	80-120	0			
Iron	948.3	50	1000	0	94.8	80-120	0			
Lead	9.646	0.50	10	0	96.5	80-120	0			
Manganese	9.443	0.50	10	0	94.4	80-120	0			
Molybdenum	9.737	0.50	10	0	97.4	80-120	0			
Nickel	9.653	0.50	10	0	96.5	80-120	0			
Potassium	963	50	1000	0	96.3	80-120	0			
Selenium	9.298	0.50	10	0	93	80-120	0			
Silver	9.768	0.50	10	0	97.7	80-120	0			
Sodium	913.8	50	1000	0	91.4	80-120	0			
Uranium	9.652	0.50	10	0	96.5	80-120	0			
Zinc	10.36	0.50	10	0	104	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67614** Instrument ID **ICP7500** Method: **SW6020**

MS		Sample ID: 1302140-04DMS				Units: mg/Kg		Analysis Date: 2/9/2013 04:57 AM		
Client ID:		Run ID: ICP7500_130208A				SeqNo: 3108636		Prep Date: 2/6/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	7025	0.94	9.374	4871	23000	75-125	0			SEO
Arsenic	11.02	0.47	9.374	2.822	87.5	75-125	0			
Barium	123.6	0.47	9.374	122.3	14.1	75-125	0			SO
Boron	45.84	2.3	46.87	5.579	85.9	75-125	0			
Cadmium	9.046	0.47	9.374	0.5305	90.8	75-125	0			
Calcium	17840	47	937.4	23680	-623	75-125	0			SEO
Chromium	16.87	0.47	9.374	7.15	104	75-125	0			
Cobalt	12.05	0.47	9.374	3.132	95.2	75-125	0			
Copper	35.89	0.47	9.374	42.82	-73.9	75-125	0			SO
Iron	8292	47	937.4	8312	-2.13	75-125	0			SO
Lead	36.62	0.47	9.374	26.49	108	75-125	0			
Manganese	238.4	0.47	9.374	242.5	-44.4	75-125	0			SEO
Molybdenum	7.522	0.47	9.374	0.3186	76.8	75-125	0			
Nickel	16.93	0.47	9.374	7.079	105	75-125	0			
Potassium	2298	47	937.4	1072	131	75-125	0			S
Selenium	7.673	0.47	9.374	0.558	75.9	75-125	0			
Silver	8.075	0.47	9.374	0.06591	85.4	75-125	0			
Sodium	950.5	47	937.4	100.1	90.7	75-125	0			
Uranium	8.896	0.47	9.374	0.3588	91.1	75-125	0			
Zinc	94.58	0.47	9.374	107.1	-133	75-125	0			SO

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67614** Instrument ID **ICP7500** Method: **SW6020**

MSD	Sample ID: 1302140-04DMSD					Units: mg/Kg		Analysis Date: 2/9/2013 05:02 AM		
Client ID:	Run ID: ICP7500_130208A				SeqNo: 3108637		Prep Date: 2/6/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	6405	0.92	9.174	4871	16700	75-125	7025	9.24	25	SEO
Arsenic	10.39	0.46	9.174	2.822	82.4	75-125	11.02	5.96	25	
Barium	130.5	0.46	9.174	122.3	88.7	75-125	123.6	5.37	25	O
Boron	45.58	2.3	45.87	5.579	87.2	75-125	45.84	0.569	25	
Cadmium	8.667	0.46	9.174	0.5305	88.7	75-125	9.046	4.28	25	
Calcium	16380	46	917.4	23680	-796	75-125	17840	8.55	25	SO
Chromium	15.68	0.46	9.174	7.15	93	75-125	16.87	7.34	25	
Cobalt	11.17	0.46	9.174	3.132	87.7	75-125	12.05	7.58	25	
Copper	47.09	0.46	9.174	42.82	46.5	75-125	35.89	27	25	SRO
Iron	7529	46	917.4	8312	-85.3	75-125	8292	9.64	25	SO
Lead	50.8	0.46	9.174	26.49	265	75-125	36.62	32.4	25	SR
Manganese	208.3	0.46	9.174	242.5	-373	75-125	238.4	13.4	25	SEO
Molybdenum	7.575	0.46	9.174	0.3186	79.1	75-125	7.522	0.711	25	
Nickel	15.42	0.46	9.174	7.079	90.9	75-125	16.93	9.32	25	
Potassium	2140	46	917.4	1072	116	75-125	2298	7.12	25	
Selenium	7.369	0.46	9.174	0.558	74.2	75-125	7.673	4.05	25	S
Silver	7.903	0.46	9.174	0.06591	85.4	75-125	8.075	2.15	25	
Sodium	913.2	46	917.4	100.1	88.6	75-125	950.5	4	25	
Uranium	8.802	0.46	9.174	0.3588	92	75-125	8.896	1.06	25	
Zinc	99.72	0.46	9.174	107.1	-79.9	75-125	94.58	5.29	25	SO

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67614** Instrument ID **ICP7500** Method: **SW6020**

DUP	Sample ID: 1302140-04DDUP					Units: mg/Kg		Analysis Date: 2/9/2013 04:47 AM			
Client ID:	Run ID: ICP7500_130208A					SeqNo: 3108634		Prep Date: 2/6/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	2.429	0.48	0	0	0	0-0	2.822	15	25		
Barium	109.8	0.48	0	0	0	0-0	122.3	10.7	25		
Boron	4.679	2.4	0	0	0	0-0	5.579	17.6	25		
Cadmium	0.2243	0.48	0	0	0	0-0	0.5305	0	25	J	
Calcium	14370	48	0	0	0	0-0	23680	48.9	25	R	
Chromium	6.999	0.48	0	0	0	0-0	7.15	2.14	25		
Cobalt	3.153	0.48	0	0	0	0-0	3.132	0.666	25		
Copper	27.2	0.48	0	0	0	0-0	42.82	44.6	25	R	
Iron	6377	48	0	0	0	0-0	8312	26.3	25	R	
Lead	32.69	0.48	0	0	0	0-0	26.49	20.9	25		
Molybdenum	0.2131	0.48	0	0	0	0-0	0.3186	0	25	J	
Nickel	7.336	0.48	0	0	0	0-0	7.079	3.56	25		
Potassium	1171	48	0	0	0	0-0	1072	8.75	25		
Selenium	0.564	0.48	0	0	0	0-0	0.558	1.07	25		
Silver	U	0.48	0	0	0	0-0	0.06591	0	25		
Sodium	121.3	48	0	0	0	0-0	100.1	19.1	25		
Uranium	U	0.48	0	0	0		0.3588	0	25		
Zinc	78.48	0.48	0	0	0	0-0	107.1	30.8	25	R	

DUP	Sample ID: 1302140-04DDUP					Units: mg/Kg		Analysis Date: 2/11/2013 09:15 PM		
Client ID:	Run ID: ICPMS03_130211A				SeqNo: 3109667		Prep Date: 2/6/2013		DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5929	48	0	0	0	0-0	4945	18.1	25	
Manganese	184.8	24	0	0	0	0-0	230.8	22.1	25	

The following samples were analyzed in this batch:

1302082-12A	1302082-15A	1302082-18A
1302082-21C		

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67581** Instrument ID **SV-4** Method: **SW8270**

MBLK	Sample ID: SBLKS1-130205-67581				Units: µg/Kg		Analysis Date: 2/5/2013 01:55 PM			
Client ID:	Run ID: SV-4_130205B				SeqNo: 3102442		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
<i>Surr: 2,4,6-Tribromophenol</i>	115.2	6.6	166.7	0	69.1	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	135.8	6.6	166.7	0	81.5	43-125	0			
<i>Surr: 2-Fluorophenol</i>	116.8	6.6	166.7	0	70.1	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	161.5	6.6	166.7	0	96.9	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	129.6	6.6	166.7	0	77.7	37-125	0			
<i>Surr: Phenol-d6</i>	120.6	6.6	166.7	0	72.4	40-125	0			

LCS	Sample ID: SLCSS1-130205-67581				Units: µg/Kg		Analysis Date: 2/5/2013 02:15 PM			
Client ID:	Run ID: SV-4_130205B				SeqNo: 3102443		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	152.5	6.6	166.7	0	91.5	50-120	0			
2-Methylnaphthalene	153.8	6.6	166.7	0	92.3	50-120	0			
Benzo(a)pyrene	136.8	6.6	166.7	0	82.1	50-130	0			
Naphthalene	149.2	6.6	166.7	0	89.5	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	142.1	6.6	166.7	0	85.3	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	150.5	6.6	166.7	0	90.3	43-125	0			
<i>Surr: 2-Fluorophenol</i>	117.9	6.6	166.7	0	70.8	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	170.9	6.6	166.7	0	103	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	136.3	6.6	166.7	0	81.8	37-125	0			
<i>Surr: Phenol-d6</i>	120.3	6.6	166.7	0	72.2	40-125	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67581** Instrument ID **SV-4** Method: **SW8270**

MS		Sample ID: 1302050-06CMS				Units: µg/Kg		Analysis Date: 2/5/2013 05:39 PM		
Client ID:		Run ID: SV-4_130205B				SeqNo: 3102445		Prep Date: 2/5/2013		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4344	66	166.3	1316	1820	50-120	0			SEO
2-Methylnaphthalene	5004	66	166.3	1528	2090	50-120	0			SEO
Benzo(a)pyrene	123.5	66	166.3	2.558	72.8	50-130	0			
Naphthalene	147.1	66	166.3	0	88.5	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	102.1	66	166.3	0	61.4	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	176.2	66	166.3	0	106	43-125	0			
<i>Surr: 2-Fluorophenol</i>	89.44	66	166.3	0	53.8	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	126.1	66	166.3	0	75.9	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	131.6	66	166.3	0	79.1	37-125	0			
<i>Surr: Phenol-d6</i>	101.7	66	166.3	0	61.2	40-125	0			

MSD		Sample ID: 1302050-06CMSD				Units: µg/Kg		Analysis Date: 2/5/2013 05:59 PM		
Client ID:		Run ID: SV-4_130205B				SeqNo: 3102446		Prep Date: 2/5/2013		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4603	66	166.2	1316	1980	50-120	4344	5.78	30	SEO
2-Methylnaphthalene	5426	66	166.2	1528	2350	50-120	5004	8.09	30	SEO
Benzo(a)pyrene	104.2	66	166.2	2.558	61.2	50-130	123.5	17	30	
Naphthalene	181.7	66	166.2	0	109	50-125	147.1	21.1	30	
<i>Surr: 2,4,6-Tribromophenol</i>	113	66	166.2	0	68	36-126	102.1	10.1	30	
<i>Surr: 2-Fluorobiphenyl</i>	171.2	66	166.2	0	103	43-125	176.2	2.92	30	
<i>Surr: 2-Fluorophenol</i>	87.26	66	166.2	0	52.5	37-125	89.44	2.47	30	
<i>Surr: 4-Terphenyl-d14</i>	171.5	66	166.2	0	103	32-125	126.1	30.5	30	R
<i>Surr: Nitrobenzene-d5</i>	141.5	66	166.2	0	85.1	37-125	131.6	7.27	30	
<i>Surr: Phenol-d6</i>	121.6	66	166.2	0	73.2	40-125	101.7	17.8	30	

The following samples were analyzed in this batch:

1302082-01D 1302082-21D

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020413-R142091** Units: **µg/Kg** Analysis Date: **2/4/2013 02:20 PM**

Client ID: Run ID: **VOA5_130204A** SeqNo: **3101239** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	43.64	0	50	0	87.3	70-128	0			
Surr: 4-Bromofluorobenzene	46.3	0	50	0	92.6	73-126	0			
Surr: Dibromofluoromethane	48.2	0	50	0	96.4	71-128	0			
Surr: Toluene-d8	51.1	0	50	0	102	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

LCS				Sample ID: VLCSS1-020413-R142091			Units: µg/Kg		Analysis Date: 2/4/2013 12:48 PM		
Client ID:		Run ID: VOA5_130204A			SeqNo: 3101238		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	56.36	5.0	50	0	113	79-124	0				
1,1,2,2-Tetrachloroethane	55.2	5.0	50	0	110	75-123	0				
1,1,2-Trichloroethane	60.76	5.0	50	0	122	79-120	0			S	
1,1-Dichloroethane	57.8	5.0	50	0	116	75-124	0				
1,1-Dichloroethene	58.39	5.0	50	0	117	80-122	0				
1,2-Dibromoethane	55.86	5.0	50	0	112	79-120	0				
1,2-Dichloroethane	53.68	5.0	50	0	107	73-121	0				
Benzene	56.68	5.0	50	0	113	79-120	0				
Carbon tetrachloride	54.78	5.0	50	0	110	74-126	0				
Chloroform	51.07	5.0	50	0	102	78-120	0				
Ethylbenzene	59.14	5.0	50	0	118	80-122	0				
Methylene chloride	57.27	10	50	0	115	70-123	0				
Tetrachloroethene	55.19	5.0	50	0	110	80-121	0				
Toluene	59.27	5.0	50	0	119	79-120	0				
Trichloroethene	59.99	5.0	50	0	120	80-121	0				
Vinyl chloride	58.95	2.0	50	0	118	76-126	0				
Xylenes, Total	169.3	15	150	0	113	80-120	0				
<i>Surr: 1,2-Dichloroethane-d4</i>	45.09	0	50	0	90.2	70-128	0				
<i>Surr: 4-Bromofluorobenzene</i>	48.08	0	50	0	96.2	73-126	0				
<i>Surr: Dibromofluoromethane</i>	49.73	0	50	0	99.5	71-128	0				
<i>Surr: Toluene-d8</i>	50.18	0	50	0	100	73-127	0				

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MS				Sample ID: 1302079-15AMS		Units: µg/Kg		Analysis Date: 2/4/2013 04:14 PM		
Client ID:		Run ID: VOA5_130204A			SeqNo: 3101244		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	45.09	5.0	50	0	90.2	79-124	0			
1,1,2,2-Tetrachloroethane	40.5	5.0	50	0	81	75-123	0			
1,1,2-Trichloroethane	47.23	5.0	50	0	94.5	79-120	0			
1,1-Dichloroethane	43.45	5.0	50	0	86.9	75-124	0			
1,1-Dichloroethene	51.45	5.0	50	0	103	80-122	0			
1,2-Dibromoethane	42.06	5.0	50	0	84.1	79-120	0			
1,2-Dichloroethane	38.83	5.0	50	0	77.7	73-121	0			
Benzene	44.11	5.0	50	0	88.2	79-120	0			
Carbon tetrachloride	42.94	5.0	50	0	85.9	74-126	0			
Chloroform	42.73	5.0	50	0	85.5	78-120	0			
Ethylbenzene	47.73	5.0	50	0	95.5	80-122	0			
Methylene chloride	51.41	10	50	5.438	92	70-123	0			
Tetrachloroethene	45.2	5.0	50	0	90.4	80-121	0			
Toluene	46.35	5.0	50	0	92.7	79-120	0			
Trichloroethene	49	5.0	50	0	98	80-121	0			
Vinyl chloride	53.2	2.0	50	0	106	76-126	0			
Xylenes, Total	136.9	15	150	0	91.3	80-120	0			
Surr: 1,2-Dichloroethane-d4	41.91	0	50	0	83.8	70-128	0			
Surr: 4-Bromofluorobenzene	47.54	0	50	0	95.1	73-126	0			
Surr: Dibromofluoromethane	48.39	0	50	0	96.8	71-128	0			
Surr: Toluene-d8	46.26	0	50	0	92.5	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142091** Instrument ID **VOA5** Method: **SW8260**

MSD	Sample ID: 1302079-15AMSD				Units: µg/Kg		Analysis Date: 2/4/2013 04:37 PM			
Client ID:	Run ID: VOA5_130204A				SeqNo: 3101245		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	58.61	5.0	50	0	117	79-124	45.09	26.1	30	
1,1,2,2-Tetrachloroethane	55.12	5.0	50	0	110	75-123	40.5	30.6	30	R
1,1,2-Trichloroethane	59.39	5.0	50	0	119	79-120	47.23	22.8	30	
1,1-Dichloroethane	60.52	5.0	50	0	121	75-124	43.45	32.8	30	R
1,1-Dichloroethene	59.58	5.0	50	0	119	80-122	51.45	14.6	30	
1,2-Dibromoethane	51.67	5.0	50	0	103	79-120	42.06	20.5	30	
1,2-Dichloroethane	50.73	5.0	50	0	101	73-121	38.83	26.6	30	
Benzene	56.02	5.0	50	0	112	79-120	44.11	23.8	30	
Carbon tetrachloride	47.91	5.0	50	0	95.8	74-126	42.94	10.9	30	
Chloroform	54.38	5.0	50	0	109	78-120	42.73	24	30	
Ethylbenzene	59.74	5.0	50	0	119	80-122	47.73	22.3	30	
Methylene chloride	67.26	10	50	5.438	124	70-123	51.41	26.7	30	S
Tetrachloroethene	71.23	5.0	50	0	142	80-121	45.2	44.7	30	SR
Toluene	60.02	5.0	50	0	120	79-120	46.35	25.7	30	S
Trichloroethene	61.37	5.0	50	0	123	80-121	49	22.4	30	S
Vinyl chloride	65.39	2.0	50	0	131	76-126	53.2	20.6	30	S
Xylenes, Total	171.4	15	150	0	114	80-120	136.9	22.4	30	
Surr: 1,2-Dichloroethane-d4	51.28	0	50	0	103	70-128	41.91	20.1	30	
Surr: 4-Bromofluorobenzene	49.44	0	50	0	98.9	73-126	47.54	3.91	30	
Surr: Dibromofluoromethane	51.14	0	50	0	102	71-128	48.39	5.54	30	
Surr: Toluene-d8	49.69	0	50	0	99.4	73-127	46.26	7.15	30	

The following samples were analyzed in this batch:

1302082-01A 1302082-21A

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MBLK Sample ID: **VBLKW-130205-R142161** Units: **µg/L** Analysis Date: **2/5/2013 10:49 AM**

Client ID: Run ID: **VOA4_130205A** SeqNo: **3102121** 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	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Carbon tetrachloride	U	1.0								
Chloroform	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Trichloroethene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	47.14	1.0	50	0	94.3	71-125	0			
Surr: 4-Bromofluorobenzene	47.73	1.0	50	0	95.5	70-125	0			
Surr: Dibromofluoromethane	50.94	1.0	50	0	102	74-125	0			
Surr: Toluene-d8	49.25	1.0	50	0	98.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

LCS		Sample ID: VLCSW-130205-R142161				Units: µg/L		Analysis Date: 2/5/2013 09:37 AM		
Client ID:		Run ID: VOA4_130205A				SeqNo: 3102119		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	55.03	1.0	50	0	110	80-120	0			
1,1,2,2-Tetrachloroethane	45.4	1.0	50	0	90.8	74-123	0			
1,1,2-Trichloroethane	48.9	1.0	50	0	97.8	80-120	0			
1,1-Dichloroethane	46.19	1.0	50	0	92.4	80-120	0			
1,1-Dichloroethene	53.85	1.0	50	0	108	80-120	0			
1,2-Dibromoethane	52.93	1.0	50	0	106	80-120	0			
1,2-Dichloroethane	48.97	1.0	50	0	97.9	79-120	0			
Benzene	48.6	1.0	50	0	97.2	80-120	0			
Carbon tetrachloride	59.17	1.0	50	0	118	79-120	0			
Chloroform	47.16	1.0	50	0	94.3	80-120	0			
Ethylbenzene	48.68	1.0	50	0	97.4	80-120	0			
Methylene chloride	47.36	2.0	50	0	94.7	75-125	0			
Tetrachloroethene	52.99	1.0	50	0	106	80-120	0			
Toluene	47.82	1.0	50	0	95.6	80-121	0			
Trichloroethene	54.22	1.0	50	0	108	80-120	0			
Vinyl chloride	50.08	1.0	50	0	100	75-125	0			
Xylenes, Total	142.4	1.0	150	0	94.9	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	44.33	1.0	50	0	88.7	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	50.11	1.0	50	0	100	70-125	0			
<i>Surr: Dibromofluoromethane</i>	49.8	1.0	50	0	99.6	74-125	0			
<i>Surr: Toluene-d8</i>	48.26	1.0	50	0	96.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

LCSD	Sample ID: VLCSDW-130205-R142161					Units: µg/L		Analysis Date: 2/5/2013 10:01 AM		
Client ID:	Run ID: VOA4_130205A				SeqNo: 3102120		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	52.78	1.0	50	0	106	80-120	55.03	4.17	20	
1,1,2,2-Tetrachloroethane	44.75	1.0	50	0	89.5	74-123	45.4	1.45	20	
1,1,2-Trichloroethane	48.98	1.0	50	0	98	80-120	48.9	0.168	20	
1,1-Dichloroethane	44.95	1.0	50	0	89.9	80-120	46.19	2.71	20	
1,1-Dichloroethene	51.05	1.0	50	0	102	80-120	53.85	5.34	20	
1,2-Dibromoethane	52.56	1.0	50	0	105	80-120	52.93	0.693	20	
1,2-Dichloroethane	48.06	1.0	50	0	96.1	79-120	48.97	1.89	20	
Benzene	46.95	1.0	50	0	93.9	80-120	48.6	3.45	20	
Carbon tetrachloride	57.13	1.0	50	0	114	79-120	59.17	3.51	20	
Chloroform	45.5	1.0	50	0	91	80-120	47.16	3.58	20	
Ethylbenzene	47.06	1.0	50	0	94.1	80-120	48.68	3.38	20	
Methylene chloride	46.64	2.0	50	0	93.3	75-125	47.36	1.54	20	
Tetrachloroethene	52.04	1.0	50	0	104	80-120	52.99	1.82	20	
Toluene	47	1.0	50	0	94	80-121	47.82	1.73	20	
Trichloroethene	52.61	1.0	50	0	105	80-120	54.22	3.01	20	
Vinyl chloride	46.94	1.0	50	0	93.9	75-125	50.08	6.46	20	
Xylenes, Total	140.3	1.0	150	0	93.5	80-124	142.4	1.5	20	
Surr: 1,2-Dichloroethane-d4	44.11	1.0	50	0	88.2	71-125	44.33	0.493	20	
Surr: 4-Bromofluorobenzene	51.13	1.0	50	0	102	70-125	50.11	2.03	20	
Surr: Dibromofluoromethane	48.61	1.0	50	0	97.2	74-125	49.8	2.42	20	
Surr: Toluene-d8	48.17	1.0	50	0	96.3	78-123	48.26	0.187	20	

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MS		Sample ID: 1302056-09AMS				Units: µg/L		Analysis Date: 2/5/2013 11:14 AM		
Client ID:		Run ID: VOA4_130205A				SeqNo: 3102122		Prep Date:		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	537.7	10	500	0	108	80-120	0			
1,1,2,2-Tetrachloroethane	439.8	10	500	0	88	74-123	0			
1,1,2-Trichloroethane	477.2	10	500	0	95.4	80-120	0			
1,1-Dichloroethane	459.9	10	500	0	92	80-120	0			
1,1-Dichloroethene	525.1	10	500	0	105	80-120	0			
1,2-Dibromoethane	510.6	10	500	0	102	80-120	0			
1,2-Dichloroethane	487.4	10	500	0	97.5	79-120	0			
Benzene	485.1	10	500	0	97	80-120	0			
Carbon tetrachloride	581.9	10	500	0	116	79-120	0			
Chloroform	469.7	10	500	0	93.9	80-120	0			
Ethylbenzene	475	10	500	0	95	80-120	0			
Methylene chloride	473.5	20	500	0	94.7	75-125	0			
Tetrachloroethene	524.4	10	500	0	105	80-120	0			
Toluene	476.7	10	500	0	95.3	80-121	0			
Trichloroethene	544.7	10	500	0	109	80-120	0			
Vinyl chloride	495.6	10	500	0	99.1	75-125	0			
Xylenes, Total	1405	10	1500	0	93.7	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	449.3	10	500	0	89.9	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	505	10	500	0	101	70-125	0			
<i>Surr: Dibromofluoromethane</i>	495.3	10	500	0	99.1	74-125	0			
<i>Surr: Toluene-d8</i>	482.7	10	500	0	96.5	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142161** Instrument ID **VOA4** Method: **SW8260**

MSD	Sample ID: 1302056-09AMSD				Units: µg/L		Analysis Date: 2/5/2013 11:38 AM			
Client ID:	Run ID: VOA4_130205A				SeqNo: 3102123		Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	520.1	10	500	0	104	80-120	537.7	3.31	20	
1,1,2,2-Tetrachloroethane	434.1	10	500	0	86.8	74-123	439.8	1.3	20	
1,1,2-Trichloroethane	469.5	10	500	0	93.9	80-120	477.2	1.62	20	
1,1-Dichloroethane	440.8	10	500	0	88.2	80-120	459.9	4.23	20	
1,1-Dichloroethene	509.2	10	500	0	102	80-120	525.1	3.07	20	
1,2-Dibromoethane	506.6	10	500	0	101	80-120	510.6	0.775	20	
1,2-Dichloroethane	478	10	500	0	95.6	79-120	487.4	1.96	20	
Benzene	470	10	500	0	94	80-120	485.1	3.17	20	
Carbon tetrachloride	560.3	10	500	0	112	79-120	581.9	3.77	20	
Chloroform	451.7	10	500	0	90.3	80-120	469.7	3.89	20	
Ethylbenzene	462.6	10	500	0	92.5	80-120	475	2.64	20	
Methylene chloride	460.8	20	500	0	92.2	75-125	473.5	2.72	20	
Tetrachloroethene	504.2	10	500	0	101	80-120	524.4	3.92	20	
Toluene	462.7	10	500	0	92.5	80-121	476.7	2.98	20	
Trichloroethene	516.9	10	500	0	103	80-120	544.7	5.23	20	
Vinyl chloride	471	10	500	0	94.2	75-125	495.6	5.1	20	
Xylenes, Total	1361	10	1500	0	90.7	80-124	1405	3.17	20	
Surr: 1,2-Dichloroethane-d4	442.1	10	500	0	88.4	71-125	449.3	1.62	20	
Surr: 4-Bromofluorobenzene	501	10	500	0	100	70-125	505	0.777	20	
Surr: Dibromofluoromethane	494.6	10	500	0	98.9	74-125	495.3	0.14	20	
Surr: Toluene-d8	477.4	10	500	0	95.5	78-123	482.7	1.1	20	

The following samples were analyzed in this batch:

1302082-22A

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67667** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK Sample ID: **WBLKS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107315** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS Sample ID: **WLCSS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107316** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.65	2.0	10	0	96.5	80-120	0			

LCSD Sample ID: **WLCSDS1-020813-67667** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107332** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.35	2.0	10	0	93.5	80-120	9.65	3.16	30	

MS Sample ID: **1302079-15CMS** Units: **mg/Kg** Analysis Date: **2/8/2013 05:30 PM**

Client ID: Run ID: **UV-2450_130208F** SeqNo: **3107331** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.287	1.9	9.364	0.352	84.7	75-125	0			

The following samples were analyzed in this batch:

1302082-01C	1302082-03B	1302082-06B
1302082-09B	1302082-12B	1302082-15B
1302082-18B	1302082-21C	

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67763** Instrument ID **ICS3K2** Method: **E300** (Dissolve)

MBLK	Sample ID: WBLKS1-67763			Units: mg/Kg			Analysis Date: 2/11/2013 12:42 PM			
Client ID:	Run ID: ICS3K2_130211A			SeqNo: 3110269			Prep Date: 2/10/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	5.0								
Fluoride	U	1.0								
Nitrogen, Nitrate (As N)	U	1.0								
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
Surr: Selenate (surr)	56.88	1.0	50	0	114	85-115	0			

LCS	Sample ID: WLCSS1-67763			Units: mg/Kg			Analysis Date: 2/11/2013 01:03 PM			
Client ID:	Run ID: ICS3K2_130211A			SeqNo: 3110270			Prep Date: 2/10/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	183.7	5.0	200	0	91.8	90-110	0			
Fluoride	39.17	1.0	40	0	97.9	90-110	0			
Nitrogen, Nitrate (As N)	37.84	1.0	40	0	94.6	90-110	0			
Nitrogen, Nitrite (As N)	39.72	1.0	40	0	99.3	90-110	0			
Sulfate	200.2	5.0	200	0	100	90-110	0			
Surr: Selenate (surr)	54.86	1.0	50	0	110	85-115	0			

MS	Sample ID: 1302082-21CMS			Units: mg/Kg			Analysis Date: 2/11/2013 08:11 PM			
Client ID: RO-SB-1 (35)	Run ID: ICS3K2_130211A			SeqNo: 3110281			Prep Date: 2/10/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	140	5.0	99.64	39.26	101	75-125	0			
Fluoride	27.44	1.0	19.93	4.87	113	75-125	0			
Nitrogen, Nitrate (As N)	21.09	1.0	19.93	0	106	75-125	0			
Nitrogen, Nitrite (As N)	22.01	1.0	19.93	0	110	75-125	0			
Sulfate	511.7	5.0	99.64	515.9	-4.16	75-125	0			SO
Surr: Selenate (surr)	56	1.0	49.82	0	112	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67763** Instrument ID **ICS3K2** Method: **E300** **(Dissolve)**

MSD	Sample ID: 1302082-21CMSD				Units: mg/Kg		Analysis Date: 2/11/2013 08:33 PM			
Client ID: RO-SB-1 (35)			Run ID: ICS3K2_130211A		SeqNo: 3110282		Prep Date: 2/10/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	138.5	5.0	99.69	39.26	99.6	75-125	140	1.08	20	
Fluoride	26.96	1.0	19.94	4.87	111	75-125	27.44	1.77	20	
Nitrogen, Nitrate (As N)	20.86	1.0	19.94	0	105	75-125	21.09	1.13	20	
Nitrogen, Nitrite (As N)	21.74	1.0	19.94	0	109	75-125	22.01	1.22	20	
Sulfate	504.9	5.0	99.69	515.9	-11	75-125	511.7	1.35	20	SO
<i>Surr: Selenate (surr)</i>	56.91	1.0	49.85	0	114	80-120	56	1.63	20	

The following samples were analyzed in this batch:

1302082-01C	1302082-03B	1302082-06B
1302082-09B	1302082-12B	1302082-15B
1302082-18B	1302082-21C	

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142356** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302082-16ADUP** Units: **wt%** Analysis Date: **2/7/2013 03:15 PM**
Client ID: **RO-SB-1 (27)** Run ID: **BALANCE1_130207C** SeqNo: **3106553** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	18.28	0.010	0	0	0	0-0	18.79	2.77	20	

The following samples were analyzed in this batch:

1302082-01C	1302082-02A	1302082-03A
1302082-04A	1302082-05A	1302082-06A
1302082-07A	1302082-08A	1302082-09A
1302082-10A	1302082-11A	1302082-12A
1302082-13A	1302082-14A	1302082-15A
1302082-16A		

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

Client: Navajo Refining Company
Work Order: 1302082
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142515** Instrument ID **BALANCE1** Method: **SW3550** (**Dissolve**)

DUP	Sample ID: 1302140-04DDUP				Units: wt%		Analysis Date: 2/8/2013 02:55 PM			
Client ID:	Run ID: BALANCE1_130208C				SeqNo: 3108447		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	10.25	0.010	0	0	0	0-0	10.21	0.434	20	

DUP	Sample ID: 1302140-05DDUP				Units: wt%		Analysis Date: 2/8/2013 02:55 PM			
Client ID:	Run ID: BALANCE1_130208C				SeqNo: 3108467		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	9.649	0.010	0	0	0	0-0	9.526	1.29	20	

The following samples were analyzed in this batch:

1302082-17A	1302082-18A	1302082-19A
1302082-20A	1302082-21C	

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302082

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg-dry	Micrograms per Kilogram - Dry weight corrected
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **02-Feb-13 09:30**

Work Order: **1302082**

Received by: **JBA**

Checklist completed by Rishel D. Naran
eSignature

04-Feb-13
Date

Reviewed by: Sonia West
eSignature

05-Feb-13
Date

Matrices: **SOIL**

Carrier name: **FedEx**

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):	<u>0.6C U/C</u> <u>005</u>		
Cooler(s)/Kit(s):	<u>4672</u>		
Date/Time sample(s) sent to storage:	<u>2/4/13 10:00</u>		
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:	<u>-</u>		

Login Notes: A Trip Blank sample was received but was not listed on the chain of custody. The laboratory analyzed this sample for VOC 8260.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



Environmental

Chain of Custody Form

Page 1 of 3

COC ID: 41191

ALS Project Manager:

1302082

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



Customer Information				Project Information															
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List														
Work Order		Project Number	128823	B	GRO (8015M)														
Company Name	Navajo Refining Co.	Bill To Company	Navajo Refining Co.	C	DRO (8015M)														
Send Report To	Robert Corbys	Invoice Attn.	Robert Corbys	D	ORO (8015M)														
Address	501 East Main	Address	501 East Main	E	LL SVOC (B270) NW GW List														
City/State/Zip	Artesa, NM	City/State/Zip	Artesa, NM	F	Total Metals (6020/7000) Long List														
Phone		Phone	575-478-6733	G	Dissolved Metals (6020/7000) RCRA8														
Fax		Fax	575-478-746-5421	H	Radium + Anions														
e-Mail Address		e-Mail Address		I	Moisture														
				J	Cyanide														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	RO-SB-1 (1)	1/31/13	1145	Soil	-	5	X	X	X	X	X	X		X	X	X			
2	RO-SB-1 (3)	1/1	1150			1									X				
3	RO-SB-1 (5)		1200			3						X		X	X	X			
4	RO-SB-1 (7)		1230			1									X				
5	RO-SB-1 (9)		1245			1									X				
6	RO-SB-1 (10)	1/31/13	1250			3					X			X	X	X			
7	RO-SB-1 (11)	2/1/13	0953			1									X				
8	RO-SB-1 (13)		0953			1									X				
9	RO-SB-1 (15)		0957			3						X		X	X	X			
10	RO-SB-1 (17)		0947			1									X				
Sampler(s): Please Print & Sign				Shipment Method:		Required Turnaround Time:				Other				Results Due Date:					
						☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour													
Relinquished by:		Date:	Time:	Received by:		Notes													
Eric Bergesen		2/1/13	1700			Day TAT, Dissolved Metals Field Filtered													
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler Temp.													
						☒ Level II: Standard QC ☐ Level III: Std QC + Raw Data ☐ Level IV: SW846 CLP-Like Other:													
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):															
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035																			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Chain of Custody Form

Page 2 of 3

COC ID: **41199**

☐ Cincinnati, OH
+1 513 733 5336
☐ Everett, WA
+1 425 356 2600
☐ Fort Collins, CO
+1 970 490 1511

☐ Holland, MI
+1 616 399 6070
☐ Houston, TX
+1 281 530 5656
☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7200
☐ Spring City, PA
+1 610 948 4903
☐ York, PA
+1 717 505 5280

ALS Project Manager:

Work Order #: **1302082**

Customer Information			Project Information				Parameter/Method Request for Analysis													
Purchase Order		Project Name	RO Discharge/Sampling				A	VOC (8260) NW GW List												
Work Order		Project Number	128823				B	GRO (80154)												
Company Name	Navajo Refining Co	Bill To Company	Navajo Refining Co				C	DRO (80154)												
Send Report To	Robert Combs	Invoice Attn.	Robert Combs				D	ORO (80154)												
Address	501 East Main	Address	501 East Main				E	LL SVOC (8270) NW GW List												
City/State/Zip	Artesia, NM	City/State/Zip	Artesia NM				F	Total Metals (Long List)												
Phone		Phone	575-748-6733				G													
Fax		Fax	575-746-5421				H	Radium + Anions												
e-Mail Address		e-Mail Address					I	Moisture												
							J	Cyanide												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	RO-SB-1 (19)	2/1/13	0947	Soil	-	1									X					
2	RO-SB-1 (20)		0940			3						X		X	X	X				
3	RO-SB-1 (21)		1018			1									X					
4	RO-SB-1 (23)		1018			1									X					
5	RO-SB-1 (25)		1018			3						X		X	X	X				
6	RO-SB-1 (27)		1010			1									X					
7	RO-SB-1 (29)		1010			1									X					
8	RO-SB-1 (30)		1010			3						X		X	X	X				
9	RO-SB-1 (31)		1005			1									X					
10	RO-SB-1 (33)		1005			1									X					
Sampler(s): Please Print & Sign			Shipment Method:			Required Turnaround Time:			☐ Other			Results Due Date:								
<i>[Signature]</i>						☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour														
Relinquished by:		Date:	Time:	Received by:		Notes:														
Eric Bergersen		2/1/13	1200	<i>[Signature]</i>		10 Day TAT, Dissolved Metals Field Filtered														
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler Temp.		QC Package: (Check Box Below)												
								☒ Level II: Standard QC												
								☐ Level III: Std QC + Raw Data												
								☐ Level IV: SW846 CLP-Like												
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):				Other: _____												
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035																				

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

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Holland, MI
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Chain of Custody Form

Houston, TX
+1 281 530 5656

Spring City, PA
+1 610 948 4903

Middletown, PA
+1 717 944 5541

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Page 3 of 3

COC ID: 72314

Environmental

ALS Project Manager:

ALS Work Order #: 1302062

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List
Work Order		Project Number	123823	B	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List
City/State/Zip	Artesia, NM 86211	City/State/Zip	Artesia, NM 86211	F	Total Metals (6020/7000) RCRA 8
Phone	(575) 748-6733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8
Fax	(575) 746-5421	Fax	(575) 746-5421	H	~~TDS~~ Cyanide + Anions
e-Mail Address		e-Mail Address		I	Moisture
				J	Fingerprint (PbANO/Sr, Cr, Si, Dist) Radon

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	RO-SB-1 (35)	2/1/13	10:05	Soil	-	5	X	X	X	X	X	X		X	X	X	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
<i>[Signature]</i>				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other _____ 2 WK Days 24 Hour					
Relinquished by:	Date:	Time:	Received by:	Notes:					
<i>[Signature]</i>	2/1/13	1200	<i>[Signature]</i>	10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
						☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD _____			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):						
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O 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.

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FedEx Package
Express **US Airbill**

FedEx
Tracking
Number

8013 7714 1180

Form
ID No.

0215

Recipient's Copy

1 From

Date 2/1/13

Sender's
Name

Eric Bergerson

Phone

281 787-1234

Company

ARCADIS U.S.

Address

501 East Main

Dept./Floor/Suite/Room

City

Artesia

State

NM

ZIP

88211

2 Your Internal Billing Reference

3 To

Recipient's
Name

CLIENT SERVICES

Phone

281 530-5656

Company

ALS LABORATORY GROUP

Address

10450 STANCLIFF RD STE 210

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City HOUSTON

State

TX

ZIP

77099-4338

0455550114



8013 7714 1180

4 Express Package Service

* To most locations.

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day

- ☒ **FedEx First Overnight**
Earliest next business morning delivery to select locations. Holiday shipments will be delivered on Wednesday unless SATURDAY Delivery is selected.
- ☒ **FedEx Priority Overnight**
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☒ **FedEx Standard Overnight**
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- ☐ **FedEx 2Day A.M.**
Second business morning. Saturday Delivery NOT available.
- ☐ **FedEx 2Day**
Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ **FedEx Express Saver**
Third business day.* Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

- ☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

- ☒ **SATURDAY Delivery**
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

- ☐ **No Signature Required**
Package may be left without obtaining a signature for delivery.
- ☐ **Direct Signature**
Someone at recipient's address may sign for delivery. Fee applies.
- ☐ **Indirect Signature**
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

- One box must be checked.
- ☒ **No** ☐ **Yes** As per attached Shipper's Declaration. ☐ **Yes** Shipper's Declaration not required. ☐ **Dry Ice** Dry Ice, B, UN 1845 x kg
- Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.
- ☐ **Cargo Aircraft Only**

7 Payment/Bill to:

- Enter FedEx Acct. No. or Credit Card No. below.
- ☐ **Sender** Acct. No. in Section 1 will be billed. ☒ **Recipient** ☐ **Third Party** ☐ **Credit Card** ☐ **Cash/Check**

Total Packages Total Weight

Credit Card Auth.

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

611

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1302082



ALS Environmental

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Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

4672

CUSTODY SEAL

Date: 2-1-2013 Time: 11:50
Name: B. Mc Kenna
Company: ARCADIS U.S.

2/1/13



18-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302213**

Dear Robert,

ALS Environmental received 31 samples on 06-Feb-2013 08:40 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 66.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Sonia West".

Electronically approved by: Sonia West

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302213

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302213-01	MW-118 (1)	Soil		2/4/2013 09:20	2/6/2013 08:40	☐
1302213-02	MW-118 (3)	Soil		2/4/2013 09:30	2/6/2013 08:40	☐
1302213-03	MW-118 (5)	Soil		2/4/2013 10:00	2/6/2013 08:40	☐
1302213-04	MW-118 (7)	Soil		2/4/2013 09:40	2/6/2013 08:40	☐
1302213-05	MW-118 (9)	Soil		2/4/2013 10:00	2/6/2013 08:40	☐
1302213-06	MW-118 (10)	Soil		2/4/2013 10:10	2/6/2013 08:40	☐
1302213-07	MW-118 (12)	Soil		2/4/2013 14:45	2/6/2013 08:40	☐
1302213-08	MW-118 (14)	Soil		2/4/2013 14:47	2/6/2013 08:40	☐
1302213-09	MW-118 (15)	Soil		2/4/2013 14:50	2/6/2013 08:40	☐
1302213-10	MW-118 (17)	Soil		2/4/2013 14:53	2/6/2013 08:40	☐
1302213-11	MW-118 (19)	Soil		2/4/2013 14:40	2/6/2013 08:40	☐
1302213-12	MW-118 (20)	Soil		2/4/2013 14:52	2/6/2013 08:40	☐
1302213-13	MW-118 (22)	Soil		2/4/2013 14:37	2/6/2013 08:40	☐
1302213-14	MW-118 (24)	Soil		2/4/2013 14:37	2/6/2013 08:40	☐
1302213-15	MW-118 (25)	Soil		2/4/2013 14:35	2/6/2013 08:40	☐
1302213-16	MW-119 (1)	Soil		2/4/2013 11:05	2/6/2013 08:40	☐
1302213-17	MW-119 (3)	Soil		2/4/2013 11:15	2/6/2013 08:40	☐
1302213-18	MW-119 (5)	Soil		2/4/2013 11:20	2/6/2013 08:40	☐
1302213-19	MW-119 (7)	Soil		2/4/2013 11:30	2/6/2013 08:40	☐
1302213-20	MW-119 (9)	Soil		2/4/2013 11:35	2/6/2013 08:40	☐
1302213-21	MW-119 (10)	Soil		2/4/2013 11:45	2/6/2013 08:40	☐
1302213-22	MW-119 (12)	Soil		2/4/2013 16:05	2/6/2013 08:40	☐
1302213-23	MW-119 (14)	Soil		2/4/2013 16:06	2/6/2013 08:40	☐
1302213-24	MW-119 (15)	Soil		2/4/2013 16:08	2/6/2013 08:40	☐
1302213-25	MW-119 (17)	Soil		2/4/2013 16:15	2/6/2013 08:40	☐
1302213-26	MW-119 (19)	Soil		2/4/2013 16:14	2/6/2013 08:40	☐
1302213-27	MW-119 (20)	Soil		2/4/2013 16:11	2/6/2013 08:40	☐
1302213-28	MW-119 (22)	Soil		2/4/2013 16:17	2/6/2013 08:40	☐
1302213-29	MW-119 (24)	Soil		2/4/2013 16:18	2/6/2013 08:40	☐
1302213-30	MW-119 (25)	Soil		2/4/2013 16:20	2/6/2013 08:40	☐
1302213-31	TRIP BLANK 011813-17	Water		2/4/2013	2/6/2013 08:40	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302213

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302192.

Your samples MW-118 (15), MW-118 (15), MW-118 (20), MW-118 (25), MW-119 (1), MW-119 (5), MW-119 (10), MW-119 (15) and MW-119 (25) were analyzed for Total Metals 6020 at a dilution due to matrix effects. The lowest possible dilution was performed.

Batch 67688, Total Metals 6020, Sample 1302251-01B: MS/MSD and DUP are for an unrelated sample.

Batch 67741, Semivolatile Organics 8270, Sample 1302175-02B: MS/MSD is for an unrelated sample.

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (1)
Collection Date: 2/4/2013 09:20 AM

Work Order: 1302213
Lab ID: 1302213-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/8/13 Analyst: KMB							
TPH (Oil Range)	U		0.67	4.6	mg/Kg-dry	1	2/14/2013 15:16
TPH (Diesel Range)	U		0.67	2.3	mg/Kg-dry	1	2/14/2013 15:16
Surr: 2-Fluorobiphenyl	60.8			60-135	%REC	1	2/14/2013 15:16
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Analyst: KKP							
Gasoline Range Organics	U		0.027	0.067	mg/Kg-dry	1	2/8/2013 16:02
Surr: 4-Bromofluorobenzene	88.1			70-130	%REC	1	2/8/2013 16:02
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/13/13 Analyst: OFO							
Mercury	40.1		0.37	4.61	µg/Kg-dry	1	2/13/2013 13:58
METALS Method: SW6020 Prep: SW3050A / 2/8/13 Analyst: ALR							
Aluminum	14,300		23	117	mg/Kg-dry	100	2/11/2013 19:53
Arsenic	4.08		0.12	0.585	mg/Kg-dry	1	2/8/2013 23:54
Barium	105		0.094	0.585	mg/Kg-dry	1	2/8/2013 23:54
Boron	7.25		3.3	5.85	mg/Kg-dry	2	2/12/2013 18:05
Cadmium	0.353	J	0.058	0.585	mg/Kg-dry	1	2/8/2013 23:54
Calcium	55,400		1,200	5,850	mg/Kg-dry	100	2/11/2013 19:53
Chromium	14.1		0.11	0.585	mg/Kg-dry	1	2/8/2013 23:54
Cobalt	4.33		0.082	0.585	mg/Kg-dry	1	2/8/2013 23:54
Copper	21.3		0.12	0.585	mg/Kg-dry	1	2/8/2013 23:54
Iron	9,280		12	58.5	mg/Kg-dry	1	2/8/2013 23:54
Lead	295		5.8	58.5	mg/Kg-dry	100	2/11/2013 19:53
Manganese	261		12	58.5	mg/Kg-dry	100	2/11/2013 19:53
Molybdenum	0.627		0.18	0.585	mg/Kg-dry	1	2/8/2013 23:54
Nickel	9.10		0.11	0.585	mg/Kg-dry	1	2/8/2013 23:54
Potassium	3,020		15	58.5	mg/Kg-dry	1	2/8/2013 23:54
Selenium	0.652		0.21	0.585	mg/Kg-dry	1	2/8/2013 23:54
Silver	U		0.094	0.585	mg/Kg-dry	1	2/8/2013 23:54
Sodium	152		13	58.5	mg/Kg-dry	1	2/8/2013 23:54
Uranium	U		0.58	0.585	mg/Kg-dry	1	2/8/2013 23:54
Zinc	37.5		0.29	0.585	mg/Kg-dry	1	2/8/2013 23:54
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/11/13 Analyst: LG							
1-Methylnaphthalene	U		2.1	8.8	µg/Kg-dry	1	2/12/2013 11:33
2-Methylnaphthalene	U		2.1	8.8	µg/Kg-dry	1	2/12/2013 11:33
Benzo(a)pyrene	U		2.1	8.8	µg/Kg-dry	1	2/12/2013 11:33
Naphthalene	U		2.1	8.8	µg/Kg-dry	1	2/12/2013 11:33
Surr: 2,4,6-Tribromophenol	44.7			36-126	%REC	1	2/12/2013 11:33
Surr: 2-Fluorobiphenyl	55.7			43-125	%REC	1	2/12/2013 11:33

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (1)
Collection Date: 2/4/2013 09:20 AM

Work Order: 1302213
Lab ID: 1302213-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	54.9			37-125	%REC	1	2/12/2013 11:33
Surr: 4-Terphenyl-d14	68.3			32-125	%REC	1	2/12/2013 11:33
Surr: Nitrobenzene-d5	54.0			37-125	%REC	1	2/12/2013 11:33
Surr: Phenol-d6	54.1			40-125	%REC	1	2/12/2013 11:33

VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.3	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,1,2,2-Tetrachloroethane	U		0.67	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,1,2-Trichloroethane	U		2.7	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,1-Dichloroethane	U		0.67	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,1-Dichloroethene	U		2.0	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,2-Dibromoethane	U		0.94	6.7	µg/Kg-dry	1	2/8/2013 12:40
1,2-Dichloroethane	U		0.81	6.7	µg/Kg-dry	1	2/8/2013 12:40
Benzene	U		0.81	6.7	µg/Kg-dry	1	2/8/2013 12:40
Carbon tetrachloride	U		1.6	6.7	µg/Kg-dry	1	2/8/2013 12:40
Chloroform	U		2.4	6.7	µg/Kg-dry	1	2/8/2013 12:40
Ethylbenzene	U		1.2	6.7	µg/Kg-dry	1	2/8/2013 12:40
Methylene chloride	U		3.4	13	µg/Kg-dry	1	2/8/2013 12:40
Tetrachloroethene	U		1.3	6.7	µg/Kg-dry	1	2/8/2013 12:40
Toluene	U		0.94	6.7	µg/Kg-dry	1	2/8/2013 12:40
Trichloroethene	U		2.2	6.7	µg/Kg-dry	1	2/8/2013 12:40
Vinyl chloride	U		1.3	2.7	µg/Kg-dry	1	2/8/2013 12:40
Xylenes, Total	U		3.5	20	µg/Kg-dry	1	2/8/2013 12:40
Surr: 1,2-Dichloroethane-d4	100			70-128	%REC	1	2/8/2013 12:40
Surr: 4-Bromofluorobenzene	95.6			73-126	%REC	1	2/8/2013 12:40
Surr: Dibromofluoromethane	99.7			71-128	%REC	1	2/8/2013 12:40
Surr: Toluene-d8	99.5			73-127	%REC	1	2/8/2013 12:40

ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/13/13		Analyst: JKP	
Chloride	34.0		2.4	6.08	mg/Kg-dry	1	2/13/2013 18:49		
Fluoride	5.27		0.37	1.22	mg/Kg-dry	1	2/13/2013 18:49		
Nitrogen, Nitrate (As N)	U		0.37	1.22	mg/Kg-dry	1	2/13/2013 18:49		
Nitrogen, Nitrite (As N)	U		0.37	1.22	mg/Kg-dry	1	2/13/2013 18:49		
Sulfate	3,100		24	60.8	mg/Kg-dry	10	2/14/2013 12:33		
Surr: Selenate (surr)	91.6			85-115	%REC	1	2/13/2013 18:49		
Surr: Selenate (surr)	89.7			85-115	%REC	10	2/14/2013 12:33		

CYANIDE			Method: SW9014			Prep: SW9010C / 2/14/13		Analyst: EDG	
Cyanide	U		0.75	2.50	mg/Kg-dry	1	2/14/2013 15:00		

MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	25.7		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (3)
Collection Date: 2/4/2013 09:30 AM

Work Order: 1302213
Lab ID: 1302213-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (5)
Collection Date: 2/4/2013 10:00 AM

Work Order: 1302213
Lab ID: 1302213-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/13/13		Analyst: OFO
Mercury	7.39		0.42	5.12	µg/Kg-dry	1	2/13/2013 14:00
METALS							
			Method: SW6020		Prep: SW3050A / 2/8/13		Analyst: ALR
Aluminum	8,560		29	143	mg/Kg-dry	100	2/11/2013 19:58
Arsenic	3.53		0.14	0.715	mg/Kg-dry	1	2/8/2013 23:59
Barium	85.6		0.11	0.715	mg/Kg-dry	1	2/8/2013 23:59
Boron	7.21		4.0	7.15	mg/Kg-dry	2	2/12/2013 18:10
Cadmium	0.130	J	0.071	0.715	mg/Kg-dry	1	2/8/2013 23:59
Calcium	115,000		1,400	7,150	mg/Kg-dry	100	2/11/2013 19:58
Chromium	8.08		0.13	0.715	mg/Kg-dry	1	2/8/2013 23:59
Cobalt	2.15		0.10	0.715	mg/Kg-dry	1	2/8/2013 23:59
Copper	3.19		0.14	0.715	mg/Kg-dry	1	2/8/2013 23:59
Iron	5,220		14	71.5	mg/Kg-dry	1	2/8/2013 23:59
Lead	3.67		0.071	0.715	mg/Kg-dry	1	2/8/2013 23:59
Manganese	62.9		0.14	0.715	mg/Kg-dry	1	2/8/2013 23:59
Molybdenum	0.416	J	0.21	0.715	mg/Kg-dry	1	2/8/2013 23:59
Nickel	4.78		0.13	0.715	mg/Kg-dry	1	2/8/2013 23:59
Potassium	1,610		19	71.5	mg/Kg-dry	1	2/8/2013 23:59
Selenium	0.286	J	0.26	0.715	mg/Kg-dry	1	2/8/2013 23:59
Silver	U		0.11	0.715	mg/Kg-dry	1	2/8/2013 23:59
Sodium	248		16	71.5	mg/Kg-dry	1	2/8/2013 23:59
Uranium	0.953		0.71	0.715	mg/Kg-dry	1	2/8/2013 23:59
Zinc	13.5		0.36	0.715	mg/Kg-dry	1	2/8/2013 23:59
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/13/13		Analyst: JKP
Chloride	56.9		3.1	7.67	mg/Kg-dry	1	2/13/2013 19:04
Fluoride	4.29		0.46	1.53	mg/Kg-dry	1	2/13/2013 19:04
Nitrogen, Nitrate (As N)	U		0.46	1.53	mg/Kg-dry	1	2/13/2013 19:04
Nitrogen, Nitrite (As N)	U		0.46	1.53	mg/Kg-dry	1	2/13/2013 19:04
Sulfate	10,700		31	76.7	mg/Kg-dry	10	2/14/2013 12:47
Surr: Selenate (surr)	91.9			85-115	%REC	1	2/13/2013 19:04
Surr: Selenate (surr)	88.0			85-115	%REC	10	2/14/2013 12:47
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/14/13		Analyst: EDG
Cyanide	U		0.85	2.83	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	34.8		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (7)
Collection Date: 2/4/2013 09:40 AM

Work Order: 1302213
Lab ID: 1302213-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	29.3		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (9)
Collection Date: 2/4/2013 10:00 AM

Work Order: 1302213
Lab ID: 1302213-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	30.4		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (10)
Collection Date: 2/4/2013 10:10 AM

Work Order: 1302213
Lab ID: 1302213-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/13/13		Analyst: OFO
Mercury	3.51	J	0.41	5.00	µg/Kg-dry	1	2/13/2013 14:02
METALS							
			Method: SW6020		Prep: SW3050A / 2/8/13		Analyst: ALR
Aluminum	7,230		25	127	mg/Kg-dry	100	2/11/2013 20:03
Arsenic	2.53		0.13	0.635	mg/Kg-dry	1	2/9/2013 00:04
Barium	84.0		0.10	0.635	mg/Kg-dry	1	2/9/2013 00:04
Boron	4.16	J	3.6	6.35	mg/Kg-dry	2	2/12/2013 18:15
Cadmium	0.172	J	0.064	0.635	mg/Kg-dry	1	2/9/2013 00:04
Calcium	187,000		1,300	6,350	mg/Kg-dry	100	2/11/2013 20:03
Chromium	7.53		0.11	0.635	mg/Kg-dry	1	2/9/2013 00:04
Cobalt	1.81		0.089	0.635	mg/Kg-dry	1	2/9/2013 00:04
Copper	3.38		0.13	0.635	mg/Kg-dry	1	2/9/2013 00:04
Iron	4,430		13	63.5	mg/Kg-dry	1	2/9/2013 00:04
Lead	6.52		0.13	1.27	mg/Kg-dry	2	2/12/2013 00:06
Manganese	98.8		0.13	0.635	mg/Kg-dry	1	2/9/2013 00:04
Molybdenum	0.464	J	0.19	0.635	mg/Kg-dry	1	2/9/2013 00:04
Nickel	4.37		0.11	0.635	mg/Kg-dry	1	2/9/2013 00:04
Potassium	1,530		17	63.5	mg/Kg-dry	1	2/9/2013 00:04
Selenium	0.344	J	0.23	0.635	mg/Kg-dry	1	2/9/2013 00:04
Silver	U		0.10	0.635	mg/Kg-dry	1	2/9/2013 00:04
Sodium	158		14	63.5	mg/Kg-dry	1	2/9/2013 00:04
Uranium	U		0.64	0.635	mg/Kg-dry	1	2/9/2013 00:04
Zinc	13.7		0.32	0.635	mg/Kg-dry	1	2/9/2013 00:04
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/13/13		Analyst: JKP
Chloride	74.6		2.7	6.83	mg/Kg-dry	1	2/13/2013 19:18
Fluoride	3.80		0.41	1.37	mg/Kg-dry	1	2/13/2013 19:18
Nitrogen, Nitrate (As N)	U		0.41	1.37	mg/Kg-dry	1	2/13/2013 19:18
Nitrogen, Nitrite (As N)	U		0.41	1.37	mg/Kg-dry	1	2/13/2013 19:18
Sulfate	3,020		27	68.3	mg/Kg-dry	10	2/14/2013 13:02
Surr: Selenate (surr)	93.0			85-115	%REC	1	2/13/2013 19:18
Surr: Selenate (surr)	89.3			85-115	%REC	10	2/14/2013 13:02
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/14/13		Analyst: EDG
Cyanide	U		0.80	2.67	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	29.3		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (12)
Collection Date: 2/4/2013 02:45 PM

Work Order: 1302213
Lab ID: 1302213-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	28.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (14)
Collection Date: 2/4/2013 02:47 PM

Work Order: 1302213
Lab ID: 1302213-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	39.4		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (15)
Collection Date: 2/4/2013 02:50 PM

Work Order: 1302213
Lab ID: 1302213-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/13/13		Analyst: OFO
Mercury	1.30	J	0.38	4.63	µg/Kg-dry	1	2/13/2013 14:04
METALS							
			Method: SW6020		Prep: SW3050A / 2/8/13		Analyst: ALR
Aluminum	2,930		25	127	mg/Kg-dry	100	2/11/2013 20:08
Arsenic	0.760	J	0.63	3.17	mg/Kg-dry	5	2/12/2013 00:21
Barium	8.93		0.51	3.17	mg/Kg-dry	5	2/12/2013 00:21
Boron	U		8.9	15.8	mg/Kg-dry	5	2/12/2013 18:20
Cadmium	0.335	J	0.32	3.17	mg/Kg-dry	5	2/12/2013 00:21
Calcium	245,000		1,300	6,330	mg/Kg-dry	100	2/11/2013 20:08
Chromium	3.62		0.57	3.17	mg/Kg-dry	5	2/12/2013 00:21
Cobalt	0.487	J	0.44	3.17	mg/Kg-dry	5	2/12/2013 00:21
Copper	U		0.63	3.17	mg/Kg-dry	5	2/12/2013 00:21
Iron	1,620		63	317	mg/Kg-dry	5	2/12/2013 00:21
Lead	2.99	J	0.32	3.17	mg/Kg-dry	5	2/12/2013 00:21
Manganese	36.3		0.63	3.17	mg/Kg-dry	5	2/12/2013 00:21
Molybdenum	U		0.19	0.633	mg/Kg-dry	1	2/9/2013 00:09
Nickel	1.58	J	0.57	3.17	mg/Kg-dry	5	2/12/2013 00:21
Potassium	561		16	63.3	mg/Kg-dry	1	2/9/2013 00:09
Selenium	1.49	J	1.1	3.17	mg/Kg-dry	5	2/12/2013 00:21
Silver	U		0.10	0.633	mg/Kg-dry	1	2/9/2013 00:09
Sodium	90.4		14	63.3	mg/Kg-dry	1	2/9/2013 00:09
Uranium	U		0.63	0.633	mg/Kg-dry	1	2/9/2013 00:09
Zinc	6.21		1.6	3.17	mg/Kg-dry	5	2/12/2013 00:21
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/13/13		Analyst: JKP
Chloride	52.0		2.4	6.08	mg/Kg-dry	1	2/13/2013 19:33
Fluoride	8.59		0.36	1.22	mg/Kg-dry	1	2/13/2013 19:33
Nitrogen, Nitrate (As N)	U		0.36	1.22	mg/Kg-dry	1	2/13/2013 19:33
Nitrogen, Nitrite (As N)	U		0.36	1.22	mg/Kg-dry	1	2/13/2013 19:33
Sulfate	777		2.4	6.08	mg/Kg-dry	1	2/13/2013 19:33
Surr: Selenate (surr)	95.6			85-115	%REC	1	2/13/2013 19:33
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/14/13		Analyst: EDG
Cyanide	U		0.75	2.51	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	27.2		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (17)
Collection Date: 2/4/2013 02:53 PM

Work Order: 1302213
Lab ID: 1302213-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	30.7		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (19)
Collection Date: 2/4/2013 02:40 PM

Work Order: 1302213
Lab ID: 1302213-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	28.0		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (20)
Collection Date: 2/4/2013 02:52 PM

Work Order: 1302213
Lab ID: 1302213-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/13/13		Analyst: OFO
Mercury	0.827	J	0.34	4.13	µg/Kg-dry	1	2/13/2013 14:06
METALS							
			Method: SW6020		Prep: SW3050A / 2/8/13		Analyst: ALR
Aluminum	3,230		24	118	mg/Kg-dry	100	2/11/2013 20:13
Arsenic	1.02	J	0.59	2.94	mg/Kg-dry	5	2/12/2013 00:26
Barium	6.44		0.47	2.94	mg/Kg-dry	5	2/12/2013 00:26
Boron	U		8.2	14.7	mg/Kg-dry	5	2/12/2013 00:26
Cadmium	0.457	J	0.29	2.94	mg/Kg-dry	5	2/12/2013 00:26
Calcium	249,000		1,200	5,880	mg/Kg-dry	100	2/11/2013 20:13
Chromium	3.22		0.53	2.94	mg/Kg-dry	5	2/12/2013 00:26
Cobalt	0.982	J	0.41	2.94	mg/Kg-dry	5	2/12/2013 00:26
Copper	0.614	J	0.59	2.94	mg/Kg-dry	5	2/12/2013 00:26
Iron	1,960		59	294	mg/Kg-dry	5	2/12/2013 00:26
Lead	3.71		0.29	2.94	mg/Kg-dry	5	2/12/2013 00:26
Manganese	58.4		0.59	2.94	mg/Kg-dry	5	2/12/2013 00:26
Molybdenum	U		0.88	2.94	mg/Kg-dry	5	2/12/2013 00:26
Nickel	2.51	J	0.53	2.94	mg/Kg-dry	5	2/12/2013 00:26
Potassium	603		76	294	mg/Kg-dry	5	2/12/2013 00:26
Selenium	1.38	J	1.1	2.94	mg/Kg-dry	5	2/12/2013 00:26
Silver	U		0.47	2.94	mg/Kg-dry	5	2/12/2013 00:26
Sodium	73.1	J	65	294	mg/Kg-dry	5	2/12/2013 00:26
Uranium	U		2.9	2.94	mg/Kg-dry	5	2/12/2013 00:26
Zinc	6.61		1.5	2.94	mg/Kg-dry	5	2/12/2013 00:26
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/13/13		Analyst: JKP
Chloride	66.2		2.2	5.49	mg/Kg-dry	1	2/13/2013 19:48
Fluoride	7.71		0.33	1.10	mg/Kg-dry	1	2/13/2013 19:48
Nitrogen, Nitrate (As N)	U		0.33	1.10	mg/Kg-dry	1	2/13/2013 19:48
Nitrogen, Nitrite (As N)	U		0.33	1.10	mg/Kg-dry	1	2/13/2013 19:48
Sulfate	681		2.2	5.49	mg/Kg-dry	1	2/13/2013 19:48
Surr: Selenate (surr)	96.6			85-115	%REC	1	2/13/2013 19:48
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/14/13		Analyst: EDG
Cyanide	U		0.69	2.29	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (22)
Collection Date: 2/4/2013 02:37 PM

Work Order: 1302213
Lab ID: 1302213-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	26.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (24)
Collection Date: 2/4/2013 02:37 PM

Work Order: 1302213
Lab ID: 1302213-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	21.7		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (25)
Collection Date: 2/4/2013 02:35 PM

Work Order: 1302213
Lab ID: 1302213-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/8/13 Analyst: KMB							
TPH (Oil Range)	U		0.63	4.3	mg/Kg-dry	1	2/11/2013 21:17
TPH (Diesel Range)	U		0.63	2.1	mg/Kg-dry	1	2/11/2013 21:17
Surr: 2-Fluorobiphenyl	60.1			60-135	%REC	1	2/11/2013 21:17
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Analyst: KKP							
Gasoline Range Organics	U		0.025	0.063	mg/Kg-dry	1	2/8/2013 16:21
Surr: 4-Bromofluorobenzene	91.9			70-130	%REC	1	2/8/2013 16:21
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/13/13 Analyst: OFO							
Mercury	2.80	J	0.34	4.23	µg/Kg-dry	1	2/13/2013 14:08
METALS Method: SW6020 Prep: SW3050A / 2/8/13 Analyst: ALR							
Aluminum	9,540		24	119	mg/Kg-dry	100	2/11/2013 20:17
Arsenic	3.21		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:30
Barium	32.6		0.19	1.19	mg/Kg-dry	2	2/12/2013 00:30
Boron	U		3.3	5.95	mg/Kg-dry	2	2/12/2013 18:25
Cadmium	0.220	J	0.12	1.19	mg/Kg-dry	2	2/12/2013 00:30
Calcium	99,200		1,200	5,950	mg/Kg-dry	100	2/11/2013 20:17
Chromium	9.08		0.21	1.19	mg/Kg-dry	2	2/12/2013 00:30
Cobalt	2.15		0.17	1.19	mg/Kg-dry	2	2/12/2013 00:30
Copper	4.53		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:30
Iron	7,200		24	119	mg/Kg-dry	2	2/12/2013 00:30
Lead	4.81		0.12	1.19	mg/Kg-dry	2	2/12/2013 00:30
Manganese	95.7		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:30
Molybdenum	0.545	J	0.36	1.19	mg/Kg-dry	2	2/12/2013 00:30
Nickel	7.10		0.21	1.19	mg/Kg-dry	2	2/12/2013 00:30
Potassium	1,740		31	119	mg/Kg-dry	2	2/12/2013 00:30
Selenium	0.724	J	0.43	1.19	mg/Kg-dry	2	2/12/2013 00:30
Silver	U		0.19	1.19	mg/Kg-dry	2	2/12/2013 00:30
Sodium	226		26	119	mg/Kg-dry	2	2/12/2013 00:30
Uranium	U		1.2	1.19	mg/Kg-dry	2	2/12/2013 00:30
Zinc	22.8		0.59	1.19	mg/Kg-dry	2	2/12/2013 00:30
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/11/13 Analyst: LG							
1-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/12/2013 11:53
2-Methylnaphthalene	U		2.0	8.3	µg/Kg-dry	1	2/12/2013 11:53
Benzo(a)pyrene	2.6	J	2.0	8.3	µg/Kg-dry	1	2/12/2013 11:53
Naphthalene	U		2.0	8.3	µg/Kg-dry	1	2/12/2013 11:53
Surr: 2,4,6-Tribromophenol	69.2			36-126	%REC	1	2/12/2013 11:53
Surr: 2-Fluorobiphenyl	76.3			43-125	%REC	1	2/12/2013 11:53

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (25)
Collection Date: 2/4/2013 02:35 PM

Work Order: 1302213
Lab ID: 1302213-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	62.6			37-125	%REC	1	2/12/2013 11:53
Surr: 4-Terphenyl-d14	93.7			32-125	%REC	1	2/12/2013 11:53
Surr: Nitrobenzene-d5	74.3			37-125	%REC	1	2/12/2013 11:53
Surr: Phenol-d6	69.9			40-125	%REC	1	2/12/2013 11:53

VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.2	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,1,2,2-Tetrachloroethane	U		0.63	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,1,2-Trichloroethane	U		2.5	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,1-Dichloroethane	U		0.63	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,1-Dichloroethene	U		1.9	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,2-Dibromoethane	U		0.89	6.3	µg/Kg-dry	1	2/8/2013 14:11
1,2-Dichloroethane	U		0.76	6.3	µg/Kg-dry	1	2/8/2013 14:11
Benzene	U		0.76	6.3	µg/Kg-dry	1	2/8/2013 14:11
Carbon tetrachloride	U		1.5	6.3	µg/Kg-dry	1	2/8/2013 14:11
Chloroform	U		2.3	6.3	µg/Kg-dry	1	2/8/2013 14:11
Ethylbenzene	U		1.1	6.3	µg/Kg-dry	1	2/8/2013 14:11
Methylene chloride	U		3.2	13	µg/Kg-dry	1	2/8/2013 14:11
Tetrachloroethene	U		1.3	6.3	µg/Kg-dry	1	2/8/2013 14:11
Toluene	U		0.89	6.3	µg/Kg-dry	1	2/8/2013 14:11
Trichloroethene	U		2.0	6.3	µg/Kg-dry	1	2/8/2013 14:11
Vinyl chloride	U		1.3	2.5	µg/Kg-dry	1	2/8/2013 14:11
Xylenes, Total	U		3.3	19	µg/Kg-dry	1	2/8/2013 14:11
Surr: 1,2-Dichloroethane-d4	98.8			70-128	%REC	1	2/8/2013 14:11
Surr: 4-Bromofluorobenzene	94.5			73-126	%REC	1	2/8/2013 14:11
Surr: Dibromofluoromethane	100			71-128	%REC	1	2/8/2013 14:11
Surr: Toluene-d8	97.6			73-127	%REC	1	2/8/2013 14:11

MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	21.0		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (1)
Collection Date: 2/4/2013 11:05 AM

Work Order: 1302213
Lab ID: 1302213-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/8/13 Analyst: KMB							
TPH (Oil Range)	1.1	J	0.64	4.4	mg/Kg-dry	1	2/14/2013 15:40
TPH (Diesel Range)	U		0.64	2.2	mg/Kg-dry	1	2/14/2013 15:40
Surr: 2-Fluorobiphenyl	60.1			60-135	%REC	1	2/14/2013 15:40
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW3541 / 2/8/13 Analyst: KKP							
Gasoline Range Organics	U		0.026	0.064	mg/Kg-dry	1	2/8/2013 16:40
Surr: 4-Bromofluorobenzene	89.9			70-130	%REC	1	2/8/2013 16:40
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/13/13 Analyst: OFO							
Mercury	20.7		0.35	4.36	µg/Kg-dry	1	2/13/2013 14:10
METALS Method: SW6020 Prep: SW3050A / 2/8/13 Analyst: ALR							
Aluminum	13,800		24	119	mg/Kg-dry	100	2/11/2013 20:32
Arsenic	3.39		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:40
Barium	89.9		0.19	1.19	mg/Kg-dry	2	2/12/2013 00:40
Boron	6.94		3.3	5.94	mg/Kg-dry	2	2/12/2013 18:30
Cadmium	0.483	J	0.12	1.19	mg/Kg-dry	2	2/12/2013 00:40
Calcium	77,800		1,200	5,940	mg/Kg-dry	100	2/11/2013 20:32
Chromium	13.0		0.21	1.19	mg/Kg-dry	2	2/12/2013 00:40
Cobalt	4.37		0.17	1.19	mg/Kg-dry	2	2/12/2013 00:40
Copper	12.1		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:40
Iron	8,910		24	119	mg/Kg-dry	2	2/12/2013 00:40
Lead	61.0		0.12	1.19	mg/Kg-dry	2	2/12/2013 00:40
Manganese	131		0.24	1.19	mg/Kg-dry	2	2/12/2013 00:40
Molybdenum	0.593	J	0.36	1.19	mg/Kg-dry	2	2/12/2013 00:40
Nickel	9.34		0.21	1.19	mg/Kg-dry	2	2/12/2013 00:40
Potassium	3,310		31	119	mg/Kg-dry	2	2/12/2013 00:40
Selenium	1.18	J	0.43	1.19	mg/Kg-dry	2	2/12/2013 00:40
Silver	U		0.19	1.19	mg/Kg-dry	2	2/12/2013 00:40
Sodium	149		26	119	mg/Kg-dry	2	2/12/2013 00:40
Uranium	U		1.2	1.19	mg/Kg-dry	2	2/12/2013 00:40
Zinc	56.8		0.59	1.19	mg/Kg-dry	2	2/12/2013 00:40
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/11/13 Analyst: LG							
1-Methylnaphthalene	U		2.1	8.5	µg/Kg-dry	1	2/12/2013 15:34
2-Methylnaphthalene	U		2.1	8.5	µg/Kg-dry	1	2/12/2013 15:34
Benzo(a)pyrene	U		2.1	8.5	µg/Kg-dry	1	2/12/2013 15:34
Naphthalene	U		2.1	8.5	µg/Kg-dry	1	2/12/2013 15:34
Surr: 2,4,6-Tribromophenol	45.6			36-126	%REC	1	2/12/2013 15:34
Surr: 2-Fluorobiphenyl	48.1			43-125	%REC	1	2/12/2013 15:34

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (1)
Collection Date: 2/4/2013 11:05 AM

Work Order: 1302213
Lab ID: 1302213-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	41.4			37-125	%REC	1	2/12/2013 15:34
Surr: 4-Terphenyl-d14	74.6			32-125	%REC	1	2/12/2013 15:34
Surr: Nitrobenzene-d5	45.7			37-125	%REC	1	2/12/2013 15:34
Surr: Phenol-d6	43.2			40-125	%REC	1	2/12/2013 15:34

VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.2	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,1,2,2-Tetrachloroethane	U		0.64	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,1,2-Trichloroethane	U		2.6	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,1-Dichloroethane	U		0.64	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,1-Dichloroethene	U		1.9	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,2-Dibromoethane	U		0.90	6.4	µg/Kg-dry	1	2/8/2013 14:34
1,2-Dichloroethane	U		0.77	6.4	µg/Kg-dry	1	2/8/2013 14:34
Benzene	U		0.77	6.4	µg/Kg-dry	1	2/8/2013 14:34
Carbon tetrachloride	U		1.5	6.4	µg/Kg-dry	1	2/8/2013 14:34
Chloroform	U		2.3	6.4	µg/Kg-dry	1	2/8/2013 14:34
Ethylbenzene	U		1.2	6.4	µg/Kg-dry	1	2/8/2013 14:34
Methylene chloride	U		3.2	13	µg/Kg-dry	1	2/8/2013 14:34
Tetrachloroethene	U		1.3	6.4	µg/Kg-dry	1	2/8/2013 14:34
Toluene	U		0.90	6.4	µg/Kg-dry	1	2/8/2013 14:34
Trichloroethene	U		2.1	6.4	µg/Kg-dry	1	2/8/2013 14:34
Vinyl chloride	U		1.3	2.6	µg/Kg-dry	1	2/8/2013 14:34
Xylenes, Total	U		3.3	19	µg/Kg-dry	1	2/8/2013 14:34
Surr: 1,2-Dichloroethane-d4	99.9			70-128	%REC	1	2/8/2013 14:34
Surr: 4-Bromofluorobenzene	94.7			73-126	%REC	1	2/8/2013 14:34
Surr: Dibromofluoromethane	99.6			71-128	%REC	1	2/8/2013 14:34
Surr: Toluene-d8	98.5			73-127	%REC	1	2/8/2013 14:34

MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	22.3		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (3)
Collection Date: 2/4/2013 11:15 AM

Work Order: 1302213
Lab ID: 1302213-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (5)
Collection Date: 2/4/2013 11:20 AM

Work Order: 1302213
Lab ID: 1302213-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/13/13		Analyst: OFO	
Mercury	7.31		0.37	4.50	µg/Kg-dry	1	2/13/2013 13:46
METALS							
Method: SW6020				Prep: SW3050A / 2/8/13		Analyst: ALR	
Aluminum	13,300		22	109	mg/Kg-dry	100	2/11/2013 20:37
Arsenic	4.21		0.22	1.09	mg/Kg-dry	2	2/12/2013 00:45
Barium	108		0.17	1.09	mg/Kg-dry	2	2/12/2013 00:45
Boron	5.63		3.0	5.43	mg/Kg-dry	2	2/12/2013 18:35
Cadmium	0.295	J	0.11	1.09	mg/Kg-dry	2	2/12/2013 00:45
Calcium	103,000		1,100	5,430	mg/Kg-dry	100	2/11/2013 20:37
Chromium	11.1		0.20	1.09	mg/Kg-dry	2	2/12/2013 00:45
Cobalt	3.77		0.15	1.09	mg/Kg-dry	2	2/12/2013 00:45
Copper	5.81		0.22	1.09	mg/Kg-dry	2	2/12/2013 00:45
Iron	8,220		22	109	mg/Kg-dry	2	2/12/2013 00:45
Lead	6.75		0.11	1.09	mg/Kg-dry	2	2/12/2013 00:45
Manganese	204		0.22	1.09	mg/Kg-dry	2	2/12/2013 00:45
Molybdenum	0.743	J	0.33	1.09	mg/Kg-dry	2	2/12/2013 00:45
Nickel	8.08		0.20	1.09	mg/Kg-dry	2	2/12/2013 00:45
Potassium	2,680		28	109	mg/Kg-dry	2	2/12/2013 00:45
Selenium	0.895	J	0.39	1.09	mg/Kg-dry	2	2/12/2013 00:45
Silver	U		0.17	1.09	mg/Kg-dry	2	2/12/2013 00:45
Sodium	131		24	109	mg/Kg-dry	2	2/12/2013 00:45
Uranium	U		1.1	1.09	mg/Kg-dry	2	2/12/2013 00:45
Zinc	27.1		0.54	1.09	mg/Kg-dry	2	2/12/2013 00:45
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/13/13		Analyst: JKP	
Chloride	29.2		2.4	6.06	mg/Kg-dry	1	2/13/2013 20:02
Fluoride	12.3		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:02
Nitrogen, Nitrate (As N)	U		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:02
Nitrogen, Nitrite (As N)	U		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:02
Sulfate	1,680		24	60.6	mg/Kg-dry	10	2/14/2013 13:17
Surr: Selenate (surr)	95.3			85-115	%REC	1	2/13/2013 20:02
Surr: Selenate (surr)	90.2			85-115	%REC	10	2/14/2013 13:17
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/14/13		Analyst: EDG	
Cyanide	U		0.71	2.36	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	23.0		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (7)
Collection Date: 2/4/2013 11:30 AM

Work Order: 1302213
Lab ID: 1302213-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.4		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (9)
Collection Date: 2/4/2013 11:35 AM

Work Order: 1302213
Lab ID: 1302213-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (10)
Collection Date: 2/4/2013 11:45 AM

Work Order: 1302213
Lab ID: 1302213-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/13/13		Analyst: OFO	
Mercury	9.12		0.38	4.69	µg/Kg-dry	1	2/13/2013 14:12
METALS							
Method: SW6020				Prep: SW3050A / 2/8/13		Analyst: ALR	
Aluminum	9,390		25	126	mg/Kg-dry	100	2/11/2013 20:41
Arsenic	6.34		0.25	1.26	mg/Kg-dry	2	2/12/2013 00:49
Barium	50.7		0.20	1.26	mg/Kg-dry	2	2/12/2013 00:49
Boron	6.02	J	3.5	6.30	mg/Kg-dry	2	2/12/2013 18:40
Cadmium	0.167	J	0.13	1.26	mg/Kg-dry	2	2/12/2013 00:49
Calcium	89,200		1,300	6,300	mg/Kg-dry	100	2/11/2013 20:41
Chromium	9.37		0.23	1.26	mg/Kg-dry	2	2/12/2013 00:49
Cobalt	3.84		0.18	1.26	mg/Kg-dry	2	2/12/2013 00:49
Copper	4.42		0.25	1.26	mg/Kg-dry	2	2/12/2013 00:49
Iron	7,850		25	126	mg/Kg-dry	2	2/12/2013 00:49
Lead	6.14		0.13	1.26	mg/Kg-dry	2	2/12/2013 00:49
Manganese	252		0.25	1.26	mg/Kg-dry	2	2/12/2013 00:49
Molybdenum	0.858	J	0.38	1.26	mg/Kg-dry	2	2/12/2013 00:49
Nickel	9.28		0.23	1.26	mg/Kg-dry	2	2/12/2013 00:49
Potassium	2,500		33	126	mg/Kg-dry	2	2/12/2013 00:49
Selenium	0.644	J	0.45	1.26	mg/Kg-dry	2	2/12/2013 00:49
Silver	U		0.20	1.26	mg/Kg-dry	2	2/12/2013 00:49
Sodium	134		28	126	mg/Kg-dry	2	2/12/2013 00:49
Uranium	U		1.3	1.26	mg/Kg-dry	2	2/12/2013 00:49
Zinc	21.7		0.63	1.26	mg/Kg-dry	2	2/12/2013 00:49
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/13/13		Analyst: JKP	
Chloride	22.6		2.4	6.07	mg/Kg-dry	1	2/13/2013 20:17
Fluoride	5.94		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:17
Nitrogen, Nitrate (As N)	U		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:17
Nitrogen, Nitrite (As N)	U		0.36	1.21	mg/Kg-dry	1	2/13/2013 20:17
Sulfate	1,080		2.4	6.07	mg/Kg-dry	1	2/13/2013 20:17
Surr: Selenate (surr)	93.5			85-115	%REC	1	2/13/2013 20:17
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/14/13		Analyst: EDG	
Cyanide	U		0.77	2.58	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	24.8		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (12)
Collection Date: 2/4/2013 04:05 PM

Work Order: 1302213
Lab ID: 1302213-22
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	14.7		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (14)
Collection Date: 2/4/2013 04:06 PM

Work Order: 1302213
Lab ID: 1302213-23
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	15.2		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (15)
Collection Date: 2/4/2013 04:08 PM

Work Order: 1302213
Lab ID: 1302213-24
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/13/13		Analyst: OFO	
Mercury	6.11		0.37	4.62	µg/Kg-dry	1	2/13/2013 14:14
METALS							
Method: SW6020				Prep: SW3050A / 2/8/13		Analyst: ALR	
Aluminum	5,700		27	134	mg/Kg-dry	100	2/11/2013 20:46
Arsenic	2.98	J	0.67	3.34	mg/Kg-dry	5	2/12/2013 01:04
Barium	47.3		0.53	3.34	mg/Kg-dry	5	2/12/2013 01:04
Boron	11.9	J	9.3	16.7	mg/Kg-dry	5	2/12/2013 01:04
Cadmium	U		0.33	3.34	mg/Kg-dry	5	2/12/2013 01:04
Calcium	246,000		1,300	6,680	mg/Kg-dry	100	2/11/2013 20:46
Chromium	4.79		0.60	3.34	mg/Kg-dry	5	2/12/2013 01:04
Cobalt	2.05	J	0.47	3.34	mg/Kg-dry	5	2/12/2013 01:04
Copper	2.39	J	0.67	3.34	mg/Kg-dry	5	2/12/2013 01:04
Iron	4,080		67	334	mg/Kg-dry	5	2/12/2013 01:04
Lead	2.84	J	0.33	3.34	mg/Kg-dry	5	2/12/2013 01:04
Manganese	523		0.67	3.34	mg/Kg-dry	5	2/12/2013 01:04
Molybdenum	2.16	J	1.0	3.34	mg/Kg-dry	5	2/12/2013 01:04
Nickel	8.56		0.60	3.34	mg/Kg-dry	5	2/12/2013 01:04
Potassium	1,280		87	334	mg/Kg-dry	5	2/12/2013 01:04
Selenium	1.32	J	1.2	3.34	mg/Kg-dry	5	2/12/2013 01:04
Silver	U		0.53	3.34	mg/Kg-dry	5	2/12/2013 01:04
Sodium	U		73	334	mg/Kg-dry	5	2/12/2013 01:04
Uranium	U		3.3	3.34	mg/Kg-dry	5	2/12/2013 01:04
Zinc	11.8		1.7	3.34	mg/Kg-dry	5	2/12/2013 01:04
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/13/13		Analyst: JKP	
Chloride	18.9		2.6	6.39	mg/Kg-dry	1	2/13/2013 20:31
Fluoride	5.87		0.38	1.28	mg/Kg-dry	1	2/13/2013 20:31
Nitrogen, Nitrate (As N)	U		0.38	1.28	mg/Kg-dry	1	2/13/2013 20:31
Nitrogen, Nitrite (As N)	U		0.38	1.28	mg/Kg-dry	1	2/13/2013 20:31
Sulfate	1,310		2.6	6.39	mg/Kg-dry	1	2/13/2013 20:31
Surr: Selenate (surr)	93.6			85-115	%REC	1	2/13/2013 20:31
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/14/13		Analyst: EDG	
Cyanide	U		0.77	2.58	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	26.0		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (17)
Collection Date: 2/4/2013 04:15 PM

Work Order: 1302213
Lab ID: 1302213-25
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE							
			Method: SW3550				Analyst: KAH
Percent Moisture	22.8		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (19)
Collection Date: 2/4/2013 04:14 PM

Work Order: 1302213
Lab ID: 1302213-26
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.0		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (20)
Collection Date: 2/4/2013 04:11 PM

Work Order: 1302213
Lab ID: 1302213-27
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/13/13		Analyst: OFO
Mercury	5.01		0.36	4.39	µg/Kg-dry	1	2/13/2013 14:16
METALS							
			Method: SW6020		Prep: SW3050A / 2/8/13		Analyst: ALR
Aluminum	10,300		24	120	mg/Kg-dry	100	2/11/2013 20:51
Arsenic	2.80		0.12	0.599	mg/Kg-dry	1	2/12/2013 01:08
Barium	208		0.096	0.599	mg/Kg-dry	1	2/12/2013 01:08
Boron	4.44		1.7	3.00	mg/Kg-dry	1	2/12/2013 01:08
Cadmium	0.188	J	0.060	0.599	mg/Kg-dry	1	2/12/2013 01:08
Calcium	65,300		1,200	5,990	mg/Kg-dry	100	2/11/2013 20:51
Chromium	8.86		0.11	0.599	mg/Kg-dry	1	2/12/2013 01:08
Cobalt	2.77		0.084	0.599	mg/Kg-dry	1	2/12/2013 01:08
Copper	3.91		0.12	0.599	mg/Kg-dry	1	2/12/2013 01:08
Iron	6,080		12	59.9	mg/Kg-dry	1	2/12/2013 01:08
Lead	4.36		0.060	0.599	mg/Kg-dry	1	2/12/2013 01:08
Manganese	88.8		0.12	0.599	mg/Kg-dry	1	2/12/2013 01:08
Molybdenum	0.302	J	0.18	0.599	mg/Kg-dry	1	2/12/2013 01:08
Nickel	6.69		0.11	0.599	mg/Kg-dry	1	2/12/2013 01:08
Potassium	1,650		16	59.9	mg/Kg-dry	1	2/12/2013 01:08
Selenium	0.620		0.22	0.599	mg/Kg-dry	1	2/12/2013 01:08
Silver	U		0.096	0.599	mg/Kg-dry	1	2/12/2013 01:08
Sodium	130		13	59.9	mg/Kg-dry	1	2/12/2013 01:08
Uranium	U		0.60	0.599	mg/Kg-dry	1	2/12/2013 01:08
Zinc	19.7		0.30	0.599	mg/Kg-dry	1	2/12/2013 01:08
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/13/13		Analyst: JKP
Chloride	33.4		2.2	5.46	mg/Kg-dry	1	2/13/2013 21:15
Fluoride	4.97		0.33	1.09	mg/Kg-dry	1	2/13/2013 21:15
Nitrogen, Nitrate (As N)	U		0.33	1.09	mg/Kg-dry	1	2/13/2013 21:15
Nitrogen, Nitrite (As N)	U		0.33	1.09	mg/Kg-dry	1	2/13/2013 21:15
Sulfate	849		2.2	5.46	mg/Kg-dry	1	2/13/2013 21:15
Surr: Selenate (surr)	93.3			85-115	%REC	1	2/13/2013 21:15
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/14/13		Analyst: EDG
Cyanide	U		0.72	2.40	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	20.7		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (22)
Collection Date: 2/4/2013 04:17 PM

Work Order: 1302213
Lab ID: 1302213-28
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	19.7		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (24)
Collection Date: 2/4/2013 04:18 PM

Work Order: 1302213
Lab ID: 1302213-29
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.2		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (25)
Collection Date: 2/4/2013 04:20 PM

Work Order: 1302213
Lab ID: 1302213-30
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/8/13 Analyst: KMB							
TPH (Oil Range)	U		0.62	4.2	mg/Kg-dry	1	2/11/2013 22:05
TPH (Diesel Range)	U		0.62	2.1	mg/Kg-dry	1	2/11/2013 22:05
Surr: 2-Fluorobiphenyl	60.5			60-135	%REC	1	2/11/2013 22:05
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Analyst: KKP							
Gasoline Range Organics	U		0.025	0.062	mg/Kg-dry	1	2/8/2013 16:58
Surr: 4-Bromofluorobenzene	91.9			70-130	%REC	1	2/8/2013 16:58
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/13/13 Analyst: OFO							
Mercury	2.25	J	0.34	4.16	µg/Kg-dry	1	2/13/2013 14:22
METALS Method: SW6020 Prep: SW3050A / 2/8/13 Analyst: ALR							
Aluminum	11,600		25	123	mg/Kg-dry	100	2/11/2013 20:56
Arsenic	2.38		0.25	1.23	mg/Kg-dry	2	2/12/2013 01:13
Barium	18.2		0.20	1.23	mg/Kg-dry	2	2/12/2013 01:13
Boron	6.19		3.4	6.13	mg/Kg-dry	2	2/12/2013 01:13
Cadmium	0.218	J	0.12	1.23	mg/Kg-dry	2	2/12/2013 01:13
Calcium	124,000		1,200	6,130	mg/Kg-dry	100	2/11/2013 20:56
Chromium	9.42		0.22	1.23	mg/Kg-dry	2	2/12/2013 01:13
Cobalt	4.83		0.17	1.23	mg/Kg-dry	2	2/12/2013 01:13
Copper	4.70		0.25	1.23	mg/Kg-dry	2	2/12/2013 01:13
Iron	8,790		25	123	mg/Kg-dry	2	2/12/2013 01:13
Lead	5.31		0.12	1.23	mg/Kg-dry	2	2/12/2013 01:13
Manganese	184		0.25	1.23	mg/Kg-dry	2	2/12/2013 01:13
Molybdenum	U		0.37	1.23	mg/Kg-dry	2	2/12/2013 01:13
Nickel	8.83		0.22	1.23	mg/Kg-dry	2	2/12/2013 01:13
Potassium	2,210		32	123	mg/Kg-dry	2	2/12/2013 01:13
Selenium	0.663	J	0.44	1.23	mg/Kg-dry	2	2/12/2013 01:13
Silver	U		0.20	1.23	mg/Kg-dry	2	2/12/2013 01:13
Sodium	140		27	123	mg/Kg-dry	2	2/12/2013 01:13
Uranium	U		1.2	1.23	mg/Kg-dry	2	2/12/2013 01:13
Zinc	23.2		0.61	1.23	mg/Kg-dry	2	2/12/2013 01:13
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/11/13 Analyst: LG							
1-Methylnaphthalene	U		2.0	8.2	µg/Kg-dry	1	2/12/2013 14:34
2-Methylnaphthalene	U		2.0	8.2	µg/Kg-dry	1	2/12/2013 14:34
Benzo(a)pyrene	U		2.0	8.2	µg/Kg-dry	1	2/12/2013 14:34
Naphthalene	U		2.0	8.2	µg/Kg-dry	1	2/12/2013 14:34
Surr: 2,4,6-Tribromophenol	58.8			36-126	%REC	1	2/12/2013 14:34
Surr: 2-Fluorobiphenyl	68.1			43-125	%REC	1	2/12/2013 14:34

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (25)
Collection Date: 2/4/2013 04:20 PM

Work Order: 1302213
Lab ID: 1302213-30
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	55.4			37-125	%REC	1	2/12/2013 14:34
Surr: 4-Terphenyl-d14	85.7			32-125	%REC	1	2/12/2013 14:34
Surr: Nitrobenzene-d5	66.6			37-125	%REC	1	2/12/2013 14:34
Surr: Phenol-d6	61.1			40-125	%REC	1	2/12/2013 14:34

VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		2.1	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,1,2,2-Tetrachloroethane	U		0.62	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,1,2-Trichloroethane	U		2.5	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,1-Dichloroethane	U		0.62	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,1-Dichloroethene	U		1.9	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,2-Dibromoethane	U		0.87	6.2	µg/Kg-dry	1	2/8/2013 14:57
1,2-Dichloroethane	U		0.74	6.2	µg/Kg-dry	1	2/8/2013 14:57
Benzene	U		0.74	6.2	µg/Kg-dry	1	2/8/2013 14:57
Carbon tetrachloride	U		1.5	6.2	µg/Kg-dry	1	2/8/2013 14:57
Chloroform	U		2.2	6.2	µg/Kg-dry	1	2/8/2013 14:57
Ethylbenzene	U		1.1	6.2	µg/Kg-dry	1	2/8/2013 14:57
Methylene chloride	U		3.1	12	µg/Kg-dry	1	2/8/2013 14:57
Tetrachloroethene	U		1.2	6.2	µg/Kg-dry	1	2/8/2013 14:57
Toluene	U		0.87	6.2	µg/Kg-dry	1	2/8/2013 14:57
Trichloroethene	U		2.0	6.2	µg/Kg-dry	1	2/8/2013 14:57
Vinyl chloride	U		1.2	2.5	µg/Kg-dry	1	2/8/2013 14:57
Xylenes, Total	U		3.2	19	µg/Kg-dry	1	2/8/2013 14:57
Surr: 1,2-Dichloroethane-d4	102			70-128	%REC	1	2/8/2013 14:57
Surr: 4-Bromofluorobenzene	95.9			73-126	%REC	1	2/8/2013 14:57
Surr: Dibromofluoromethane	102			71-128	%REC	1	2/8/2013 14:57
Surr: Toluene-d8	97.5			73-127	%REC	1	2/8/2013 14:57

ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/13/13		Analyst: JKP	
Chloride	34.4		2.3	5.66	mg/Kg-dry	1	2/13/2013 21:29		
Fluoride	3.28		0.34	1.13	mg/Kg-dry	1	2/13/2013 21:29		
Nitrogen, Nitrate (As N)	U		0.34	1.13	mg/Kg-dry	1	2/13/2013 21:29		
Nitrogen, Nitrite (As N)	U		0.34	1.13	mg/Kg-dry	1	2/13/2013 21:29		
Sulfate	495		2.3	5.66	mg/Kg-dry	1	2/13/2013 21:29		
Surr: Selenate (surr)	95.7			85-115	%REC	1	2/13/2013 21:29		

MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	19.3		0.010	0.0100	wt%	1	2/13/2013 15:25

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: TRIP BLANK 011813-17
Collection Date: 2/4/2013

Work Order: 1302213
Lab ID: 1302213-31
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/8/2013 18:18
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/8/2013 18:18
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Benzene	U		0.00020	0.0010	mg/L	1	2/8/2013 18:18
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Chloroform	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/8/2013 18:18
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/8/2013 18:18
Toluene	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/8/2013 18:18
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/8/2013 18:18
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/8/2013 18:18
Surr: 1,2-Dichloroethane-d4	98.2			71-125	%REC	1	2/8/2013 18:18
Surr: 4-Bromofluorobenzene	102			70-125	%REC	1	2/8/2013 18:18
Surr: Dibromofluoromethane	100			74-125	%REC	1	2/8/2013 18:18
Surr: Toluene-d8	105			78-123	%REC	1	2/8/2013 18:18

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

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67694** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130208-67694				Units: mg/Kg		Analysis Date: 2/11/2013 11:06 AM			
Client ID:	Run ID: FID-7_130211A				SeqNo: 3109863		Prep Date: 2/8/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.223	0.10	3.33	0	66.8	60-135	0			

LCS	Sample ID: FLCSS1-130208-67694				Units: mg/Kg		Analysis Date: 2/11/2013 11:30 AM			
Client ID:	Run ID: FID-7_130211A				SeqNo: 3109864		Prep Date: 2/8/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	26.93	3.4	33.33	0	80.8	70-130	0			
TPH (Diesel Range)	32.23	1.7	33.33	0	96.7	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.189	0.10	3.33	0	65.7	60-135	0			

MS	Sample ID: 1302130-07CMS				Units: mg/Kg		Analysis Date: 2/11/2013 02:14 PM			
Client ID:	Run ID: FID-7_130211A				SeqNo: 3109869		Prep Date: 2/8/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	30.4	3.4	33.3	0.924	88.5	70-130	0			
TPH (Diesel Range)	33.5	1.7	33.3	0.04855	100	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.122	0.10	3.327	0	63.8	60-135	0			

MSD	Sample ID: 1302130-07CMSD				Units: mg/Kg		Analysis Date: 2/11/2013 02:38 PM			
Client ID:	Run ID: FID-7_130211A				SeqNo: 3109870		Prep Date: 2/8/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	29.07	3.4	33.3	0.924	84.5	70-130	30.4	4.49	30	
TPH (Diesel Range)	32.78	1.7	33.3	0.04855	98.3	70-130	33.5	2.19	30	
<i>Surr: 2-Fluorobiphenyl</i>	2.058	0.10	3.327	0	61.9	60-135	2.122	3.09	30	

The following samples were analyzed in this batch:

1302213-01C	1302213-15C	1302213-16C
1302213-30C		

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

QC Page: 1 of 23

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142598** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130208-R142598				Units: mg/Kg		Analysis Date: 2/8/2013 11:29 AM			
Client ID:	Run ID: FID-9_130208A				SeqNo: 3110069		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
Surr: 4-Bromofluorobenzene	0.08244	0.0050	0.1	0	82.4	70-130	0			

LCS	Sample ID: GLCSS-130208-R142598				Units: mg/Kg		Analysis Date: 2/8/2013 10:51 AM			
Client ID:	Run ID: FID-9_130208A				SeqNo: 3110067		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.066	0.050	1	0	107	70-130	0			
Surr: 4-Bromofluorobenzene	0.08679	0.0050	0.1	0	86.8	70-130	0			

LCSD	Sample ID: GLCSDS-130208-R142598				Units: mg/Kg		Analysis Date: 2/8/2013 11:10 AM			
Client ID:	Run ID: FID-9_130208A				SeqNo: 3110068		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.046	0.050	1	0	105	70-130	1.066	1.92	30	
Surr: 4-Bromofluorobenzene	0.08518	0.0050	0.1	0	85.2	70-130	0.08679	1.86	30	

MS	Sample ID: 1302130-05BMS				Units: mg/Kg		Analysis Date: 2/8/2013 02:46 PM			
Client ID:	Run ID: FID-9_130208A				SeqNo: 3110078		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.048	0.050	1	0	105	70-130	0			
Surr: 4-Bromofluorobenzene	0.08551	0.0050	0.1	0	85.5	70-130	0			

MSD	Sample ID: 1302130-05BMSD				Units: mg/Kg		Analysis Date: 2/8/2013 03:05 PM			
Client ID:	Run ID: FID-9_130208A				SeqNo: 3110079		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.019	0.050	1	0	102	70-130	1.048	2.82	30	
Surr: 4-Bromofluorobenzene	0.08438	0.0050	0.1	0	84.4	70-130	0.08551	1.33	30	

The following samples were analyzed in this batch:

1302213-01B	1302213-15B	1302213-16B
1302213-30B		

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67688** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020813-67688** Units: **mg/Kg** Analysis Date: **2/8/2013 03:52 PM**

Client ID: Run ID: **ICPMS05_130208A** SeqNo: **3107176** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4223	1.0								J
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	0.2178	0.50								J
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Uranium	U	0.50								
Zinc	U	0.50								

MBLK Sample ID: **MBLKS1-020813-67688** Units: **mg/Kg** Analysis Date: **2/11/2013 02:05 PM**

Client ID: Run ID: **ICPMS05_130211A** SeqNo: **3108768** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	2.5								
Sodium	U	50								

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67688** Instrument ID **ICPMS05** Method: **SW6020**

LCS Sample ID: **MLCSS1-020813-67688** Units: **mg/Kg** Analysis Date: **2/8/2013 03:54 PM**

Client ID: Run ID: **ICPMS05_130208A** SeqNo: **3107177** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	9.551	1.0	10	0	95.5	80-120	0			
Arsenic	9.288	0.50	10	0	92.9	80-120	0			
Barium	9.21	0.50	10	0	92.1	80-120	0			
Cadmium	8.995	0.50	10	0	89.9	80-120	0			
Calcium	876.4	50	1000	0	87.6	80-120	0			
Chromium	9.365	0.50	10	0	93.7	80-120	0			
Cobalt	9.464	0.50	10	0	94.6	80-120	0			
Copper	9.594	0.50	10	0	95.9	80-120	0			
Iron	918.6	50	1000	0	91.9	80-120	0			
Lead	9.292	0.50	10	0	92.9	80-120	0			
Manganese	9.29	0.50	10	0	92.9	80-120	0			
Molybdenum	9.045	0.50	10	0	90.4	80-120	0			
Nickel	9.358	0.50	10	0	93.6	80-120	0			
Potassium	866.4	50	1000	0	86.6	80-120	0			
Selenium	9.645	0.50	10	0	96.4	80-120	0			
Silver	9.071	0.50	10	0	90.7	80-120	0			
Uranium	9.13	0.50	10	0	91.3	80-120	0			
Zinc	9.501	0.50	10	0	95	80-120	0			

LCS Sample ID: **MLCSS1-020813-67688** Units: **mg/Kg** Analysis Date: **2/11/2013 02:07 PM**

Client ID: Run ID: **ICPMS05_130211A** SeqNo: **3108769** Prep Date: **2/8/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	48.15	2.5	50	0	96.3	80-120	0			
Sodium	959.9	50	1000	0	96	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67688** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 1302251-01BMS				Units: mg/Kg		Analysis Date: 2/8/2013 04:13 PM		
Client ID:		Run ID: ICPMS05_130208A				SeqNo: 3107188		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	7184	0.94	9.362	5268	20500	75-125	0			SEO
Arsenic	10.43	0.47	9.362	1.442	96	75-125	0			
Barium	36.97	0.47	9.362	27.73	98.7	75-125	0			
Cadmium	8.679	0.47	9.362	0.007344	92.6	75-125	0			
Calcium	1444	47	936.2	563.6	94	75-125	0			
Chromium	15.45	0.47	9.362	5.189	110	75-125	0			
Cobalt	10.01	0.47	9.362	0.9823	96.4	75-125	0			
Copper	11.14	0.47	9.362	2.43	93	75-125	0			
Iron	6750	47	936.2	4746	214	75-125	0			SO
Lead	13.34	0.47	9.362	4.276	96.8	75-125	0			
Manganese	19.81	0.47	9.362	8.513	121	75-125	0			
Molybdenum	8.064	0.47	9.362	0.124	84.8	75-125	0			
Nickel	11.16	0.47	9.362	2.036	97.5	75-125	0			
Potassium	1214	47	936.2	302.4	97.4	75-125	0			
Selenium	8.572	0.47	9.362	0.1601	89.8	75-125	0			
Silver	8.625	0.47	9.362	0.03348	91.8	75-125	0			
Uranium	8.882	0.47	9.362	0.4215	90.4	75-125	0			
Zinc	17.66	0.47	9.362	6.006	124	75-125	0			

MS		Sample ID: 1302251-01BMS				Units: mg/Kg		Analysis Date: 2/11/2013 01:04 PM		
Client ID:		Run ID: ICPMS05_130211A				SeqNo: 3108707		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	43.62	2.3	46.81	2.12	88.6	75-125	0			
Sodium	1460	47	936.2	523	100	75-125	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67688** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 1302251-01BMSD				Units: mg/Kg		Analysis Date: 2/8/2013 04:15 PM		
Client ID:		Run ID: ICPMS05_130208A				SeqNo: 3107189		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	7085	0.93	9.322	5268	19500	75-125	7184	1.39	25	SEO
Arsenic	10.04	0.47	9.322	1.442	92.3	75-125	10.43	3.79	25	
Barium	36.69	0.47	9.322	27.73	96.1	75-125	36.97	0.768	25	
Cadmium	8.191	0.47	9.322	0.007344	87.8	75-125	8.679	5.79	25	
Calcium	1351	47	932.2	563.6	84.5	75-125	1444	6.62	25	
Chromium	15.48	0.47	9.322	5.189	110	75-125	15.45	0.204	25	
Cobalt	9.642	0.47	9.322	0.9823	92.9	75-125	10.01	3.71	25	
Copper	11.09	0.47	9.322	2.43	92.9	75-125	11.14	0.462	25	
Iron	6733	47	932.2	4746	213	75-125	6750	0.25	25	SO
Lead	13.07	0.47	9.322	4.276	94.4	75-125	13.34	1.99	25	
Manganese	19.66	0.47	9.322	8.513	120	75-125	19.81	0.784	25	
Molybdenum	8.081	0.47	9.322	0.124	85.4	75-125	8.064	0.211	25	
Nickel	10.93	0.47	9.322	2.036	95.4	75-125	11.16	2.13	25	
Potassium	1177	47	932.2	302.4	93.8	75-125	1214	3.09	25	
Selenium	8.376	0.47	9.322	0.1601	88.1	75-125	8.572	2.31	25	
Silver	8.161	0.47	9.322	0.03348	87.2	75-125	8.625	5.53	25	
Uranium	8.588	0.47	9.322	0.4215	87.6	75-125	8.882	3.37	25	
Zinc	16.13	0.47	9.322	6.006	109	75-125	17.66	9.04	25	

MSD		Sample ID: 1302251-01BMSD				Units: mg/Kg		Analysis Date: 2/11/2013 01:06 PM		
Client ID:		Run ID: ICPMS05_130211A				SeqNo: 3108708		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	43.49	2.3	46.61	2.12	88.8	75-125	43.62	0.292	25	
Sodium	1364	47	932.2	523	90.2	75-125	1460	6.78	25	

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67688** Instrument ID **ICPMS05** Method: **SW6020**

DUP		Sample ID: 1302251-01BDUP				Units: mg/Kg		Analysis Date: 2/8/2013 04:11 PM		
Client ID:		Run ID: ICPMS05_130208A				SeqNo: 3107184		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.432	0.47	0	0	0	0-0	1.442	0.69	25	
Barium	25.82	0.47	0	0	0	0-0	27.73	7.13	25	
Cadmium	U	0.47	0	0	0	0-0	0.007344	0	25	
Calcium	524.9	47	0	0	0	0-0	563.6	7.12	25	
Chromium	5.187	0.47	0	0	0	0-0	5.189	0.0449	25	
Cobalt	0.8574	0.47	0	0	0	0-0	0.9823	13.6	25	
Copper	1.648	0.47	0	0	0	0-0	2.43	38.4	25	R
Iron	4243	47	0	0	0	0-0	4746	11.2	25	
Lead	4.189	0.47	0	0	0	0-0	4.276	2.05	25	
Manganese	8.105	0.47	0	0	0	0-0	8.513	4.9	25	
Molybdenum	0.1995	0.47	0	0	0	0-0	0.124	0	25	J
Nickel	1.848	0.47	0	0	0	0-0	2.036	9.68	25	
Potassium	302	47	0	0	0	0-0	302.4	0.125	25	
Selenium	0.4194	0.47	0	0	0	0-0	0.1601	0	25	J
Silver	U	0.47	0	0	0	0-0	0.03348	0	25	
Uranium	U	0.47	0	0	0		0.4215	0	25	
Zinc	5.742	0.47	0	0	0	0-0	6.006	4.49	25	

DUP		Sample ID: 1302251-01BDUP				Units: mg/Kg		Analysis Date: 2/11/2013 02:12 PM		
Client ID:		Run ID: ICPMS05_130211A				SeqNo: 3108771		Prep Date: 2/8/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5438	0.94	0	0	0	0-0	5931	8.68	25	E
Boron	2.326	2.4	0	0	0	0-0	2.847	0	25	J
Sodium	657.7	47	0	0	0	0-0	721.9	9.3	25	

The following samples were analyzed in this batch:

1302213-01D	1302213-03A	1302213-06A
1302213-09A	1302213-12A	1302213-15D
1302213-16D	1302213-18A	1302213-21A
1302213-24A	1302213-27A	1302213-30D

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67786** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS1-021313-67786				Units: µg/Kg		Analysis Date: 2/13/2013 01:42 PM			
Client ID:	Run ID: HG02_130213A				SeqNo: 3112188		Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS1-021313-67786				Units: µg/Kg		Analysis Date: 2/13/2013 01:44 PM			
Client ID:	Run ID: HG02_130213A				SeqNo: 3112190		Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	346	3.3	333.3	0	104	85-115	0			

MS	Sample ID: 1302213-18AMS				Units: µg/Kg		Analysis Date: 2/13/2013 01:50 PM			
Client ID: MW-119 (5)	Run ID: HG02_130213A				SeqNo: 3112197		Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	337.1	3.4	346.1	5.633	95.8	85-115	0			

MSD	Sample ID: 1302213-18AMSD				Units: µg/Kg		Analysis Date: 2/13/2013 01:52 PM			
Client ID: MW-119 (5)	Run ID: HG02_130213A				SeqNo: 3112199		Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	348.7	3.4	345.9	5.633	99.2	85-115	337.1	3.38	20	

DUP	Sample ID: 1302213-18ADUP				Units: µg/Kg		Analysis Date: 2/13/2013 01:48 PM			
Client ID: MW-119 (5)	Run ID: HG02_130213A				SeqNo: 3112194		Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.832	3.5	0	0	0		5.633	3.48	20	

The following samples were analyzed in this batch:

1302213-01D	1302213-03A	1302213-06A
1302213-09A	1302213-12A	1302213-15D
1302213-16D	1302213-18A	1302213-21A
1302213-24A	1302213-27A	1302213-30D

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67741** Instrument ID **SV-4** Method: **SW8270**

MBLK Sample ID: **SBLKS2-130211-67741** Units: **µg/Kg** Analysis Date: **2/12/2013 07:15 PM**
 Client ID: Run ID: **SV-4_130212A** SeqNo: **3112136** Prep Date: **2/11/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
Surr: 2,4,6-Tribromophenol	107.3	6.6	166.7	0	64.4	36-126	0			
Surr: 2-Fluorobiphenyl	131	6.6	166.7	0	78.6	43-125	0			
Surr: 2-Fluorophenol	128.7	6.6	166.7	0	77.2	37-125	0			
Surr: 4-Terphenyl-d14	147.3	6.6	166.7	0	88.4	32-125	0			
Surr: Nitrobenzene-d5	122.4	6.6	166.7	0	73.4	37-125	0			
Surr: Phenol-d6	127	6.6	166.7	0	76.2	40-125	0			

LCS Sample ID: **SLCSS2-130211-67741** Units: **µg/Kg** Analysis Date: **2/12/2013 07:35 PM**
 Client ID: Run ID: **SV-4_130212A** SeqNo: **3112137** Prep Date: **2/11/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	134.8	6.6	166.7	0	80.9	50-120	0			
2-Methylnaphthalene	137	6.6	166.7	0	82.2	50-120	0			
Benzo(a)pyrene	101.1	6.6	166.7	0	60.7	50-130	0			
Naphthalene	133.1	6.6	166.7	0	79.8	50-125	0			
Surr: 2,4,6-Tribromophenol	124.5	6.6	166.7	0	74.7	36-126	0			
Surr: 2-Fluorobiphenyl	128.1	6.6	166.7	0	76.9	43-125	0			
Surr: 2-Fluorophenol	125.8	6.6	166.7	0	75.5	37-125	0			
Surr: 4-Terphenyl-d14	146.9	6.6	166.7	0	88.1	32-125	0			
Surr: Nitrobenzene-d5	121.8	6.6	166.7	0	73.1	37-125	0			
Surr: Phenol-d6	122.8	6.6	166.7	0	73.7	40-125	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67741** Instrument ID **SV-4** Method: **SW8270**

MS Sample ID: **1302175-02BMS** Units: **µg/Kg** Analysis Date: **2/12/2013 08:16 PM**
 Client ID: Run ID: **SV-4_130212A** SeqNo: **3112139** Prep Date: **2/11/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	699.3	66	166.4	583.8	69.4	50-120	0			
2-Methylnaphthalene	132.4	66	166.4	0	79.6	50-120	0			
Benzo(a)pyrene	101.7	66	166.4	0	61.1	50-130	0			
Naphthalene	159.1	66	166.4	0	95.6	50-125	0			
Surr: 2,4,6-Tribromophenol	124.4	66	166.4	0	74.7	36-126	0			
Surr: 2-Fluorobiphenyl	163.5	66	166.4	0	98.2	43-125	0			
Surr: 2-Fluorophenol	93.61	66	166.4	0	56.3	37-125	0			
Surr: 4-Terphenyl-d14	151.1	66	166.4	0	90.8	32-125	0			
Surr: Nitrobenzene-d5	130.9	66	166.4	0	78.7	37-125	0			
Surr: Phenol-d6	186.6	66	166.4	0	112	40-125	0			

MSD Sample ID: **1302175-02BMSD** Units: **µg/Kg** Analysis Date: **2/12/2013 08:36 PM**
 Client ID: Run ID: **SV-4_130212A** SeqNo: **3112140** Prep Date: **2/11/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	723.6	66	166.3	583.8	84	50-120	699.3	3.42	30	
2-Methylnaphthalene	109	66	166.3	0	65.5	50-120	132.4	19.4	30	
Benzo(a)pyrene	98.85	66	166.3	0	59.4	50-130	101.7	2.84	30	
Naphthalene	150.2	66	166.3	0	90.3	50-125	159.1	5.72	30	
Surr: 2,4,6-Tribromophenol	131.7	66	166.3	0	79.2	36-126	124.4	5.72	30	
Surr: 2-Fluorobiphenyl	151.5	66	166.3	0	91.1	43-125	163.5	7.63	30	
Surr: 2-Fluorophenol	113.3	66	166.3	0	68.1	37-125	93.61	19.1	30	
Surr: 4-Terphenyl-d14	147.9	66	166.3	0	88.9	32-125	151.1	2.1	30	
Surr: Nitrobenzene-d5	112.5	66	166.3	0	67.6	37-125	130.9	15.1	30	
Surr: Phenol-d6	111.5	66	166.3	0	67	40-125	186.6	50.4	30	R

The following samples were analyzed in this batch:

1302213-01C	1302213-15C	1302213-16C
1302213-30C		

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142332** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020813-R142332** Units: **µg/Kg** Analysis Date: **2/8/2013 08:51 AM**

Client ID: Run ID: **VOA5_130208A** SeqNo: **3105805** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	48.35	0	50	0	96.7	70-128	0			
Surr: 4-Bromofluorobenzene	47.21	0	50	0	94.4	73-126	0			
Surr: Dibromofluoromethane	49.57	0	50	0	99.1	71-128	0			
Surr: Toluene-d8	50.84	0	50	0	102	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142332** Instrument ID **VOA5** Method: **SW8260**

LCS Sample ID: **VLCSS1-020813-R142332** Units: **µg/Kg** Analysis Date: **2/8/2013 08:06 AM**

Client ID: Run ID: **VOA5_130208A** SeqNo: **3105804** 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	50.93	5.0	50	0	102	79-124	0			
1,1,2,2-Tetrachloroethane	43.86	5.0	50	0	87.7	75-123	0			
1,1,2-Trichloroethane	46.4	5.0	50	0	92.8	79-120	0			
1,1-Dichloroethane	47.42	5.0	50	0	94.8	75-124	0			
1,1-Dichloroethene	41.54	5.0	50	0	83.1	80-122	0			
1,2-Dibromoethane	46.55	5.0	50	0	93.1	79-120	0			
1,2-Dichloroethane	49.08	5.0	50	0	98.2	73-121	0			
Benzene	49.42	5.0	50	0	98.8	79-120	0			
Carbon tetrachloride	48.23	5.0	50	0	96.5	74-126	0			
Chloroform	49.47	5.0	50	0	98.9	78-120	0			
Ethylbenzene	48.58	5.0	50	0	97.2	80-122	0			
Methylene chloride	48.46	10	50	0	96.9	70-123	0			
Tetrachloroethene	46.35	5.0	50	0	92.7	80-121	0			
Toluene	48.79	5.0	50	0	97.6	79-120	0			
Trichloroethene	50.47	5.0	50	0	101	80-121	0			
Vinyl chloride	49.07	2.0	50	0	98.1	76-126	0			
Xylenes, Total	148.3	15	150	0	98.9	80-120	0			
Surr: 1,2-Dichloroethane-d4	49.87	0	50	0	99.7	70-128	0			
Surr: 4-Bromofluorobenzene	49.17	0	50	0	98.3	73-126	0			
Surr: Dibromofluoromethane	50.57	0	50	0	101	71-128	0			
Surr: Toluene-d8	48.65	0	50	0	97.3	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142332** Instrument ID **VOA5** Method: **SW8260**

MS Sample ID: **1302237-05AMS** Units: **µg/Kg** Analysis Date: **2/8/2013 11:31 AM**

Client ID: Run ID: **VOA5_130208A** SeqNo: **3106577** 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	53.69	5.0	50	0	107	79-124	0			
1,1,2,2-Tetrachloroethane	43.64	5.0	50	0	87.3	75-123	0			
1,1,2-Trichloroethane	46.42	5.0	50	0	92.8	79-120	0			
1,1-Dichloroethane	51.53	5.0	50	0	103	75-124	0			
1,1-Dichloroethene	47.74	5.0	50	0	95.5	80-122	0			
1,2-Dibromoethane	47.24	5.0	50	0	94.5	79-120	0			
1,2-Dichloroethane	49.61	5.0	50	0	99.2	73-121	0			
Benzene	54.96	5.0	50	1.572	107	79-120	0			
Carbon tetrachloride	50.46	5.0	50	0	101	74-126	0			
Chloroform	54.12	5.0	50	0	108	78-120	0			
Ethylbenzene	50	5.0	50	0	100	80-122	0			
Methylene chloride	49.54	10	50	0	99.1	70-123	0			
Tetrachloroethene	46.55	5.0	50	0	93.1	80-121	0			
Toluene	52.61	5.0	50	1.122	103	79-120	0			
Trichloroethene	54.13	5.0	50	0	108	80-121	0			
Vinyl chloride	51.46	2.0	50	0	103	76-126	0			
Xylenes, Total	153	15	150	0	102	80-120	0			
Surr: 1,2-Dichloroethane-d4	48.02	0	50	0	96	70-128	0			
Surr: 4-Bromofluorobenzene	49.6	0	50	0	99.2	73-126	0			
Surr: Dibromofluoromethane	49.01	0	50	0	98	71-128	0			
Surr: Toluene-d8	49.1	0	50	0	98.2	73-127	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142332** Instrument ID **VOA5** Method: **SW8260**

MSD		Sample ID: 1302237-05AMSD				Units: µg/Kg		Analysis Date: 2/8/2013 11:54 AM		
Client ID:		Run ID: VOA5_130208A				SeqNo: 3106578		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	53.75	5.0	50	0	107	79-124	53.69	0.113	30	
1,1,2,2-Tetrachloroethane	44.34	5.0	50	0	88.7	75-123	43.64	1.58	30	
1,1,2-Trichloroethane	48.38	5.0	50	0	96.8	79-120	46.42	4.14	30	
1,1-Dichloroethane	51.5	5.0	50	0	103	75-124	51.53	0.0479	30	
1,1-Dichloroethene	44.04	5.0	50	0	88.1	80-122	47.74	8.05	30	
1,2-Dibromoethane	48.04	5.0	50	0	96.1	79-120	47.24	1.69	30	
1,2-Dichloroethane	47.39	5.0	50	0	94.8	73-121	49.61	4.57	30	
Benzene	57.93	5.0	50	1.572	113	79-120	54.96	5.25	30	
Carbon tetrachloride	50.3	5.0	50	0	101	74-126	50.46	0.329	30	
Chloroform	52.68	5.0	50	0	105	78-120	54.12	2.71	30	
Ethylbenzene	48.83	5.0	50	0	97.7	80-122	50	2.36	30	
Methylene chloride	51.56	10	50	0	103	70-123	49.54	3.99	30	
Tetrachloroethene	47.71	5.0	50	0	95.4	80-121	46.55	2.44	30	
Toluene	54.74	5.0	50	1.122	107	79-120	52.61	3.97	30	
Trichloroethene	54.27	5.0	50	0	109	80-121	54.13	0.251	30	
Vinyl chloride	51.8	2.0	50	0	104	76-126	51.46	0.65	30	
Xylenes, Total	146	15	150	0	97.4	80-120	153	4.68	30	
Surr: 1,2-Dichloroethane-d4	46.98	0	50	0	94	70-128	48.02	2.19	30	
Surr: 4-Bromofluorobenzene	49.03	0	50	0	98.1	73-126	49.6	1.17	30	
Surr: Dibromofluoromethane	49.86	0	50	0	99.7	71-128	49.01	1.73	30	
Surr: Toluene-d8	48.96	0	50	0	97.9	73-127	49.1	0.276	30	

The following samples were analyzed in this batch:

1302213-01A	1302213-15A	1302213-16A
1302213-30A		

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142411** Instrument ID **VOA4** Method: **SW8260**

MBLK Sample ID: **VBLKW-130208-R142411** Units: **µg/L** Analysis Date: **2/8/2013 03:28 PM**

Client ID: Run ID: **VOA4_130208A** SeqNo: **3107211** 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	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Carbon tetrachloride	U	1.0								
Chloroform	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Trichloroethene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	49.26	1.0	50	0	98.5	71-125	0			
Surr: 4-Bromofluorobenzene	50.97	1.0	50	0	102	70-125	0			
Surr: Dibromofluoromethane	49.88	1.0	50	0	99.8	74-125	0			
Surr: Toluene-d8	52.35	1.0	50	0	105	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142411** Instrument ID **VOA4** Method: **SW8260**

LCS Sample ID: **VLCSW-130208-R142411** Units: **µg/L** Analysis Date: **2/8/2013 02:39 PM**

Client ID: Run ID: **VOA4_130208A** SeqNo: **3107210** 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	52.86	1.0	50	0	106	80-120	0			
1,1,2,2-Tetrachloroethane	47.98	1.0	50	0	96	74-123	0			
1,1,2-Trichloroethane	50.07	1.0	50	0	100	80-120	0			
1,1-Dichloroethane	50.7	1.0	50	0	101	80-120	0			
1,1-Dichloroethene	54.16	1.0	50	0	108	80-120	0			
1,2-Dibromoethane	51.59	1.0	50	0	103	80-120	0			
1,2-Dichloroethane	48.17	1.0	50	0	96.3	79-120	0			
Benzene	47.86	1.0	50	0	95.7	80-120	0			
Carbon tetrachloride	48.36	1.0	50	0	96.7	79-120	0			
Chloroform	48.15	1.0	50	0	96.3	80-120	0			
Ethylbenzene	49.39	1.0	50	0	98.8	80-120	0			
Methylene chloride	50.36	2.0	50	0	101	75-125	0			
Tetrachloroethene	51.48	1.0	50	0	103	80-120	0			
Toluene	49.61	1.0	50	0	99.2	80-121	0			
Trichloroethene	51.24	1.0	50	0	102	80-120	0			
Vinyl chloride	53.9	1.0	50	0	108	75-125	0			
Xylenes, Total	146.1	1.0	150	0	97.4	80-124	0			
Surr: 1,2-Dichloroethane-d4	47.45	1.0	50	0	94.9	71-125	0			
Surr: 4-Bromofluorobenzene	53.53	1.0	50	0	107	70-125	0			
Surr: Dibromofluoromethane	50.08	1.0	50	0	100	74-125	0			
Surr: Toluene-d8	51.42	1.0	50	0	103	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142411** Instrument ID **VOA4** Method: **SW8260**

MS		Sample ID: 1302186-03AMS				Units: µg/L		Analysis Date: 2/8/2013 05:05 PM		
Client ID:		Run ID: VOA4_130208A				SeqNo: 3107855		Prep Date:		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	5465	100	5000	0	109	80-120	0			
1,1,2,2-Tetrachloroethane	4608	100	5000	0	92.2	74-123	0			
1,1,2-Trichloroethane	4986	100	5000	0	99.7	80-120	0			
1,1-Dichloroethane	5028	100	5000	0	101	80-120	0			
1,1-Dichloroethene	5538	100	5000	0	111	80-120	0			
1,2-Dibromoethane	5196	100	5000	0	104	80-120	0			
1,2-Dichloroethane	5039	100	5000	0	101	79-120	0			
Benzene	10820	100	5000	5736	102	80-120	0			
Carbon tetrachloride	4875	100	5000	0	97.5	79-120	0			
Chloroform	4926	100	5000	0	98.5	80-120	0			
Ethylbenzene	5806	100	5000	730.1	102	80-120	0			
Methylene chloride	5077	200	5000	0	102	75-125	0			
Tetrachloroethene	5283	100	5000	0	106	80-120	0			
Toluene	6015	100	5000	951	101	80-121	0			
Trichloroethene	5148	100	5000	0	103	80-120	0			
Vinyl chloride	5413	100	5000	0	108	75-125	0			
Xylenes, Total	16630	100	15000	1612	100	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	4817	100	5000	0	96.3	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	5461	100	5000	0	109	70-125	0			
<i>Surr: Dibromofluoromethane</i>	5005	100	5000	0	100	74-125	0			
<i>Surr: Toluene-d8</i>	5199	100	5000	0	104	78-123	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142411** Instrument ID **VOA4** Method: **SW8260**

MSD		Sample ID: 1302186-03AMSD				Units: µg/L		Analysis Date: 2/8/2013 05:30 PM		
Client ID:		Run ID: VOA4_130208A				SeqNo: 3107856		Prep Date:		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	5339	100	5000	0	107	80-120	5465	2.34	20	
1,1,2,2-Tetrachloroethane	4755	100	5000	0	95.1	74-123	4608	3.15	20	
1,1,2-Trichloroethane	4957	100	5000	0	99.1	80-120	4986	0.589	20	
1,1-Dichloroethane	5015	100	5000	0	100	80-120	5028	0.268	20	
1,1-Dichloroethene	5299	100	5000	0	106	80-120	5538	4.4	20	
1,2-Dibromoethane	5263	100	5000	0	105	80-120	5196	1.3	20	
1,2-Dichloroethane	5061	100	5000	0	101	79-120	5039	0.453	20	
Benzene	10490	100	5000	5736	95	80-120	10820	3.18	20	
Carbon tetrachloride	4761	100	5000	0	95.2	79-120	4875	2.36	20	
Chloroform	4821	100	5000	0	96.4	80-120	4926	2.15	20	
Ethylbenzene	5600	100	5000	730.1	97.4	80-120	5806	3.61	20	
Methylene chloride	5082	200	5000	0	102	75-125	5077	0.09	20	
Tetrachloroethene	5072	100	5000	0	101	80-120	5283	4.06	20	
Toluene	5842	100	5000	951	97.8	80-121	6015	2.92	20	
Trichloroethene	4962	100	5000	0	99.2	80-120	5148	3.69	20	
Vinyl chloride	5259	100	5000	0	105	75-125	5413	2.88	20	
Xylenes, Total	16150	100	15000	1612	96.9	80-124	16630	2.92	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	4925	100	5000	0	98.5	71-125	4817	2.21	20	
<i>Surr: 4-Bromofluorobenzene</i>	5363	100	5000	0	107	70-125	5461	1.82	20	
<i>Surr: Dibromofluoromethane</i>	5107	100	5000	0	102	74-125	5005	2.01	20	
<i>Surr: Toluene-d8</i>	5145	100	5000	0	103	78-123	5199	1.05	20	

The following samples were analyzed in this batch:

1302213-31A

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67808** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK	Sample ID: WBLKS1-021413-67808				Units: mg/Kg		Analysis Date: 2/14/2013 03:00 PM			
Client ID:	Run ID: UV-2450_130214F				SeqNo: 3114919		Prep Date: 2/14/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS	Sample ID: WLCSS1-021413-67808				Units: mg/Kg		Analysis Date: 2/14/2013 03:00 PM			
Client ID:	Run ID: UV-2450_130214F				SeqNo: 3114920		Prep Date: 2/14/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.5	2.0	10	0	95	80-120	0			

LCSD	Sample ID: WLCSDS1-021413-67808				Units: mg/Kg		Analysis Date: 2/14/2013 03:00 PM			
Client ID:	Run ID: UV-2450_130214F				SeqNo: 3114932		Prep Date: 2/14/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.2	2.0	10	0	92	80-120	9.5	3.21	30	

MS	Sample ID: 1302213-12BMS				Units: mg/Kg		Analysis Date: 2/14/2013 03:00 PM			
Client ID: MW-118 (20)	Run ID: UV-2450_130214F				SeqNo: 3114933		Prep Date: 2/14/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.377	1.8	8.846	0	106	75-125	0			

The following samples were analyzed in this batch:

1302213-01E	1302213-03B	1302213-06B
1302213-09B	1302213-12B	1302213-18B
1302213-21B	1302213-24B	1302213-27B

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67821** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK	Sample ID: WBLKS1-67821			Units: mg/Kg			Analysis Date: 2/13/2013 06:20 PM			
Client ID:	Run ID: ICS2100_130213A			SeqNo: 3113807			Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	2.63	5.0								J
Fluoride	U	1.0								
Nitrogen, Nitrate (As N)	0.65	1.0								J
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
<i>Surr: Selenate (surr)</i>	47.69	1.0	50	0	95.4	85-115	0			

LCS	Sample ID: WLCSS1-67821			Units: mg/Kg			Analysis Date: 2/13/2013 06:35 PM			
Client ID:	Run ID: ICS2100_130213A			SeqNo: 3113808			Prep Date: 2/13/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	218.3	5.0	200	0	109	90-110	0			
Fluoride	36.81	1.0	40	0	92	90-110	0			
Nitrogen, Nitrate (As N)	42.43	1.0	40	0	106	90-110	0			
Nitrogen, Nitrite (As N)	43.2	1.0	40	0	108	90-110	0			
Sulfate	209.7	5.0	200	0	105	90-110	0			
<i>Surr: Selenate (surr)</i>	46.98	1.0	50	0	94	85-115	0			

MS	Sample ID: 1302386-02AMS			Units: mg/Kg			Analysis Date: 2/13/2013 10:57 PM			
Client ID:	Run ID: ICS2100_130213A			SeqNo: 3113826			Prep Date: 2/13/2013		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	447.7	23	455.4	0	98.3	75-125	0			
Fluoride	83.99	4.6	91.09	0	92.2	75-125	0			
Nitrogen, Nitrate (As N)	92.65	4.6	91.09	0	102	75-125	0			
Nitrogen, Nitrite (As N)	96.77	4.6	91.09	0	106	75-125	0			
Sulfate	465.2	23	455.4	13.54	99.2	75-125	0			
<i>Surr: Selenate (surr)</i>	199.5	4.6	227.7	0	87.6	80-120	0			

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67821** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD		Sample ID: 1302386-02AMSD				Units: mg/Kg		Analysis Date: 2/13/2013 11:11 PM		
Client ID:		Run ID: ICS2100_130213A				SeqNo: 3113827		Prep Date: 2/13/2013		DF: 5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	452.7	23	454.4	0	99.6	75-125	447.7	1.11	20	
Fluoride	85.05	4.5	90.89	0	93.6	75-125	83.99	1.24	20	
Nitrogen, Nitrate (As N)	93.85	4.5	90.89	0	103	75-125	92.65	1.29	20	
Nitrogen, Nitrite (As N)	97.46	4.5	90.89	0	107	75-125	96.77	0.707	20	
Sulfate	469.6	23	454.4	13.54	100	75-125	465.2	0.954	20	
Surr: Selenate (surr)	202.4	4.5	227.2	0	89.1	80-120	199.5	1.43	20	

The following samples were analyzed in this batch:

1302213-01E	1302213-03B	1302213-06B
1302213-09B	1302213-12B	1302213-18B
1302213-21B	1302213-24B	1302213-27B
1302213-30D		

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142774** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302213-20ADUP** Units: **wt%** Analysis Date: **2/13/2013 02:45 PM**
Client ID: **MW-119 (9)** Run ID: **BALANCE1_130213B** SeqNo: **3113511** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	17.39	0.010	0	0	0	0-0	17.86	2.65	20	

The following samples were analyzed in this batch:

1302213-01E	1302213-02A	1302213-03B
1302213-04A	1302213-05A	1302213-06B
1302213-07A	1302213-08A	1302213-09B
1302213-10A	1302213-11A	1302213-12B
1302213-13A	1302213-14A	1302213-15D
1302213-16D	1302213-17A	1302213-18B
1302213-19A	1302213-20A	

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

Client: Navajo Refining Company
Work Order: 1302213
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142775** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1302305-10BDUP** Units: **wt%** Analysis Date: **2/13/2013 03:25 PM**

Client ID: Run ID: **BALANCE1_130213C** SeqNo: **3113534** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	18.14	0.010	0	0	0	0-0	17.01	6.44	20	

The following samples were analyzed in this batch:

1302213-21B	1302213-22A	1302213-23A
1302213-24B	1302213-25A	1302213-26A
1302213-27B	1302213-28A	1302213-29A
1302213-30D		

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302213

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg-dry	Micrograms per Kilogram - Dry weight corrected
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **06-Feb-13 08:40**

Work Order: **1302213**

Received by: **JBA**

Checklist completed by Johannie B. Allen
eSignature

12-Feb-13
Date

Reviewed by:

eSignature

Date

Matrices: soil/water

Carrier name: ALS.HS

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):	<u>1.6 C, 1.0 C, 1.1 C, 1.3 C/uc</u>		<u>IR 1</u>
Cooler(s)/Kit(s):	<u>3747/3040/3306/4185</u>		
Date/Time sample(s) sent to storage:	<u>2/6/13 18:00</u>		
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:	<u>-</u>		

Login Notes: MW-118(5) no time on COC collected 02/4/13 @ 09:45; COC not relinquished by client ; Radium fraction soil samples are in WO 1302223

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



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Chain of Custody Form

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COC ID: 72333

1302213

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List
Work Order		Project Number	128823	B	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 LONG LIST
Phone	(575) 748-3733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8
Fax	(575) 748-5421	Fax	(575) 748-5421	H	~~Radon~~ Radium
e-Mail Address		e-Mail Address		I	Moisture
				J	~~Finger Print (PDA) (Asp. Grav. Sim. Dist.)~~ Cyanide, Arsenic

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-118 (1)	2/4/13	0920	Soil	-	5	X	X	X	X	X	X		X	X	X	
2	MW-118 (3)		0930			1									X		
3	MW-118 (5)					3					X			X	X	X	
4	MW-118 (7)		0940			1									X		
5	MW-118 (9)		1000			1									X		
6	MW-118 (10)		1010			3					X			X	X	X	
7	MW-118 (12)		1445			1									X		
8	MW-118 (14)		1447			1									X		
9	MW-118 (15)		1450 ~~1447~~			3					X			X	X	X	
10	MW-118 (17)		1453			1									X		

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour					
Relinquished by:	Date: <u>2/6/13</u> Time: <u>0840</u>	Received by:	Notes: 10 Day TAT. Dissolved Metals Field Filtered						
Relinquished by:	Date: Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)				
Logged by (Laboratory):	Date: Time:	Checked by (Laboratory):			☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD				
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

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.

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Chain of Custody Form

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South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		Parameter/Method Request for Analysis																
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List															
Work Order		Project Number	128823	B	GRO (8015M)															
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)															
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)															
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List															
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 <i>Long List</i>															
Phone	(575) 748-6733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8															
Fax	(575) 746-5421	Fax	(575) 746-5421	H	~~TOC~~ <i>Radium</i>															
e-Mail Address		e-Mail Address		I	Moisture															
				J	~~Fingerprint (Pb, As, Cd, Cr, Cu, Fe, Ni, Se, Zn)~~ <i>Anions, Cyanide</i>															

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	65 of 66 MW-118 (19)	2/4/13	1440	Soil	—	1									X		
2	MW-118 (20)		1452	Soil		3						X		X	X	X	
3	MW-118 (22)		1437			1									X		
4	MW-118 (24)		1437			1									X		
5	MW-118 (25)		1435			5	X	X	X	X	X	X		X	X	X	
6	MW-119 (1)		1105			5	X	X	X	X	X	X		X	X	X	
7	MW-119 (3)		1115			1									X		
8	MW-119 (5)		1120			3						X		X	X	X	
9	MW-119 (7)		1130			1									X		
10	MW-119 (9)		1135			1									X		

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other <u>2 WK Days</u> ☐ 24 Hour					
Relinquished by:	Date: <u>2/4/13</u> Time: <u>0840</u>	Received by: <u>[Signature]</u>		Notes: 10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date: Time:	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
Logged by (Laboratory):	Date: Time:	Checked by (Laboratory):				☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

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Chain of Custody Form

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+1 717 505 5280

ALS Project Manager:

ALS Work Order #:

Customer Information

Project Information

Parameter/Method Request for Analysis

Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List
Work Order		Project Number	128823	B	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 <i>Long List</i>
Phone	(575) 748-6733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8
Fax	(575) 746-5421	Fax	(575) 746-5421	H	<i>TDS Radium</i>
e-Mail Address		e-Mail Address		I	Moisture
				J	Fingerprint (Pb, As, Cd, Cr, Cu, Fe, Ni, Se, Zn) <i>Cyanide, Anions</i>

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-119 (10)	2/4/13	1145	Soil	—	3						X		X	X	X	
2	MW-119 (12)		1605			1									X		
3	MW-119 (14)		1606			1									X		
4	MW-119 (15)		1608			3						X		X	X	X	
5	MW-119 (17)		1615			1									X		
6	MW-119 (19)		1614			1									X		
7	MW-119 (20)		1611			3						X		X	X	X	
8	MW-119 (22)		1617			1									X		
9	MW-119 (24)		1618			1									X		
10	MW-119 (25)		1620			5	X	X	X	X	X	X		X	X	X	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other <u>2 WK Days</u> ☐ 24 Hour					
Relinquished by:	Date: <u>2/4/13</u>	Time: <u>0840</u>	Received by:	Notes: 10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O 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.

Copyright 2011 by ALS Environmental.



29-Mar-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302223**

Dear Robert,

ALS Environmental received 26 samples on 06-Feb-2013 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 99.

Regards,

A handwritten signature in black ink that reads "Sonia West".

Electronically approved by: Sonia West

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302223

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302223-01	MW-118 (1)	Soil		2/4/2013 09:20	2/6/2013	☐
1302223-02	MW-118 (5)	Soil		2/4/2013 09:05	2/6/2013	☐
1302223-03	MW-118 (10)	Soil		2/4/2013 10:10	2/6/2013	☐
1302223-04	MW-118 (15)	Soil		2/4/2013 14:50	2/6/2013	☐
1302223-05	MW-118 (20)	Soil		2/4/2013 14:52	2/6/2013	☐
1302223-06	MW-118 (25)	Soil		2/4/2013 14:35	2/6/2013	☐
1302223-07	MW-119 (1)	Soil		2/4/2013 11:05	2/6/2013	☐
1302223-08	MW-119 (5)	Soil		2/4/2013 11:20	2/6/2013	☐
1302223-09	MW-119 (10)	Soil		2/4/2013 11:45	2/6/2013	☐
1302223-10	MW-119 (15)	Soil		2/4/2013 16:08	2/6/2013	☐
1302223-11	MW-119 (20)	Soil		2/4/2013 16:11	2/6/2013	☐
1302223-12	MW-119 (25)	Soil		2/4/2013 16:20	2/6/2013	☐
1302223-13	MW-117 (1)	Soil		1/31/2013 08:55	2/6/2013	☐
1302223-14	MW-117 (5)	Soil		1/31/2013 09:15	2/6/2013	☐
1302223-15	MW-117 (10)	Soil		1/31/2013 10:30	2/6/2013	☐
1302223-16	MW-117 (15)	Soil		1/31/2013 15:20	2/6/2013	☐
1302223-17	MW-117 (20)	Soil		1/31/2013 15:25	2/6/2013	☐
1302223-18	MW-117 (25)	Soil		1/31/2013 15:40	2/6/2013	☐
1302223-19	RO-SB-1 (1)	Soil		1/31/2013 11:45	2/6/2013	☐
1302223-20	RO-SB-1 (5)	Soil		1/31/2013 12:00	2/6/2013	☐
1302223-21	RO-SB-1 (10)	Soil		1/31/2013 12:50	2/6/2013	☐
1302223-22	RO-SB-1 (15)	Soil		2/1/2013 09:57	2/6/2013	☐
1302223-23	RO-SB-1 (20)	Soil		2/1/2013 09:40	2/6/2013	☐
1302223-24	RO-SB-1 (25)	Soil		2/1/2013 10:18	2/6/2013	☐
1302223-25	RO-SB-1 (30)	Soil		2/1/2013 10:10	2/6/2013	☐
1302223-26	RO-SB-1 (35)	Soil		2/1/2013 10:05	2/6/2013	☐

Client: Navajo Refining Company**Project:** RO Discharge Sampling**Work Order:** 1302223**Case Narrative**

This report has been revised to include the Radium 226 and 228 data for samples RO-SB-1 (1) through RO-SB-1 (35).

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (1)
Collection Date: 2/4/2013 09:20 AM

Work Order: 1302223
Lab ID: 1302223-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (5)
Collection Date: 2/4/2013 09:05 AM

Work Order: 1302223
Lab ID: 1302223-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (10)
Collection Date: 2/4/2013 10:10 AM

Work Order: 1302223
Lab ID: 1302223-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (15)
Collection Date: 2/4/2013 02:50 PM

Work Order: 1302223
Lab ID: 1302223-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (20)
Collection Date: 2/4/2013 02:52 PM

Work Order: 1302223
Lab ID: 1302223-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-118 (25)
Collection Date: 2/4/2013 02:35 PM

Work Order: 1302223
Lab ID: 1302223-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (1)
Collection Date: 2/4/2013 11:05 AM

Work Order: 1302223
Lab ID: 1302223-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (5)
Collection Date: 2/4/2013 11:20 AM

Work Order: 1302223
Lab ID: 1302223-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (10)
Collection Date: 2/4/2013 11:45 AM

Work Order: 1302223
Lab ID: 1302223-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (15)
Collection Date: 2/4/2013 04:08 PM

Work Order: 1302223
Lab ID: 1302223-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (20)
Collection Date: 2/4/2013 04:11 PM

Work Order: 1302223
Lab ID: 1302223-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-119 (25)
Collection Date: 2/4/2013 04:20 PM

Work Order: 1302223
Lab ID: 1302223-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/15/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (1)
Collection Date: 1/31/2013 08:55 AM

Work Order: 1302223
Lab ID: 1302223-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (5)
Collection Date: 1/31/2013 09:15 AM

Work Order: 1302223
Lab ID: 1302223-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (10)
Collection Date: 1/31/2013 10:30 AM

Work Order: 1302223
Lab ID: 1302223-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (15)
Collection Date: 1/31/2013 03:20 PM

Work Order: 1302223
Lab ID: 1302223-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (20)
Collection Date: 1/31/2013 03:25 PM

Work Order: 1302223
Lab ID: 1302223-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-117 (25)
Collection Date: 1/31/2013 03:40 PM

Work Order: 1302223
Lab ID: 1302223-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (1)
Collection Date: 1/31/2013 11:45 AM

Work Order: 1302223
Lab ID: 1302223-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (5)
Collection Date: 1/31/2013 12:00 PM

Work Order: 1302223
Lab ID: 1302223-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (10)
Collection Date: 1/31/2013 12:50 PM

Work Order: 1302223
Lab ID: 1302223-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (15)
Collection Date: 2/1/2013 09:57 AM

Work Order: 1302223
Lab ID: 1302223-22
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (20)
Collection Date: 2/1/2013 09:40 AM

Work Order: 1302223
Lab ID: 1302223-23
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (25)
Collection Date: 2/1/2013 10:18 AM

Work Order: 1302223
Lab ID: 1302223-24
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (30)
Collection Date: 2/1/2013 10:10 AM

Work Order: 1302223
Lab ID: 1302223-25
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: RO-SB-1 (35)
Collection Date: 2/1/2013 10:05 AM

Work Order: 1302223
Lab ID: 1302223-26
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/6/2013

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302223

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **06-Feb-13 00:00**

Work Order: **1302223**

Received by: **JBA**

Checklist completed by Johannie B. Allen
eSignature

18-Feb-13

Date

Reviewed by:

eSignature

Date

Matrices: soil/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):	<u>1.6 C,1.0 C,1.1 C,1.3 C,2.7 C,0.6 C/uc</u>		<u>IR 1</u>
Cooler(s)/Kit(s):	<u>3747/3040/3306/4185/7034/4672</u>		
Date/Time sample(s) sent to storage:	<u>2/6/13 17:30; 2/4/13 09:23:02/4/13 10:00</u>		
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:	<u>-</u>		

Login Notes: These are Radium fraction soil samples; WO 1302079-01,-03 & -06 which are 1302223-13 thru -15; WO 1302082 - 01,-03 & -06 which are 1302223-19 thru -21were sent ahead.

Client Contacted: _____ Date Contacted: _____ Person Contacted: _____
Contacted By: _____ Regarding: _____

Comments:

CorrectiveAction:



Environmental

Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 72333

1302223

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



Customer Information		Project Information		ALS Project Manager:	
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (6000, 6010, 6015M)
Work Order		Project Number	128823	B	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 LONG LIST
Phone	(575) 748-6733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8
Fax	(575) 746-5421	Fax	(575) 746-5421	H	~~DBP~~ Radium
e-Mail Address		e-Mail Address		I	Moisture
				J	~~Fingerprint (1/4" Disc) - Gray, Silver Dist~~ Cyanide, Anions

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-118 (1)	2/4/13	0920	Soil	-	5	X	X	X	X	X	X		X	X	X	
2	MW-118 (3)		0930			1									X		
3	MW-118 (5)					3						X		X	X	X	
4	MW-118 (7)		0940			1									X		
5	MW-118 (9)		1000			1									X		
6	MW-118 (10)		1010			3						X		X	X	X	
7	MW-118 (12)		1445			1									X		
8	MW-118 (14)		1447			1									X		
9	MW-118 (15)		1450			3						X		X	X	X	
10	MW-118 (17)		1453			1									X		

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				☒ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour					
Relinquished by:	Date: <u>2/6/13</u> Time: <u>0840</u>	Received by:		Notes: 10 Day TAT. Dissolved Metals Field Filtered					
Relinquished by:	Date: Time:	Received by (Laboratory):		Cooler ID	Cooler Temp	QC Package: (Check One Box Below)			
Logged by (Laboratory):	Date: Time:	Checked by (Laboratory):				☒ Level II Std QC ☐ TRRP Checklist ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O 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.

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+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 2 of 3

COC ID: 72326

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Environmental

Customer Information		Project Information		ALS Project Manager: _____ ALS Work Order #: _____															
Purchase Order		Project Name		Parameter/Method Request for Analysis															
Work Order		Project Number	RO Discharge/Sampling	A	VOC (8260) NW GW List														
Company Name	Navajo Refining Company	Bill To Company	128823	B	GRO (8015M)														
Send Report To	Robert Combs	Invoice Attn	Navajo Refining Company	C	DRO (8015M)														
Address	501 East Main	Address	Robert Combs	D	ORO (8015M)														
City/State/Zip	Artesia, NM 88211	City/State/Zip	501 East Main	E	LL SVOC (8270) NM GW List														
Phone	(575) 748-8733	Phone	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 <i>Long List</i>														
Fax	(575) 746-5421	Fax	(575) 748-8733	G	Dissolved Metals (6020/7000) RCRA 8														
e-Mail Address		e-Mail Address	(575) 746-5421	H	~~TOB~~ <i>Radium</i>														
				I	Moisture														
				J	Fingerprint (Pb, Ni, Cr, Cu, Zn, Fe, Mn, Co, Cd, Se, Sb, Sn, Ti, V, W, Mo, As, Bi, Br, Ca, Cl, F, Ga, Ge, Hg, In, Ir, K, Li, Mg, Na, Nb, Pd, P, Pt, Rb, S, Si, Sr, Ta, Te, Th, U, Y, Zr) <i>Anions, Cyanide</i>														
Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
MW-118 (19)	2/4/13	1440	Soil	—	1									X					
MW-118 (20)		1452	Soil		3						X		X	X	X				
MW-118 (22)		1437			1									X					
MW-118 (24)		1437			1									X					
MW-118 (25)		1435			5	X	X	X	X	X	X		X	X	X				
MW-119 (1)		1105			5	X	X	X	X	X	X		X	X	X				
MW-119 (3)		1115			1									X					
MW-119 (5)		1120			3						X		X	X	X				
MW-119 (7)		1130			1									X					
MW-119 (9)		1135			1									X					

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				☒ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour					
Inquired by:	Date: 2/4/13	Time: 0840	Received by:	Notes: 10 Day TAT. Dissolved Metals Field Filtered					
Inquired by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
Inquired by (Laboratory):	Date:	Time:	Checked by (Laboratory):			☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

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

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+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 3 of 3

COC ID: 72319

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Environmental

Customer Information		Project Information		ALS Project Manager: _____ ALS Work Order #: _____																
Parameter/Method Request for Analysis																				
Purchase Order		Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List															
Work Order		Project Number	128823	B	GRO (8015M)															
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	DRO (8015M)															
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D	ORO (8015M)															
Address	501 East Main	Address	501 East Main	E	LL SVOC (8270) NM GW List															
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Total Metals (6020/7000) RCRA 8 <i>Long List</i>															
Phone	(575) 748-6733	Phone	(575) 748-6733	G	Dissolved Metals (6020/7000) RCRA 8															
Fax	(575) 748-5421	Fax	(575) 748-5421	H	<i>Radium</i>															
e-Mail Address		e-Mail Address		I	Moisture															
Sample Description		Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
34 of 99	MW-119 (10)	2/4/13	1145	Soil	—	3						X		X	X	X				
	MW-119 (12)		1605			1									X					
	MW-119 (14)		1606			1										X				
	MW-119 (15)		1608			3						X		X	X	X				
	MW-119 (17)		1615			1									X					
	MW-119 (19)		1614			1									X					
	MW-119 (20)		1611			3						X		X	X	X				
	MW-119 (22)		1617			1									X					
	MW-119 (24)		1618			1									X					
	MW-119 (25)		1620			5	X	X	X	X	X	X		X	X	X				
Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:												
				☒ Std. 10 WK Days ☐ 5 WK Days ☐ Other _____																
Inquished by:		Date: 2/4/13	Time: 8:40p	Received by:		Notes: 10 Day TAT. Dissolved Metals Field Filtered														
Inquished by:		Date:	Time:	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)												
Signed by (Laboratory):		Date:	Time:	Checked by (Laboratory):				☒ Level II Std QC ☐ TRRP CheckList ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other / EDD _____												
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																				

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.

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fedEx **NEW Package**
Express **US Airbill**

FedEx Tracking Number **8022 1536 6851**

Form ID No. **0200**

Recipient's Copy

From **[Redacted]**
Date **2/5/13**
Sender's Name **Fred Bergeron** Phone **281 787 1254**
Company **ARCADIS**
Address **2979 Lapack Suite 300**
City **Houston** State **TX** ZIP **77042**

Your Internal Billing Reference

To Recipient's Name **Client Services** Phone **281 530 5656**
Company **ALS Lab Group**
Address **10450 Stancil Rd**
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address **Suite 210**
City **Houston** State **TX** ZIP **77049**

☐ **HOLD Weekday**
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.
☐ **HOLD Saturday**
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.

4 Express Package Service * To most locations.
NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the new
FedEx Express Freight US Airbill.

Next Business Day

2 or 3 Business Days

- ☐ **FedEx First Overnight**
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ **FedEx Priority Overnight**
Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☒ **FedEx Standard Overnight**
Next business afternoon. * Saturday Delivery NOT available.

- ☐ **FedEx 2Day A.M.**
Second business morning. * Saturday Delivery NOT available.
☐ **FedEx 2Day**
Second business afternoon. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ **FedEx Express Saver**
Third business day. * Saturday Delivery NOT available.

5 Packaging * Declared value limit \$500.

- ☐ **FedEx Envelope*** ☐ **FedEx Pak*** ☐ **FedEx Box** ☐ **FedEx Tube** ☒ **Other**

6 Special Handling and Delivery Signature Options

- ☐ **SATURDAY Delivery**
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
☐ **No Signature Required**
Package may be left without obtaining a signature for delivery.
☐ **Direct Signature**
Someone at recipient's address may sign for delivery. Fee applies.
☐ **Indirect Signature**
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

- One box must be checked.
☒ **No** ☐ **Yes** As per attached Shipper's Declaration. ☐ **Yes** Shipper's Declaration not required. ☐ **Dry Ice**
Dry ice, 9, UN 1845 x kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. ☐ **Cargo Aircraft Only**

7 Payment Bill to:

- Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
☐ **Sender** Acct. No. in Section 1 will be billed. ☒ **Recipient** ☐ **Third Party** ☐ **Credit Card** ☐ **Cash/Check**
Total Packages **17** Total Weight **[Redacted]** Credit Card Auth. **[Redacted]**

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

644

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8022 1536 6851

ALS Environmental
10450 Stancil Rd, Suite 210
Houston, Texas 77049
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: **2-5-13** Time: **1600**
Name: **BERGERSEN**
Company: **ARCADIS**
Seal Broken By: **[Signature]**

FedEx Package
Express US Airbill

FedEx Tracking Number 8013 8012 5570

From
Date 2/5/13
Sender's Name Eric Bergersen
Company ARCADIS
Address 2929 Briarpark Dr Suite 300
City Houston State TX ZIP 77042
Your Internal Billing Reference

To
Recipient's Name CLIENT SERVICES
Company ALS LABORATORY GROUP
Address 10450 STANCLIFF RD STE 210
City HOUSTON State TX ZIP 77099-4338
0455550776



8013 8012 5570

Form ID No. 0215
Recipient's Copy

4 Express Package Service
NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., see the
FedEx Express Freight US Airbill.

Next Business Day
☒ FedEx First Overnight
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☒ FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
☐ FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.
☐ FedEx 2Day
Second business morning.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

☐ No Signature Required
Package may be left without obtaining a signature for delivery.
☐ Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.
☐ Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

One box must be checked.
☒ No ☐ Yes
As per attached Shipper's Declaration. ☐ Yes
Shipper's Declaration not required. ☐ Dry Ice
Dry ice, 5 UN 1845 _____ x _____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. ☐ Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages Total Weight _____ Credit Card Auth. _____
Bk. _____

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date
Name
Company

CUSTODY SEAL

Date: 4/3/13 Time: 1100
Signature: B. McKenna
Company: ARCADIS U.S.

Seal Broken By:

Date:



Package
US Airbill

FedEx
Tracking
Number

8013 8012 5537

MUR1

Form
ID No. 0215

Recipient's Copy

1 From
Date 2/5/13
Sender's Name Eric Bergersen
Company ARCADIS
Address 2929 Briarpark Suite 300
City Houston State TX ZIP 77042

2 Your Internal Billing Reference

3 To
Recipient's Name CLIENT SERVICES
Company ALS LABORATORY GROUP
Address 10450 STANCLIFF RD STE 210
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City HOUSTON State TX ZIP 77099-4338

0455550776



8013 8012 5537

4 Express Package Service *To most locations.
NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day
☐ FedEx Standard Overnight
Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ FedEx Priority Overnight
Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☒ FedEx Standard Overnight
Next business afternoon. * Saturday Delivery NOT available.

2 or 3 Business Days
☐ FedEx 2Day A.M.
Second business morning. * Saturday Delivery NOT available.
☐ FedEx 2Day
Second business afternoon. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
☐ FedEx Express Saver
Third business day. * Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

☐ No Signature Required
Package may be left without obtaining a signature for delivery.

☐ Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.

☐ Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

One box must be checked.
☒ No ☐ Yes
As per attached Shipper's Declaration. ☐ Yes
Shipper's Declaration not required.
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

☐ Dry Ice
Dry ice, 5, UN 1845 x kg
☐ Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check
Total Packages Total Weight lbs. Credit Card Auth.

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

374

CUSTODY SEAL

Date: 2-5-13 Time: 12:00
Name: BERGERSEN
Company: ARCADIS

374
Date: 2/6/13

From
Date 2/5/13
Sender's Name Eric Bergesen Phone 281 787-1234
Company ARCADIS
Address 2929 Briarpark Suite 300
City Houston State TX ZIP 77042

2 Your Internal Billing Reference

3 To
Recipient's Name CLIENT SERVICES Phone 281 530-5656
Company ALS LABORATORY GROUP
Address 10450 STANCLIFF RD STE 210
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City HOUSTON State TX ZIP 77059-4338

HOLD Weekday
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.
HOLD Saturday
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



8013 7025 2083

4 Express Package Service * To most locations.
NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day
☐ FedEx First Overnight
Earliest next business morning delivery to select
locations. Friday shipments will be delivered on
Monday unless SATURDAY Delivery is selected.
☐ FedEx Priority Overnight
Next business morning. * Friday shipments will be
delivered on Monday unless SATURDAY Delivery
is selected.
☒ FedEx Standard Overnight
Next business afternoon.
Saturday Delivery NOT available.

2 or 3 Business Days
☐ FedEx 2Day A.M.
Second business morning.
Saturday Delivery NOT available.
☐ FedEx 2Day
Second business afternoon. * Thursday shipments
will be delivered on Monday unless SATURDAY
Delivery is selected.
☐ FedEx Express Saver
Third business day.
Saturday Delivery NOT available.

5 Packaging * Declared value limit \$500.

☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
☐ No Signature Required
Package may be left without
obtaining a signature for delivery.
☐ Direct Signature
Someone at recipient's address
may sign for delivery. Fee applies.
☐ Indirect Signature
If no one is available at recipient's
address, someone at a neighboring
address may sign for delivery. For
residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

One box must be checked.
☒ No ☐ Yes
As per attached
Shipper's Declaration. ☐ Yes
Shipper's Declaration
not required. ☐ Dry Ice
Dry ice, 5 UN 1845 x kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging
or placed in a FedEx Express Drop Box. ☐ Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip.
Acct. No. ☐
Sender ☐ Acct. No. in Section
I will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check
Total Packages Total Weight lbs. Credit Card Auth.

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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CUSTODY SEAL	
Date: 2-5-13	Time: 1100
Name: B. McKenna	
Company: ARCADIS U.S.	

	S Environmental 10450 Stancliff Rd Suite 210 Houston, TX 77059-4338 Tel: 281 530 5656 Fax: 281 530 5887

FedEx
Tracking
Number

8013 7714 1158

Form
ID No.

0215

Recipient's Copy

1 From
Date 2/5/13
Sender's Name Eric Bergeson
Company ARCADISO
Address 2929 Briarpark Suite 300
City Houston State TX ZIP 77042

2 Your Internal Billing Reference

3 To
Recipient's Name CLIENT SERVICES
Company ALS LABORATORY GROUP
Address 10450 STANCLIFF RD STE 210
City HOUSTON State TX ZIP 77099-4338



8013 7714 1158

0455550114

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day

- ☒ FedEx First Overnight
Earliest next business morning delivery to select locations. Saturday shipments not to be shipped on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Priority Overnight
Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☒ FedEx Standard Overnight
Next business afternoon. * Saturday Delivery NOT available.

2 or 3 Business Days

- ☐ FedEx 2Day A.M.
Second business morning. * Saturday Delivery NOT available.
- ☐ FedEx 2Day
Second business afternoon. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Express Saver
Third business day. * Saturday Delivery NOT available.

5 Packaging

- ☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

- ☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
- ☐ No Signature Required
Package may be left without obtaining a signature for delivery.
- ☐ Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.
- ☐ Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.
- Does this shipment contain dangerous goods?
One box must be checked.
☒ No ☐ Yes As per attached Shipper's Declaration ☐ Yes Shipper's Declaration not required ☐ Dry Ice Dry Ice, 9 UN 1845 x kg ☐ Cargo Aircraft Only
- Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment Bill to

- Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
- ☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages Total Weight

Your liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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March 15, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-165
Project Name: None Submitted
Project Number: 1302223

Dear Ms. West:

Twenty soil samples were received from ALS Environmental on February 14, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mlc
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



1302165

Gamma Spectroscopy:

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 21 days prior to analysis.

All acceptance criteria were met.

ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302165

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302223

Client PO Number: 10-1302223

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302223-01A (MW-118 (1))	1302165-1		SOIL	04-Feb-13	9:20
1302223-02A (MW-118 (5))	1302165-2		SOIL	04-Feb-13	9:05
1302223-03A (MW-118 (10))	1302165-3		SOIL	04-Feb-13	10:10
1302223-04A (MW-118 (15))	1302165-4		SOIL	04-Feb-13	14:50
1302223-05A (MW-118 (20))	1302165-5		SOIL	04-Feb-13	14:52
1302223-06A (MW-118 (25))	1302165-6		SOIL	04-Feb-13	14:35
1302223-07A (MW-119 (1))	1302165-7		SOIL	04-Feb-13	11:05
1302223-08A (MW-119 (5))	1302165-8		SOIL	04-Feb-13	11:20
1302223-09A (MW-119 (10))	1302165-9		SOIL	04-Feb-13	11:45
1302223-10A (MW-119 (15))	1302165-10		SOIL	04-Feb-13	16:08
1302223-11A (MW-119 (20))	1302165-11		SOIL	04-Feb-13	16:11
1302223-12A (MW-119 (25))	1302165-12		SOIL	04-Feb-13	16:20
1302223-16A (MW-117 (15))	1302165-13		SOIL	31-Jan-13	15:20
1302223-17A (MW-117 (20))	1302165-14		SOIL	31-Jan-13	15:25
1302223-18A (MW-117 (25))	1302165-15		SOIL	31-Jan-13	15:40
1302223-22A (RO-SB-1 (15))	1302165-16		SOIL	31-Jan-13	9:57
1302223-23A (RO-SB-1 (20))	1302165-17		SOIL	31-Jan-13	9:40
1302223-24A (RO-SB-1 (25))	1302165-18		SOIL	01-Feb-13	10:18
1302223-25A (RO-SB-1 (30))	1302165-19		SOIL	01-Feb-13	10:10
1302223-26A (RO-SB-1 (35))	1302165-20		SOIL	01-Feb-13	10:05

**Subcontractor:**ALS Environmental
225 Commerce Drive

Fort Collins, CO 80524

TEL: (800) 443-1511

FAX: (970) 490-1522

Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Date: 13-Feb-13COC ID: 13353Due Date: 21-Feb-13

Salesperson

Mala H. Belmonte

1302165

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	10-130223	Project Name	1302223	A	Radium 226, 228 Sub to ALS Ft. Collins											
Work Order		Project Number		B												
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C												
Send Report To	Sonia West	Inv Attn	Accounts Payable	D												
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E												
				F												
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G												
Phone	(281) 530-5656	Phone	(281) 530-5656	H												
Fax	(281) 530-5887	Fax	(281) 530-5887	I												
eMail Address	Sonia.West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	J												

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1302223-01A (MW-118 (1))	Soil	4/Feb/2013 9:20	(1) 8OZAGNEAT	X									
1302223-02A (MW-118 (5))	Soil	4/Feb/2013 9:05	(1) 8OZAGNEAT	X									
1302223-03A (MW-118 (10))	Soil	4/Feb/2013 10:10	(1) 8OZAGNEAT	X									
1302223-04A (MW-118 (15))	Soil	4/Feb/2013 14:50	(1) 8OZAGNEAT	X									
1302223-05A (MW-118 (20))	Soil	4/Feb/2013 14:52	(1) 8OZAGNEAT	X									
1302223-06A (MW-118 (25))	Soil	4/Feb/2013 14:35	(1) 8OZAGNEAT	X									
1302223-07A (MW-119 (1))	Soil	4/Feb/2013 11:05	(1) 8OZAGNEAT	X									
1302223-08A (MW-119 (5))	Soil	4/Feb/2013 11:20	(1) 8OZAGNEAT	X									
1302223-09A (MW-119 (10))	Soil	4/Feb/2013 11:45	(1) 8OZAGNEAT	X									
1302223-10A (MW-119 (15))	Soil	4/Feb/2013 16:08	(1) 8OZAGNEAT	X									
1302223-11A (MW-119 (20))	Soil	4/Feb/2013 16:11	(1) 8OZAGNEAT	X									
1302223-12A (MW-119 (25))	Soil	4/Feb/2013 16:20	(1) 8OZAGNEAT	X									
1302223-13A (MW-117 (1))	Soil	31/Jan/2013 8:55	(1) 8OZAGNEAT	X									
1302223-14A (MW-117 (5))	Soil	31/Jan/2013 9:15	(1) 8OZAGNEAT	X									

Comments:

WO 1302223 - Please analyze for Radium 226/228. Samples that were sent from previous WO 1302079 & 1302082 match with this WO those on enclosed list

Relinquished by:

Date/Time

13 Feb 13

Received by:

Date/Time

02-14-13 0915

Cooler IDs

Report/QC Level

Std

Relinquished by:

Date/Time

Received by:

Date/Time

**Subcontractor:**ALS Environmental
225 Commerce Drive

Fort Collins, CO 80524

TEL: (800) 443-1511

FAX: (970) 490-1522

Acct #:

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Date: **13-Feb-13**COC ID: **13353**Due Date: **21-Feb-13**Salesperson: **Mala H. Belmonte**

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	10-130223	Project Name	1302223	A	Radium 226, 228 Sub to ALS Ft. Collins
Work Order		Project Number		B	
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	Sonia West	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	Sonia.West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1302223-15A (MW-117 (10))	Soil	31/Jan/2013 10:30	(1) 8OZAGNEAT	X									
1302223-16A (MW-117 (15))	Soil	31/Jan/2013 15:20	(1) 8OZAGNEAT	X									
1302223-17A (MW-117 (20))	Soil	31/Jan/2013 15:25	(1) 8OZAGNEAT	X									
1302223-18A (MW-117 (25))	Soil	31/Jan/2013 15:40	(1) 8OZAGNEAT	X									
1302223-19A (RO-SB-1 (1))	Soil	31/Jan/2013 11:45	(1) 8OZAGNEAT	X									
1302223-20A (RO-SB-1 (5))	Soil	31/Jan/2013 12:00	(1) 8OZAGNEAT	X									
1302223-21A (RO-SB-1 (10))	Soil	31/Jan/2013 12:50	(1) 8OZAGNEAT	X									
1302223-22A (RO-SB-1 (15))	Soil	1/Feb/2013 9:57	(1) 8OZAGNEAT	X									
1302223-23A (RO-SB-1 (20))	Soil	1/Feb/2013 9:40	(1) 8OZAGNEAT	X									
1302223-24A (RO-SB-1 (25))	Soil	1/Feb/2013 10:18	(1) 8OZAGNEAT	X									
1302223-25A (RO-SB-1 (30))	Soil	1/Feb/2013 10:10	(1) 8OZAGNEAT	X									
1302223-26A (RO-SB-1 (35))	Soil	1/Feb/2013 10:05	(1) 8OZAGNEAT	X									

Comments:

WO 1302223 - Please analyze for Radium 226/228. Samples that were sent from previous WO 1302079 & 1302082 match with this WO those on enclosed list

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	13/Feb/13		2-13-13 0915		Std
Relinquished by:	Date/Time	Received by:	Date/Time		



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302165

Project Manager: OK

Initials: KB Date: 2-14-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		☒ YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		☒ YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 ☒ #4 ☒ RAD ONLY ☒		☒ YES	NO
Cooler #: <u>1</u> <u>2KB</u>			
Temperature (°C): <u>4.5</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>13</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES ☐ NO ☐ NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / ☒ NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 2-14-13

ef: pl/bf/jba
ep: Environmental

Date: 13FEB13
Wgt: 48.49 LBS
DV:

SPECIAL: 9.97
HANDLING: 0.00
TOTAL: 109.70

Svcs: PRIORITY OVERNIGHT
TRK: 4340 2174 2850

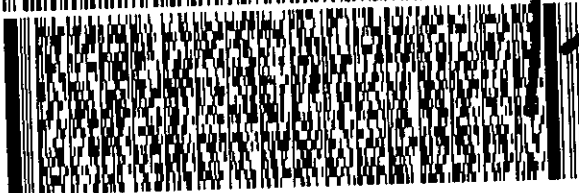
ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 13FEB13
ACTWGT: 48.5 LB
CAD: 300130/CAFE2606

BILL SENDER

ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1611 REF: PL/BF/JBA
DEPT: ENVIRONMENTAL



FedEx
Express



J12131210050125

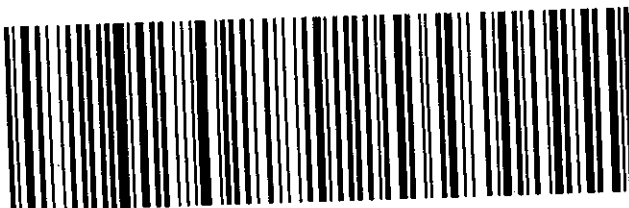
TRK# 4340 2174 2850
0201

THU - 14 FEB 12
PRIORITY OVERNIGHT

NA FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 04/12



Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-01A (MW-118 (1))

Lab ID: 1302165-1

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 09:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.5 (+/- 0.36)	G	0.58	pCi/g	NA	3/11/2013 09:43
Ra-228	0.89 (+/- 0.5)	NQ,G	0.86	pCi/g	NA	3/11/2013 09:43
PAI 713						
Prep Date: 2/18/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-02A (MW-118 (5))

Lab ID: 1302165-2

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 09:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.64 (+/- 0.39)	G	0.55	pCi/g	NA	3/11/2013 09:43
Ra-228	0.96 (+/- 0.63)	NQ,G	0.84	pCi/g	NA	3/11/2013 09:43
PAI 713						
Prep Date: 2/18/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-03A (MW-118 (10))

Lab ID: 1302165-3

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 10:10

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/18/2013	PrepBy: SAM
Ra-226	0.62 (+/- 0.29)	LT,G,TI	0.48	pCi/g	NA	3/11/2013 09:43
Ra-228	ND (+/- 0.51)	U,G	0.74	pCi/g	NA	3/11/2013 09:43

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-04A (MW-118 (15))

Lab ID: 1302165-4

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 14:50

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/18/2013	PrepBy: SAM
Ra-226	ND (+/- 0.19)	U,G	0.36	pCi/g	NA	3/11/2013 09:43
Ra-228	ND (+/- 0.38)	U,G	0.57	pCi/g	NA	3/11/2013 09:43

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-05A (MW-118 (20))

Lab ID: 1302165-5

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 14:52

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/18/2013	PrepBy: SAM
Ra-226	ND (+/- 0.28)	U,G	0.52	pCi/g	NA	3/11/2013 09:43
Ra-228	ND (+/- 0.6)	U,G	0.89	pCi/g	NA	3/11/2013 09:43

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-06A (MW-118 (25))

Lab ID: 1302165-6

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 14:35

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.74 (+/- 0.26)	LT,G	PAI 713 0.44	pCi/g	Prep Date: 2/18/2013 NA	PrepBy: SAM 3/11/2013 09:43
Ra-228	1.04 (+/- 0.54)	G,TI	0.63	pCi/g	NA	3/11/2013 09:43

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-07A (MW-119 (1))

Lab ID: 1302165-7

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 11:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.41 (+/- 0.3)	G	PAI 713	0.45 pCi/g	NA	Prep Date: 2/18/2013 3/11/2013 09:43
Ra-228	ND (+/- 0.4)	U,G		0.9 pCi/g	NA	PrepBy: SAM 3/11/2013 09:43

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-08A (MW-119 (5))

Lab ID: 1302165-8

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 11:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.14 (+/- 0.29)	G	0.46	pCi/g	NA	3/11/2013 09:43
Ra-228	ND (+/- 0.44)	U,G	0.67	pCi/g	NA	3/11/2013 09:43
PAI 713						
Prep Date: 2/18/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-09A (MW-119 (10))

Lab ID: 1302165-9

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 11:45

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.44 (+/- 0.36)	G	0.55	pCi/g	NA	3/11/2013 10:45
Ra-228	0.8 (+/- 0.53)	LT,G,TI	0.68	pCi/g	NA	3/11/2013 10:45
PAI 713						
Prep Date: 2/18/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-10A (MW-119 (15))

Lab ID: 1302165-10

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 16:08

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713	Prep Date: 2/18/2013		
				PrepBy: SAM		
Ra-226	0.56 (+/- 0.21)	LT,G	0.37	pCi/g	NA	3/11/2013 10:45
Ra-228	ND (+/- 0.55)	U,G	0.97	pCi/g	NA	3/11/2013 10:45

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-11A (MW-119 (20))

Lab ID: 1302165-11

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 16:11

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.07 (+/- 0.29)	G	0.48	pCi/g	NA	3/11/2013 10:46
Ra-228	0.9 (+/- 0.44)	LT,G	0.65	pCi/g	NA	3/11/2013 10:46
PAI 713						
Prep Date: 2/18/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID: 1302223-12A (MW-119 (25))

Lab ID: 1302165-12

Legal Location:

Matrix: SOIL

Collection Date: 2/4/2013 16:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713	Prep Date: 2/18/2013		
				PrepBy: SAM		
Ra-226	0.66 (+/- 0.33)	LT,G,TI	0.64	pCi/g	NA	3/11/2013 10:46
Ra-228	ND (+/- 0.45)	U,G	0.72	pCi/g	NA	3/11/2013 10:46

Client: ALS Environmental
 Project: 1302223
 Sample ID : 1302223-26A (RO-SB-1 (35))
 Legal Location:
 Collection Date: 2/1/2013 10:05

Date: 14-Mar-13
 Work Order: 1302165
 Lab ID : 1302165-20
 Matrix: SOIL
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Explanation of Qualifiers						

Radiochemistry:

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

Client: ALS Environmental

Date: 14-Mar-13

Project: 1302223

Work Order: 1302165

Sample ID : 1302223-26A (RO-SB-1 (35))

Lab ID : 1302165-20

Legal Location :

Matrix: SOIL

Collection Date: 2/1/2013 10:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample.						
D - A pattern resembling diesel was detected in this sample.						
M - A pattern resembling motor oil was detected in this sample.						
C - A pattern resembling crude oil was detected in this sample.						
4 - A pattern resembling JP-4 was detected in this sample.						
5 - A pattern resembling JP-5 was detected in this sample.						
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.						
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.						
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:						
- gasoline						
- JP-8						
- diesel						
- mineral spirits						
- motor oil						
- Stoddard solvent						
- bunker C						

ALS Environmental -- FC

Date: 3/14/2013 8:55:

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1302165

Project: 1302223

Batch ID: **GS130215-3-1**Instrument ID: **GAMMA**Method: **Gamma Spectroscopy Results**

DUP	Sample ID: 1302165-1				Units: pCi/g		Analysis Date: 3/11/2013 10:45			
Client ID: 1302223-01A (MW-118 (1))			Run ID: GS130215-3A			Prep Date: 2/18/2013			DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	1.43 (+/- 0.34)	0.52					1.5	0.139	2.13	G
Ra-228	0.87 (+/- 0.62)	0.86					0.89	0.0287	2.13	LT,G,TI

LCS	Sample ID: GS130215-3A				Units: pCi/g		Analysis Date: 3/11/2013 11:05			
Client ID:	Run ID: GS130215-3A						Prep Date: 2/18/2013		DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	454 (+/- 53)	3	469.4		96.8	85-115				P,M3

LCS	Sample ID: GS130215-3				Units: pCi/g		Analysis Date: 3/11/2013 10:46			
Client ID:	Run ID: GS130215-3A						Prep Date: 2/18/2013		DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	463 (+/- 55)	7	475.3		97.5	85-115				P
Co-60	205 (+/- 24)	1	204.4		100	85-115				P
Cs-137	183 (+/- 22)	1	173.6		105	85-115				P

MB	Sample ID: GS130215-3				Units: pCi/g		Analysis Date: 3/11/2013 10:46			
Client ID:	Run ID: GS130215-3A				Prep Date: 2/18/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.24								U
Ra-228	ND	0.37								U

The following samples were analyzed in this batch:

1302165-1	1302165-2	1302165-3
1302165-4	1302165-5	1302165-6
1302165-7	1302165-8	1302165-9
1302165-10	1302165-11	1302165-12

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



March 6, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-040
Project Name: None Submitted
Project Number: 1302223

Dear Ms. West:

Six soil samples were received from ALS Environmental on February 05, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mlc
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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04 of 99

ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280



1302040

Gamma Spectroscopy:

The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713.

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 24 days prior to analysis.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302040

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302223

Client PO Number: 10-1302223

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302223-13A (MW-117 (1))	1302040-1		SOIL	31-Jan-13	8:55
1302223-14A (MW-117 (5))	1302040-2		SOIL	31-Jan-13	9:15
1302223-15A (MW-117 (10))	1302040-3		SOIL	31-Jan-13	10:30
1302223-16A (MW-117 (15))	1302040-4		SOIL	31-Jan-13	15:20
1302223-17A (MW-117 (20))	1302040-5		SOIL	31-Jan-13	15:25
1302223-18A (MW-117 (25))	1302040-6		SOIL	31-Jan-13	15:40

**Subcontractor:**ALS Environmental
225 Commerce Drive

Fort Collins, CO 80524

TEL: (800) 443-1511

FAX: (970) 490-1522

Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

1302040

Date: 04-Feb-13

COC ID: 13244

Due Date: 08-Feb-13

Salesperson Mala H. Belmonte

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1302079	A	Radium 226 228 Sub to ALS Ft. Collins
Work Order		Project Number		B	
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	Sonia West	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	Sonia.West@alsglobal.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
① 1302079-01E (MW-117 (1))	Soil	31/Jan/2013 8:55	(1) 4OZGNEAT	X									
② 1302079-03C (MW-117 (5))	Soil	31/Jan/2013 9:15	(1) 4OZGNEAT	X									
③ 1302079-06C (MW-119 (10))	Soil	31/Jan/2013 10:30	(1) 4OZGNEAT	X									
④ 1302079-09C (MW-117 (15))	Soil	31/Jan/2013 15:20	(1) 4OZGNEAT	X									
⑤ 1302079-12C (MW-117 (20))	Soil	31/Jan/2013 15:25	(1) 4OZGNEAT	X									
⑥ 1302079-15E (MW-117 (25))	Soil	31/Jan/2013 15:40	(1) 4OZGNEAT	X									

Comments:

Please analyze for Radium 226/228. Email results to sonia.west@alsglobal.com and CC jumoke.lawal@alsglobal.com

RV AS 02/04/13 18:00 C Sumble 2-5-13 0910

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302040

Project Manager: JK

Initials: CDT Date: 2-5-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	☒ NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		☒ YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 ☒ #4 RAD ONLY		☒ YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES ☐ NO ☐ NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

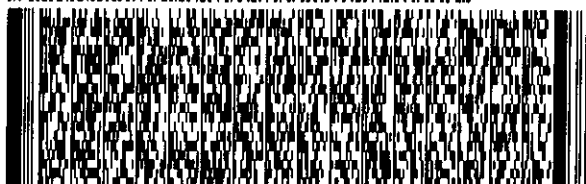
SAMPLES RECEIVED IN 8 OZ SOIL JARS-

If applicable, was the client contacted? YES / NO / ☒ NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 2-5-13

BILL SENDER

REF: SUB SAMPLES

**E**

TUE - 05 FEB A2
PRIORITY OVERNIGHT

NA-FTCA

80524
S DEN

CO ~ US



Part #156148-434 AY2 04/12 ♣♣

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-13A (MW-117 (1))

Lab ID: 1302040-1

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 08:55

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.55 (+/- 0.35)	G	0.57	pCi/g	NA	3/4/2013 08:41
Ra-228	ND (+/- 0.62)	U,G	0.93	pCi/g	NA	3/4/2013 08:41
PAI 713						
Prep Date: 2/8/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-14A (MW-117 (5))

Lab ID: 1302040-2

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 09:15

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/8/2013	PrepBy: SAM
Ra-226	0.5 (+/- 0.24)	LT, TI	0.46	pCi/g	NA	3/4/2013 08:41
Ra-228	ND (+/- 0.51)	U	0.82	pCi/g	NA	3/4/2013 08:41

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-15A (MW-117 (10))

Lab ID: 1302040-3

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 10:30

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.68 (+/- 0.22)	LT,G	0.38	pCi/g	NA	3/4/2013 08:41
Ra-228	ND (+/- 0.5)	U,G	0.81	pCi/g	NA	3/4/2013 08:41
PAI 713						
Prep Date: 2/8/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-16A (MW-117 (15))

Lab ID: 1302040-4

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 15:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/8/2013	PrepBy: SAM
Ra-226	ND (+/- 0.24)	U,G	0.44	pCi/g	NA	3/4/2013 08:41
Ra-228	ND (+/- 0.44)	U,G	0.73	pCi/g	NA	3/4/2013 08:41

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-17A (MW-117 (20))

Lab ID: 1302040-5

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 15:25

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.87 (+/- 0.26)	LT,G	PAI 713 0.48	pCi/g	Prep Date: 2/8/2013 NA	PrepBy: SAM 3/4/2013 08:42
Ra-228	ND (+/- 0.5)	U,G	0.75	pCi/g	NA	3/4/2013 08:42

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID: 1302223-18A (MW-117 (25))

Lab ID: 1302040-6

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 15:40

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713	Prep Date: 2/8/2013		PrepBy: SAM
Ra-226	0.51 (+/- 0.21)	LT,G	0.37	pCi/g	NA	3/4/2013 08:42
Ra-228	0.82 (+/- 0.49)	LT,G,Tl	0.64	pCi/g	NA	3/4/2013 08:42

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client:	ALS Environmental	Date:	06-Mar-13
Project:	1302223	Work Order:	1302040
Sample ID :	1302223-18A (MW-117 (25))	Lab ID :	1302040-6
Legal Location :		Matrix:	SOIL
Collection Date:	1/31/2013 15:40	Percent Moisture:	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- U or ND - Result is less than the sample specific MDC.
 Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
 Y2 - Chemical Yield outside default limits.
 W - DER is greater than Warning Limit of 1.42
 * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
 # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
 G - Sample density differs by more than 15% of LCS density.
 D - DER is greater than Control Limit
 M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
 L - LCS Recovery below lower control limit.
 H - LCS Recovery above upper control limit.
 P - LCS, Matrix Spike Recovery within control limits.
 N - Matrix Spike Recovery outside control limits
 NC - Not Calculated for duplicate results less than 5 times MDC
 B - Analyte concentration greater than MDC.
 B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

- B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
 U or ND - Indicates that the compound was analyzed for but not detected.
 E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 M - Duplicate injection precision was not met.
 N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 * - Duplicate analysis (relative percent difference) not within control limits.

Organics:

- U or ND - Indicates that the compound was analyzed for but not detected.
 B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
 E - Analyte concentration exceeds the upper level of the calibration range.
 J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
 A - A tentatively identified compound is a suspected aldo-condensation product.
 X - The analyte was diluted below an accurate quantitation level.
 * - The spike recovery is equal to or outside the control criteria used.
 + - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302040

Sample ID : 1302223-18A (MW-117 (25))

Lab ID : 1302040-6

Legal Location :

Matrix: SOIL

Collection Date: 1/31/2013 15:40

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample.						
D - A pattern resembling diesel was detected in this sample.						
M - A pattern resembling motor oil was detected in this sample.						
C - A pattern resembling crude oil was detected in this sample.						
4 - A pattern resembling JP-4 was detected in this sample.						
5 - A pattern resembling JP-5 was detected in this sample.						
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.						
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.						
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:						
- gasoline						
- JP-8						
- diesel						
- mineral spirits						
- motor oil						
- Stoddard solvent						
- bunker C						

ALS Environmental -- FC

Date: 3/6/2013 7:16:1

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1302040

Project: 1302223

Batch ID: GS130207-2-1

Instrument ID: GAMMA

Method: Gamma Spectroscopy Results

DUP	Sample ID: 1302040-6				Units: pCi/g		Analysis Date: 3/4/2013 09:44			
Client ID: 1302223-18A (MW-117 (25))			Run ID: GS130207-2A			Prep Date: 2/8/2013			DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.61					0.51	0.0381	2.13	U,G
Ra-228	ND	0.97					0.82	0.367	2.13	U,G

LCS	Sample ID: GS130207-2A					Units: pCi/g		Analysis Date: 3/4/2013 10:40		
Client ID:	Run ID: GS130207-2A					Prep Date: 2/8/2013		DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	466 (+/- 55)	3	469.4		99.3	85-115				P,M3

LCS	Sample ID: GS130207-2				Units: pCi/g		Analysis Date: 3/4/2013 10:39			
Client ID:	Run ID: GS130207-2A						Prep Date: 2/8/2013		DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	487 (+/- 59)	15	475.4		103	85-115				P
Co-60	206 (+/- 24)	1	204.9		100	85-115				P
Cs-137	179 (+/- 21)	1	173.7		103	85-115				P

MB	Sample ID: GS130207-2				Units: pCi/g		Analysis Date: 3/4/2013 09:49			
Client ID:	Run ID: GS130207-2A				Prep Date: 2/8/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.24								U
Ra-228	ND	0.4								U

The following samples were analyzed in this batch:

1302040-1	1302040-2	1302040-3
1302040-4	1302040-5	1302040-6

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



March 6, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-041
Project Name: None Submitted
Project Number: 1302223

Dear Ms. West:

Eight soil samples were received from ALS Environmental on February 05, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mlc
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280



1302041

Gamma Spectroscopy:

The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713.

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 24 days prior to analysis.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302041

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302223

Client PO Number: 10-1302223

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302223-19A (RO-SB-1 (1))	1302041-1		SOIL	31-Jan-13	11:45
1302223-20A (RO-SB-1 (5))	1302041-2		SOIL	31-Jan-13	12:00
1302223-21A (RO-SB-1 (10))	1302041-3		SOIL	31-Jan-13	12:50
1302223-22A (RO-SB-1 (15))	1302041-4		SOIL	01-Feb-13	9:57
1302223-23A (RO-SB-1 (20))	1302041-5		SOIL	01-Feb-13	9:40
1302223-24A (RO-SB-1 (25))	1302041-6		SOIL	01-Feb-13	10:18
1302223-25A (RO-SB-1 (30))	1302041-7		SOIL	01-Feb-13	10:10
1302223-26A (RO-SB-1 (35))	1302041-8		SOIL	01-Feb-13	10:05



Subcontractor:

ALS Environmental
225 Commerce Drive

TEL: (800) 443-1511

FAX: (970) 490-1522

Acct #:

Fort Collins, CO 80524

Salesperson: Mala H. Belmonte

CHAIN-OF-CUSTODY RECORD

Date: 04-Feb-13
COC ID: 13246
Due Date: 14-Feb-13

Page 1 of 1

Customer Information		Project Information		Parameter/Method Request for Analysis													
Purchase Order	Project Name	Project Number	1302082	A	B	C	D	E	F	G	H	I	J				
Work Order																	
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.														
Send Report To	Sonia West	Inv Attn	Accounts Payable														
Address	10450 Stanciliff Rd, Suite 210	Address	10450 Stanciliff Rd, Suite 210														
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338														
Phone	(281) 530-5656	Phone	(281) 530-5656														
Fax	(281) 530-5887	Fax	(281) 530-5887														
eMail Address	Sonia.West@alsglobal.com	eMail CC															
Sample ID				Matrix	Collection Date	24hr	Bottle	A	B	C	D	E	F	G	H	I	J
①	1302082-01E (RO-SB-1 (1))	Soil	31/Jan/2013 11:45	(1) 4OZGNEAT	X												
②	1302082-03C (RO-SB-1 (5))	Soil	31/Jan/2013 12:00	(1) 4OZGNEAT	X												
③	1302082-06C (RO-SB-1 (10))	Soil	31/Jan/2013 12:50	(1) 4OZGNEAT	X												
④	1302082-09C (RO-SB-1 (15))	Soil	1/Feb/2013 9:57	(1) 4OZGNEAT	X												
⑤	1302082-12C (RO-SB-1 (20))	Soil	1/Feb/2013 9:40	(1) 4OZGNEAT	X												
⑥	1302082-15C (RO-SB-1 (25))	Soil	1/Feb/2013 10:18	(1) 4OZGNEAT	X												
⑦	1302082-18C (RO-SB-1 (30))	Soil	1/Feb/2013 10:10	(1) 4OZGNEAT	X												
⑧	1302082-21E (RO-SB-1 (35))	Soil	1/Feb/2013 10:05	(1) 4OZGNEAT	X												

Comments:

Please analysis for Radium 226/228. Email results to sonia.west@alsglobal.com and CC jumokey.lawa@alsglobal.com

Relinquished by: *Raw ALS 2/4/13 18:00 C Jumble* Date/Time: *25-13 0910*

Relinquished by:

Date/Time

Received by:

Date/Time

Cooler IDs

Report/QC Level

Std



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302041

Project Manager: JK

Initials: CDT Date: 2-5-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	☒ NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		☒ YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 ☒ #4	RAD ONLY	☒ YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

SAMPLES RECEIVED IN 8 OZ. SOIL JARS

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: _____

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04FEB13
ACTWGT: 49.1 LB
CAD: 300130/CAFE2606

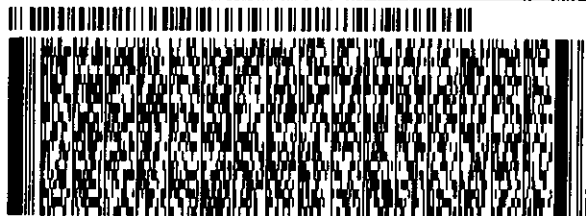
BILL SENDER

TO ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
REF: SUB SAMPLES

12
-2

51201/0524/FE0



FedEx
Express



J121312 10050125

TRK# 4340 2174 0813
0201

TUE - 05 FEB A2
PRIORITY OVERNIGHT

NA FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 04/12



Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-19A (RO-SB-1 (1))

Lab ID: 1302041-1

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 11:45

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.32 (+/- 0.29)	G	PAI 713	0.46 pCi/g	NA	Prep Date: 2/8/2013 3/4/2013 08:42
Ra-228	ND (+/- 0.5)	U,G		0.9 pCi/g	NA	PrepBy: SAM 3/4/2013 08:42

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-20A (RO-SB-1 (5))

Lab ID: 1302041-2

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 12:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.09 (+/- 0.34)	G	0.54	pCi/g	NA	3/4/2013 09:44
Ra-228	1.17 (+/- 0.75)	M,G,NQ	1.03	pCi/g	NA	3/4/2013 09:44
PAI 713						
Prep Date: 2/8/2013 PrepBy: SAM						

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-21A (RO-SB-1 (10))

Lab ID: 1302041-3

Legal Location:

Matrix: SOIL

Collection Date: 1/31/2013 12:50

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713	Prep Date: 2/8/2013		
			Prep By: SAM			
Ra-226	0.89 (+/- 0.34)	LT,G,TI	0.58	pCi/g	NA	3/4/2013 09:44
Ra-228	ND (+/- 0.53)	U,G	0.93	pCi/g	NA	3/4/2013 09:44

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-22A (RO-SB-1 (15))

Lab ID: 1302041-4

Legal Location:

Matrix: SOIL

Collection Date: 2/1/2013 09:57

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.87 (+/- 0.25)	LT,G	PAI 713 0.38	pCi/g	Prep Date: 2/8/2013 NA	PrepBy: SAM 3/4/2013 09:44
Ra-228	ND (+/- 0.4)	U,G	0.82	pCi/g	NA	3/4/2013 09:44

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-23A (RO-SB-1 (20))

Lab ID: 1302041-5

Legal Location:

Matrix: SOIL

Collection Date: 2/1/2013 09:40

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.58 (+/- 0.27)	LT,G,TI	PAI 713 0.51	pCi/g	NA	Prep Date: 2/8/2013 3/4/2013 09:44
Ra-228	0.99 (+/- 0.62)	NQ,G	0.81	pCi/g	NA	PrepBy: SAM 3/4/2013 09:44

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-24A (RO-SB-1 (25))

Lab ID: 1302041-6

Legal Location:

Matrix: SOIL

Collection Date: 2/1/2013 10:18

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.07 (+/- 0.28)	G	PAI 713 0.45	pCi/g	NA	Prep Date: 2/8/2013 3/4/2013 09:44
Ra-228	1.11 (+/- 0.43)	G, TI	0.64	pCi/g	NA	Prep By: SAM 3/4/2013 09:44

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-25A (RO-SB-1 (30))

Lab ID: 1302041-7

Legal Location:

Matrix: SOIL

Collection Date: 2/1/2013 10:10

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713	Prep Date: 2/8/2013		
				Prep By: SAM		
Ra-226	0.56 (+/- 0.26)	LT,G,TI	0.49	pCi/g	NA	3/4/2013 09:44
Ra-228	ND (+/- 0.6)	U,G	0.94	pCi/g	NA	3/4/2013 09:44

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID: 1302223-26A (RO-SB-1 (35))

Lab ID: 1302041-8

Legal Location:

Matrix: SOIL

Collection Date: 2/1/2013 10:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.72 (+/- 0.22)	LT	0.38	pCi/g	NA	3/4/2013 09:44
Ra-228	ND (+/- 0.39)	U	0.59	pCi/g	NA	3/4/2013 09:44

Client: ALS Environmental
 Project: 1302223
 Sample ID : 1302223-26A (RO-SB-1 (35))
 Legal Location:
 Collection Date: 2/1/2013 10:05

Date: 06-Mar-13
 Work Order: 1302041
 Lab ID : 1302041-8
 Matrix: SOIL
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Explanation of Qualifiers						

Radiochemistry:

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

Client: ALS Environmental

Date: 06-Mar-13

Project: 1302223

Work Order: 1302041

Sample ID : 1302223-26A (RO-SB-1 (35))

Lab ID : 1302041-8

Legal Location :

Matrix: SOIL

Collection Date: 2/1/2013 10:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample.						
D - A pattern resembling diesel was detected in this sample.						
M - A pattern resembling motor oil was detected in this sample.						
C - A pattern resembling crude oil was detected in this sample.						
4 - A pattern resembling JP-4 was detected in this sample.						
5 - A pattern resembling JP-5 was detected in this sample.						
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.						
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.						
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:						
- gasoline						
- JP-8						
- diesel						
- mineral spirits						
- motor oil						
- Stoddard solvent						
- bunker C						

ALS Environmental -- FC

Date: 3/6/2013 7:19:1

Client: ALS Environmental

Work Order: 1302041

Project: 1302223

QC BATCH REPORT

Batch ID: GS130207-2-1

Instrument ID: GAMMA

Method: Gamma Spectroscopy Results

LCS	Sample ID: GS130207-2A				Units: pCi/g		Analysis Date: 3/4/2013 10:40			
Client ID:	Run ID: GS130207-2A				Prep Date: 2/8/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	466 (+/- 55)	3	469.4		99.3	85-115				P,M3

LCS	Sample ID: GS130207-2				Units: pCi/g		Analysis Date: 3/4/2013 10:39			
Client ID:	Run ID: GS130207-2A				Prep Date: 2/8/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	487 (+/- 59)	15	475.4		103	85-115				P
Co-60	206 (+/- 24)	1	204.9		100	85-115				P
Cs-137	179 (+/- 21)	1	173.7		103	85-115				P

MB	Sample ID: GS130207-2				Units: pCi/g			Analysis Date: 3/4/2013 09:49			
Client ID:	Run ID: GS130207-2A				Prep Date: 2/8/2013			DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual	
Ra-226	ND	0.24								U	
Ra-228	ND	0.4								U	

The following samples were analyzed in this batch:

1302041-1	1302041-2	1302041-3
1302041-4	1302041-5	1302041-6
1302041-7	1302041-8	

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



06-Mar-2013

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

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

Re: RO Discharge Sampling

Work Order: **1302400**

Dear Robert,

ALS Environmental received 20 samples on 31-Jan-2013 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 93.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Sonia West".

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 1302400

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1302400-01	MW-115 (1)	Soil		1/29/2013 14:25	1/31/2013 09:10	☐
1302400-02	MW-115 (5)	Soil		1/29/2013 14:35	1/31/2013 09:10	☐
1302400-03	MW-115 (10)	Soil		1/29/2013 16:10	1/31/2013 09:10	☐
1302400-04	MW-115 (15)	Soil		1/29/2013 15:20	1/31/2013 09:10	☐
1302400-05	MW-115 (20)	Soil		1/29/2013 16:00	1/31/2013 09:10	☐
1302400-06	MW-115 (25)	Soil		1/29/2013 15:45	1/31/2013 09:10	☐
1302400-07	MW-116 (1)	Soil		1/29/2013 16:05	1/31/2013 09:10	☐
1302400-08	MW-116 (5)	Soil		1/29/2013 16:32	1/31/2013 09:10	☐
1302400-09	MW-116 (10)	Soil		1/30/2013 09:02	1/31/2013 09:10	☐
1302400-10	MW-116 (15)	Soil		1/30/2013 09:10	1/31/2013 09:10	☐
1302400-11	MW-116 (20)	Soil		1/30/2013 09:20	1/31/2013 09:10	☐
1302400-12	MW-116 (25)	Soil		1/30/2013 09:35	1/31/2013 09:10	☐
1302400-13	MW-114 (1)	Soil		1/28/2013 14:30	1/31/2013 09:10	☐
1302400-14	MW-114 (5)	Soil		1/28/2013 14:45	1/31/2013 09:10	☐
1302400-15	MW-114 (10)	Soil		1/28/2013 15:30	1/31/2013 09:10	☐
1302400-16	MW-114 (15)	Soil		1/28/2013 15:50	1/31/2013 09:10	☐
1302400-17	MW-114 (20)	Soil		1/28/2013 16:10	1/31/2013 09:10	☐
1302400-18	MW-114 (25)	Soil		1/28/2013 16:20	1/31/2013 09:10	☐
1302400-19	MW-114 (30)	Soil		1/28/2013 16:00	1/31/2013 09:10	☐
1302400-20	MW-114 (35)	Soil		1/28/2013 16:50	1/31/2013 09:10	☐

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company

Project: RO Discharge Sampling

Work Order: 1302400

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (1)
Collection Date: 1/29/2013 02:25 PM

Work Order: 1302400
Lab ID: 1302400-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (5)
Collection Date: 1/29/2013 02:35 PM

Work Order: 1302400
Lab ID: 1302400-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (10)
Collection Date: 1/29/2013 04:10 PM

Work Order: 1302400
Lab ID: 1302400-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (15)
Collection Date: 1/29/2013 03:20 PM

Work Order: 1302400
Lab ID: 1302400-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (20)
Collection Date: 1/29/2013 04:00 PM

Work Order: 1302400
Lab ID: 1302400-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-115 (25)
Collection Date: 1/29/2013 03:45 PM

Work Order: 1302400
Lab ID: 1302400-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (1)
Collection Date: 1/29/2013 04:05 PM

Work Order: 1302400
Lab ID: 1302400-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (5)
Collection Date: 1/29/2013 04:32 PM

Work Order: 1302400
Lab ID: 1302400-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (10)
Collection Date: 1/30/2013 09:02 AM

Work Order: 1302400
Lab ID: 1302400-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (15)
Collection Date: 1/30/2013 09:10 AM

Work Order: 1302400
Lab ID: 1302400-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (20)
Collection Date: 1/30/2013 09:20 AM

Work Order: 1302400
Lab ID: 1302400-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (25)
Collection Date: 1/30/2013 09:35 AM

Work Order: 1302400
Lab ID: 1302400-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (1)
Collection Date: 1/28/2013 02:30 PM

Work Order: 1302400
Lab ID: 1302400-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (5)
Collection Date: 1/28/2013 02:45 PM

Work Order: 1302400
Lab ID: 1302400-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (10)
Collection Date: 1/28/2013 03:30 PM

Work Order: 1302400
Lab ID: 1302400-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (15)
Collection Date: 1/28/2013 03:50 PM

Work Order: 1302400
Lab ID: 1302400-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (20)
Collection Date: 1/28/2013 04:10 PM

Work Order: 1302400
Lab ID: 1302400-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (25)
Collection Date: 1/28/2013 04:20 PM

Work Order: 1302400
Lab ID: 1302400-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (30)
Collection Date: 1/28/2013 04:00 PM

Work Order: 1302400
Lab ID: 1302400-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

ALS Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-114 (35)
Collection Date: 1/28/2013 04:50 PM

Work Order: 1302400
Lab ID: 1302400-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB	
Miscellaneous Analysis	See Attached		0			1	3/5/2013

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 1302400

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **31-Jan-13 09:10**

Work Order: **1301997**

Received by: **RDH**

Checklist completed by Johanna B. Allen
eSignature

31-Jan-13
Date

Reviewed by: Patricia L. Lynch
eSignature

01-Feb-13
Date

Matrices: soil/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):	<u>1.2 C/uc</u> <u>IR 1</u>		
Cooler(s)/Kit(s):	<u>5414</u>		
Date/Time sample(s) sent to storage:	<u>1/31/13 14:50</u>		
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:	<u>-</u>		

Login Notes: Ra-226/228 & cyanide not on COC. Incorrect metals list on COC.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **31-Jan-13 09:10**

Work Order: **13011005**

Received by: **RDH**

Checklist completed by Johanna B. Allen
eSignature

31-Jan-13
Date

Reviewed by: Patricia L. Lynch
eSignature

01-Feb-13
Date

Matrices: soil/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):	<u>1.4 C/uc</u> <u>IR 1</u>		
Cooler(s)/Kit(s):	<u>4028</u>		
Date/Time sample(s) sent to storage:	<u>1/31/13 14:30</u>		
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:	<u>-</u>		
Login Notes:	<u>Trip blank received, but not on COC. Ra-226/228 & cyanide not on COC. Incorrect metals list on COC.</u>		

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **31-Jan-13 09:10**

Work Order: **1302026**

Received by: **RDH**

Checklist completed by Robert D. Harris 01-Feb-13
eSignature Date

Reviewed by: Patricia L. Lynch 13-Feb-13
eSignature Date

Matrices: soils

Carrier name: FedEx

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):	<u>1.8c c/u</u> <u>005</u>		
Cooler(s)/Kit(s):	<u>3725</u>		
Date/Time sample(s) sent to storage:	<u>2/1/13 14:50</u>		
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:	<u>-</u>		

Login Notes: COC and sample count received didn't match up. PL spoke with client and got everything corrected. Logged in by PL.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



Environmental

Chain of Custody Form

Page 1 of 2

COC ID: **41202**

ALS Project Manager:

Project Information

Project Name	RO Discharge / Sample
Project Number	128823
Bill To Company	Navajo Refining Co
Invoice Attn.	Robert Carbs
Address	501 East Main
City/State/Zip	Artesia, NM
Phone	575-748-6733
Fax	575-746-5421
e-Mail Address	

Parameter/Method Request for Analysis

A	VOC (8260) NW GW List
B	GRO (8015M)
C	DRO (8015M)
D	ORO (8015M)
E	1L SVOC (8270) NW GW List
F	Total Metals (6020/7000) RCRA 8
G	Dissolved Metals (6030/7000) RCRA 8
H	TDS
I	Moisture
J	

Customer Information

Purchase Order	
Work Order	
Company Name	Navajo Refining Co
Send Report To	Robert Carbs
Address	501 East Main
City/State/Zip	Artesia, NM
Phone	
Fax	
e-Mail Address	

Sample Description

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles
1	MW 115 (1)	1-29-13	1425	Soil	—	5
2	MW 115 (3)		1430			1
3	MW 115 (5)		1435			5
4	MW 115 (7)		1502			1
5	MW 115 (9)		1502			5
6	MW 115 (10)		1610			1
7	MW 115 (11)		1612			1
8	MW 115 (13)		1612			5
9	MW 115 (15)		1520			1
10	MW 115 (17)		1522			1

Sampler(s): Please Print & Sign

Relinquished by: *Eric Bergersen*

Received by: *Eric Bergersen*

Date: 1/30/13

Time: 1300

Shipment Method:

Required Turnaround Time:

☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ Other

Results Due Date:

Notes:

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

QC Package: (Check Box Below)

Level II: Standard QC

Level III: Std QC + Raw Data

Level IV: SW846 CLP-Like

Other:

10 Day TAT Dissolved Metals Field Filtered

</



Houston, TX
+1 281 530 5656

Spring City, PA
+1 610 948 4903

South Charleston, WV
+1 304 356 3168

Middletown, PA
+1 717 944 5541

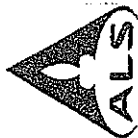
Salt Lake City, UT
+1 801 266 7700

York, PA
+1 717 505 5280

Page 2 of 2
COC ID: 7233

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 those stated on the COC Form.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Environmental

Chain of Custody Form

Page 1 of 2

COC ID: 41210

1302400

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

- ☐ Cincinnati, OH
+1 513 733 5336
- ☐ Everett, WA
+1 425 356 2600
- ☐ Fort Collins, CO
+1 970 490 1511



Customer Information				Project Information				ALS Project Manager												Parameter/Method Request for Analysis																			
Purchase Order				Project Name				Project Number				Bill To Company				Invoice Attn.				Address				City/State/Zip				Phone				Fax				e-Mail Address			
				Navajo Refining				128823				Navajo Refining Co				Robert Conboy				501 East Main				Artesia, NM				575-748-6733				575-746-5421							
Send Report To				Navajo Refining				128823				Navajo Refining Co				Robert Conboy				501 East Main				Artesia, NM				575-748-6733				575-746-5421							
Address				501 East Main																																			
City/State/Zip				Artesia, NM																																			
Phone																																							
Fax																																							
e-Mail Address																																							

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-116 (1)	1/29/13	1605	Soil	-	5	X	X	X	X	X	X	X	X	X	X	
2	MW-116 (3)	1/29/13	1618			5											
3	MW-116 (5)	1/29/13	1632			5											
4	MW-116 (7)	1/30/13	0855			1											
5	MW-116 (9)	1/30/13	0855			1											
6	MW-116 (10)	1/30/13	0902			5											
7	MW-116 (11)	1/30/13	0905			1											
8	MW-116 (13)	1/30/13	0905			1											
9	MW-116 (15)	1/30/13	0910			5											
10	MW-116 (17)	1/30/13	0915			1											

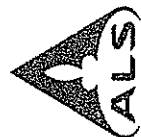
Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:		Results Due Date:	
Date	Time	Date	Time	STD 10 Wk Days	5 Wk Days	2 Wk Days	24 Hour
1/30/13	1300			☒	☐	☐	☐
Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>	

Received by:		Received by (Laboratory):		Check by (Laboratory):		QC Package: (Check Box Below)	
Date	Time	Date	Time	Date	Time	Level II: Standard QC	Level III: Std QC + Raw Data
1/30/13	1300	1/31/13	0910			☒	☐
Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>		Relinquished by: <u>Eric Segesser</u>	

Preservative Key:		Other:	
1-HCL	2-HNO3	3-H2SO4	4-NaOH

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Environmental

Chain of Custody Form

Page 2 of 2

COC ID: **41190**

☐ Cincinnati, OH
+1 513 733 5336

☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

☐ Holland, MI
+1 616 399 6070

☐ Houston, TX
+1 281 530 5656

☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7700

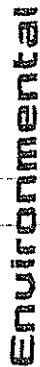
☐ Spring City, PA
+1 610 948 4903

☐ York, PA
+1 717 505 5280

Customer Information				Project Information				ALS Project Manager												Work Order #											
Purchase Order				Project Name				Parameter/Method Request for Analysis												13 01/02											
Work Order				Project Number				VOC (8260) NM GW List																							
Company Name				Bill To Company				GRO (8015M)																							
Send Report To				Invoice Attn.				DRO (8015M)																							
Address				Address				LL SVOC (8270) NM GW List																							
City/State/Zip				City/State/Zip				Total Metals (6020/7000) RCRA 8																							
Phone				Phone				Dissolved Metals (6020/7000) RCRA 8																							
Fax				Fax				TDS																							
e-Mail Address				e-Mail Address				Moisture																							
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold														
1	MW-116 (17)	1/30/13	0915	Soil	-	1																									
2	MW-116 (20)	1/30/13	0920	Soil	-	5	X	X	X	X	X	X	X	X	X	X															
3	MW-116 (21)	1/30/13	0930	Soil	-	1																									
4	MW-116 (23)	1/30/13	0930	Soil	-	1																									
5	MW-116 (25)	1/30/13	0935	Soil	-	5	X	X	X	X	X	X	X	X	X	X															
6																															
7																															
8																															
9																															
10																															

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COCID: 41198

Environmental

1302400

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



☐ Cincinnati, OH
+1 513 733 5336

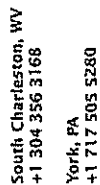
☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

Customer Information				Project Information				Parameter/Method Request for Analysis			
Purchase Order	Project Name	Project Number	Project Name	Project Number	Project Name	Project Number	Project Name				
Work Order	Navajo Refining	128823	Navajo Refining	128823	Navajo Refining	128823	Navajo Refining				
Company Name	Navajo Refining	128823	Navajo Refining	128823	Navajo Refining	128823	Navajo Refining				
Send Report To	Robert Carbo	128823	Robert Carbo	128823	Robert Carbo	128823	Robert Carbo				
Address	501 East Main	128823	501 East Main	128823	501 East Main	128823	501 East Main				
City/State/Zip	Altoona, NM 88211	128823	Altoona, NM 88211	128823	Altoona, NM 88211	128823	Altoona, NM 88211				
Phone	575-748-6733	128823	575-748-6733	128823	575-748-6733	128823	575-748-6733				
Fax	575-746-5421	128823	575-746-5421	128823	575-746-5421	128823	575-746-5421				
e-Mail Address		128823		128823		128823					
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	Matrix				
1	MW-114 (1)	1/28/13	1430	Soil	1	5	Soil				
2	MW-114 (3)	1/28/13	1440	Soil	1	5	Soil				
3	MW-114 (5)	1/28/13	1445	"	1	5	"				
4	MW-114 (7)	1/28/13	1530	"	1	5	"				
5	MW-114 (9)	1/28/13	1545	"	1	5	"				
6	MW-114 (10)	1/28/13	1530	"	1	5	"				
7	MW-114 (11)	1/28/13	1530	"	1	5	"				
8	MW-114 (13)	1/28/13	1550	"	1	5	"				
9	MW-114 (15)	1/28/13	1550	"	1	5	"				
10	MW-114 (17)	1/28/13	1600	"	1	5	"				
Sampler(s): Please Print & Sign				Required Turnaround Time:				Results Due Date:			
Eric Bergersen				10 WK Days				10 Day TAT. Dissolved Metals Field			
Relinquished by:				Received by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			
Time: 1300				Time: 1300				Time: 1300			
Relinquished by:				Relinquished by:				Relinquished by:			
Eric Bergersen				Eric Bergersen				Eric Bergersen			
Date: 1/30/13				Date: 1/30/13				Date: 1/30/13			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

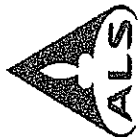
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COCID: 72331

Relinquished by:	Date:	Time:
Eric Bergesen	1/30/13	13
Relinquished by:	Date:	Time:
Eric Bergesen	1/30/13	13

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Environmental

Chain of Custody Form

Page 3 of 3

COC ID: 41209

- ☐ Cincinnati, OH
+1 513 733 5336
- ☐ Everett, WA
+1 425 356 2600
- ☐ Fort Collins, CO
+1 970 490 1511
- ☐ Holland, MI
+1 616 399 6070
- ☐ Houston, TX
+1 281 530 5656
- ☐ Middletown, PA
+1 717 944 5541
- ☐ Salt Lake City, UT
+1 801 266 7700
- ☐ Spring City, PA
+1 610 948 4903
- ☐ York, PA
+1 717 505 5280

Customer Information				Project Information				ALS Project Manager				Work Order #					
Purchase Order				Project Name				Parameter/Method Request for Analysis									
Work Order				Project Number													
Company Name				Bill To Company				Navajo Refining									
Send Report To				Invoice Attn.				Robert Combs									
Address				Address				501 East Main									
City/State/Zip				City/State/Zip				Artesia, NM 88211									
Phone				Phone				575-748-6733									
Fax				Fax				575-746-5421									
e-Mail Address				e-Mail Address													
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-1H(35)	1/28/13	1650	Soil	-	5	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign

Eric Bergesen

Relinquished by:

Eric Bergesen

Relinquished by:

Eric Bergesen

Date: 1/30/13
Time: 1300

Date: 1/30/13
Time: 1300

Date: 1/30/13
Time: 1300

Received by (Laboratory):

Eric Bergesen

Received by (Laboratory):

Eric Bergesen

Received by (Laboratory):

Eric Bergesen

1 HCL 2 HNO3 3 H2SO4 4 NaOH 5 Na2S2O3 6 NaHSO4 7 Other: 8-4 degrees C 9-5035

Preservative Key:

Shipment Method:

Required Turnaround Time:
☒ Std 10 Wk Days
☐ 5 Wk Days
☐ 2 Wk Days
☐ 24 Hour

Results Due Date:

Notes:

10 Day TAT, Dissolved Metal Field Filled

QC Package: (Check Box Below)
☐ Level II: Standard QC
☐ Level III: Std QC + Raw Data
☐ Level IV: SW846 CLP-Like
☐ Other:

Logistics (Laboratory):

Logistics (Laboratory):

Logistics (Laboratory):

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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March 4, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-029
Project Name: None Submitted
Project Number: 1302400

Dear Ms. West:

Eight soil samples were received from ALS Environmental on February 02, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mic
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280



1302029

Gamma Spectroscopy:

The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713.

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 21 days prior to analysis.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302029

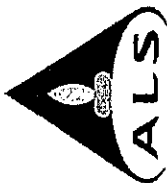
Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302400

Client PO Number: 10-1302400

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302400-13A (MW-114 (1))	1302029-1		SOIL	28-Jan-13	14:30
1302400-14A (MW-114 (5))	1302029-2		SOIL	28-Jan-13	14:45
1302400-15A (MW-114 (10))	1302029-3		SOIL	28-Jan-13	15:30
1302400-16A (MW-114 (15))	1302029-4		SOIL	28-Jan-13	15:50
1302400-17A (MW-114 (20))	1302029-5		SOIL	28-Jan-13	16:10
1302400-18A (MW-114 (25))	1302029-6		SOIL	28-Jan-13	16:20
1302400-19A (MW-114 (30))	1302029-7		SOIL	28-Jan-13	16:00
1302400-20A (MW-114 (35))	1302029-8		SOIL	28-Jan-13	16:50



Subcontractor:
ALS Environmental
225 Commerce Drive
Fort Collins, CO 80524

TEL: (800) 443-1511
FAX: (970) 490-1522
Acct #:

Salesperson: Mala H. Belmonte

CHAIN-OF-CUSTODY RECORD

Date: 01-Feb-13
COC ID: 13239
Due Date: 06-Feb-13

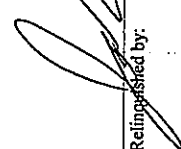
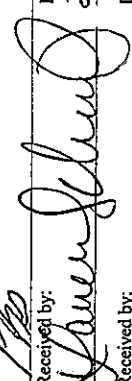
Page 1 of 1

1302029

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	10-1302026	Project Name	1302026	A Radium 226 .228 Sub to ALS Ft. Collins												
Work Order		Project Number		B												
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C												
Send Report To	Sonia West	Inv Attn	Accounts Payable	D												
Address	10450 Stanciliff Rd, Suite 210	Address	10450 Stanciliff Rd, Suite 210	E												
				F												
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G												
Phone	(281) 530-5656	Phone	(281) 530-5656	H												
Fax	(281) 530-5887	Fax	(281) 530-5887	I												
eMail Address	Sonia.West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	J												
Sample ID	Matrix	Collection Date	24hr	Bottle	A	B	C	D	E	F	G	H	I	J		
1302026-01E (MW-114 (1))	Soil	28/Jan/2013 14:30	(1) 4OZGNEAT	X												
1302026-03E (MW-114 (5))	Soil	28/Jan/2013 14:45	(1) 4OZGNEAT	X												
1302026-06E (MW-114 (10))	Soil	28/Jan/2013 15:30	(1) 4OZGNEAT	X												
1302026-09E (MW-114 (15))	Soil	28/Jan/2013 15:50	(1) 4OZGNEAT	X												
1302026-12E (MW-114 (20))	Soil	28/Jan/2013 16:10	(1) 4OZGNEAT	X												
1302026-15E (MW-114 (25))	Soil	28/Jan/2013 16:20	(1) 4OZGNEAT	X												
1302026-18E (MW-114 (30))	Soil	28/Jan/2013 16:00	(1) 4OZGNEAT	X												
1302026-21E (MW-114 (35))	Soil	28/Jan/2013 16:50	(1) 4OZGNEAT	X												

Comments:

WO 1302026 - Please analyze for Radium 226/228

Relinquished by:  Date/Time: 10 Feb 13
Received by:  Date/Time: 2/2/13 0930
Relinquished by: _____ Date/Time: _____
Received by: _____ Date/Time: _____

Report/QC Level
Std

Cooler IDs



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX
Project Manager: JRK

Workorder No: 1302029
Initials: LAS Date: 2/2/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		☒ YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		YES	☒ NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	☒ RAD ONLY	YES	☒ NO
Cooler #: <u>1</u>			
Temperature (°C): <u>AMB</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES ☐ NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

Flow - limited volume.

If applicable, was the client contacted? ☒ YES ☐ NO / NA Contact: S. West Date/Time: 2-2-13

Project Manager Signature / Date: [Signature] 2-2-13



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302029

Project Manager: JK

Initials: CDT

Date: 2-5-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	☒ NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		☒ YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 ☒ #4 RAD ONLY		☒ YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

Extra volume that was requested.

If applicable, was the client contacted? YES / NO ☒ NA Contact: _____

Date/Time: _____

Project Manager Signature / Date: _____

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

1302029

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77089
UNITED STATES US

SHIP DATE: 01FEB13
ACTWGT: 21.0 LB
CAD: 300130/CAFE2606

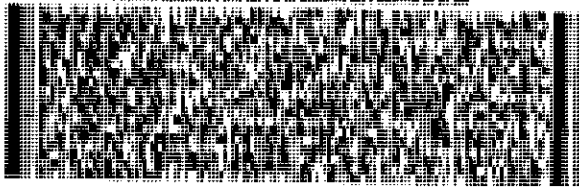
BILL SENDER

TO **ROY FRENCH**
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524

(870) 490-1611
DEPT: ENVIRONMENTAL

REF: SW/PL/JBA



FedEx
Express



J12131210050125

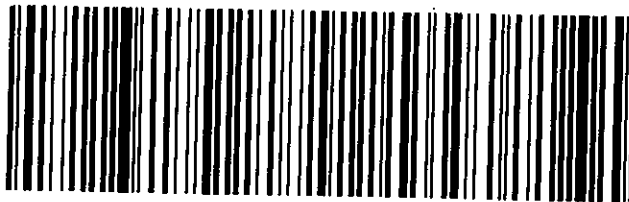
TRK#
0201 4340 2174 0732

SATURDAY ### A2
PRIORITY OVERNIGHT

XO FTCA

80524
CO-US **DEN**

Part # 156148-434 RIT2 04/12



DO NOT USE USING THIS

1302029

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04FEB13
ACTWGT: 49.1 LB
CAD: 300130/CAFE2606

BILL SENDER

TO ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

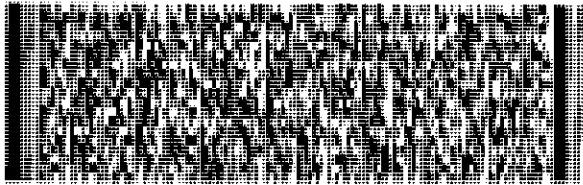
FORT COLLINS CO 80524

(970) 490-1511

REF: SUB SAMPLES

12
-2

S12C1/0F24/FF50



FedEx
Express



JT2131210050126

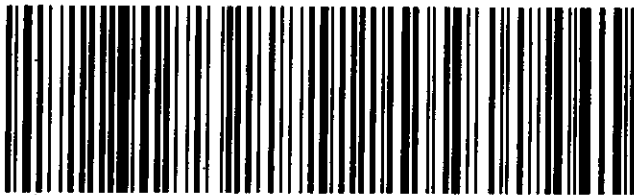
TRK# 4340 2174 0813
0201

TUE - 05 FEB A2
PRIORITY OVERNIGHT

NA FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 04/12



ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-13A (MW-114 (1))
Legal Location:
Collection Date: 1/28/2013 14:30

Date: 04-Mar-13
Work Order: 1302029
Lab ID: 1302029-1
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.83 (+/- 0.42)	G	0.65	pCi/g	NA	2/27/2013 12:58
Ra-228	ND (+/- 0.69)	U,G	0.99	pCi/g	NA	2/27/2013 12:58

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-14A (MW-114 (5))

Lab ID: 1302029-2

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 14:45

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.9 (+/- 0.39)	G	PAI 713 0.38	pCi/g	Prep Date: 2/6/2013 NA	PrepBy: SAM 2/27/2013 12:58
Ra-228	1.12 (+/- 0.57)	G,NQ	1	pCi/g	NA	2/27/2013 12:58

ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-15A (MW-114 (10))
Legal Location:
Collection Date: 1/28/2013 15:30

Date: 04-Mar-13
Work Order: 1302029
Lab ID: 1302029-3
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.13 (+/- 0.28)	G	0.41	pCi/g	NA	2/27/2013 12:59
Ra-228	ND (+/- 0.45)	U,G	0.66	pCi/g	NA	2/27/2013 12:59

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-16A (MW-114 (15))

Lab ID: 1302029-4

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 15:50

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.9 (+/- 0.26)	LT,G	0.43	pCi/g	NA	2/27/2013 13:32
Ra-228	ND (+/- 0.52)	U,G	0.89	pCi/g	NA	2/27/2013 13:32

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-17A (MW-114 (20))

Lab ID: 1302029-5

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 16:10

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	0.94 (+/- 0.29)	LT,G	PAI 713 0.46	pCi/g	Prep Date: 2/6/2013 NA	PrepBy: SAM 2/27/2013 14:27
Ra-228	1.06 (+/- 0.63)	G,NQ	0.77	pCi/g	NA	2/27/2013 14:27

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-18A (MW-114 (25))

Lab ID: 1302029-6

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 16:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.8 (+/- 0.26)	LT,G	0.45	pCi/g	NA	2/28/2013 13:51
Ra-228	ND (+/- 0.4)	U,G	0.73	pCi/g	NA	2/28/2013 13:51

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-19A (MW-114 (30))

Lab ID: 1302029-7

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 16:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.73 (+/- 0.25)	LT,G,TI	0.38	pCi/g	NA	2/27/2013 14:27
Ra-228	0.86 (+/- 0.47)	LT,G,TI	0.57	pCi/g	NA	2/27/2013 14:27

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-20A (MW-114 (35))

Lab ID: 1302029-8

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 16:50

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.82 (+/- 0.28)	LT,G	0.5	pCi/g	NA	2/27/2013 14:27
Ra-228	0.99 (+/- 0.47)	LT,G,TI	0.88	pCi/g	NA	2/27/2013 14:27

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-20A (MW-114 (35))
Legal Location:
Collection Date: 1/28/2013 16:50

Date: 04-Mar-13
Work Order: 1302029
Lab ID: 1302029-8
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302029

Sample ID: 1302400-20A (MW-114 (35))

Lab ID: 1302029-8

Legal Location:

Matrix: SOIL

Collection Date: 1/28/2013 16:50

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample. D - A pattern resembling diesel was detected in this sample. M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample. 4 - A pattern resembling JP-4 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: - gasoline - JP-8 - diesel - mineral spirits - motor oil - Stoddard solvent - bunker C						

ALS Environmental -- FC

Date: 3/4/2013 1:58:1

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1302029

Project: 1302400

Batch ID: GS130205-2-1

Instrument ID: GAMMA

Method: Gamma Spectroscopy Results

DUP	Sample ID: 1302029-1				Units: pCi/g		Analysis Date: 2/27/2013 14:27			
Client ID: 1302400-13A (MW-114 (1))			Run ID: GS130205-2A			Prep Date: 2/6/2013			DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	1.84 (+/- 0.41)	0.55					1.83	0.00854	2.13	G
Ra-228	1.37 (+/- 0.58)	1.04					0.92	0.499	2.13	M3,G,TI

LCS	Sample ID: GS130205-2A				Units: pCi/g		Analysis Date: 2/28/2013 15:34			
Client ID:	Run ID: GS130205-2A						Prep Date: 2/6/2013		DF: NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	469 (+/- 55)	3	469.4		100	85-115				P,M3

LCS	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	479 (+/- 58)	14	475.4		101	85-115				P
Co-60	205 (+/- 24)	1	205.2		99.9	85-115				P
Cs-137	180 (+/- 21)	1	173.7		103	85-115				P

MB	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.35								U
Ra-228	ND	0.47								U

The following samples were analyzed in this batch:

1302029-1	1302029-2	1302029-3
1302029-4	1302029-5	1302029-6
1302029-7	1302029-8	

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



March 4, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-030
Project Name: None Submitted
Project Number: 1302400

Dear Ms. West:

Six soil samples were received from ALS Environmental on February 02, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mlc
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

ALS GROUP USA, CORP. Part of the ALS Laboratory Group An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280



1302030

Gamma Spectroscopy:

The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713.

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 21 days prior to analysis.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302030

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302400

Client PO Number: 10-1302400

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302400-07A (MW-116 (1))	1302030-1		SOIL	29-Jan-13	16:05
1302400-08A (MW-116 (5))	1302030-2		SOIL	29-Jan-13	16:32
1302400-09A (MW-116 (10))	1302030-3		SOIL	30-Jan-13	9:02
1302400-10A (MW-116 (15))	1302030-4		SOIL	30-Jan-13	9:10
1302400-11A (MW-116 (20))	1302030-5		SOIL	30-Jan-13	9:20
1302400-12A (MW-116 (25))	1302030-6		SOIL	30-Jan-13	9:35



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX

Workorder No: 1302030

Project Manager: JRK

Initials: LAS Date: 2/2/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		☒ YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		YES	☒ NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	☒ RAD ONLY	YES	☒ NO
Cooler #: <u>1</u>			
Temperature (°C): <u>AMB</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

#10 - Limited Volume

If applicable, was the client contacted? ☒ YES / NO / NA Contact: S West Date/Time: 2-2-13

Project Manager Signature / Date: [Signature] 2-2-13



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302030

Project Manager: JK

Initials: CDT

Date: 2-5-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	☒ NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		☒ YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 ☒ #4 RAD ONLY		☒ YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

Extra volume that was requested

If applicable, was the client contacted? YES / NO / ☒ NA Contact: _____

Date/Time: _____

Project Manager Signature / Date: _____

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

1302030

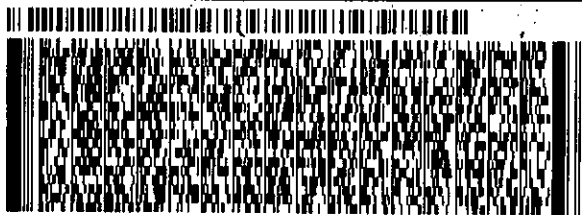
ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 01FEB13
ACTWT: 21.0 LB
CAD: 300130/CAFE2606

BILL SENDER

TO ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(870) 490-1611 REF: SW/PL/JBA
DEPT: ENVIRONMENTAL



FedEx
Express



J12131210050125

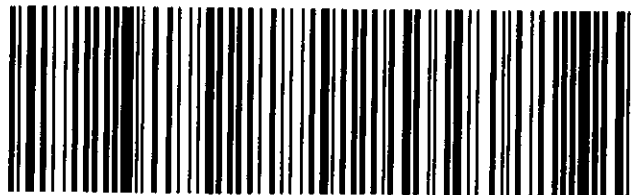
TRK# 4340 2174 0732
0201

SATURDAY ### A2
PRIORITY OVERNIGHT

X0 FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 04/12



DO NOT EAT USING THIS TAG

1302030

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04FEB13
ACTWGT: 49.1 LB
CAD: 300130/CAFE2606

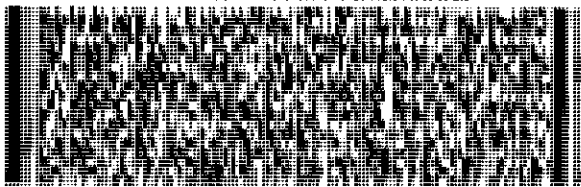
BILL SENDER

TO ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 480-1511
REF: SUB SAMPLES

12
-2

51211/0524/TF50



FedEx
Express



J121312 10050125

TRK# 4340 2174 0813
0201

TUE - 05 FEB A2
PRIORITY OVERNIGHT

NA FTCA

80524
CO--US DEN

Part # 156148-434 RIT2 04/12



ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-07A (MW-116 (1))
Legal Location:
Collection Date: 1/29/2013 16:05

Date: 04-Mar-13
Work Order: 1302030
Lab ID: 1302030-1
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.87 (+/- 0.39)	G	0.53	pCi/g	NA	2/27/2013 14:27
Ra-228	1.2 (+/- 0.51)	G,Tl	0.64	pCi/g	NA	2/27/2013 14:27

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302030

Sample ID: 1302400-08A (MW-116 (5))

Lab ID: 1302030-2

Legal Location:

Matrix: SOIL

Collection Date: 1/29/2013 16:32

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.86 (+/- 0.27)	LT,G	0.51	pCi/g	NA	2/27/2013 14:49
Ra-228	ND (+/- 0.44)	U,G	0.8	pCi/g	NA	2/27/2013 14:49

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302030

Sample ID: 1302400-09A (MW-116 (10))

Lab ID: 1302030-3

Legal Location:

Matrix: SOIL

Collection Date: 1/30/2013 09:02

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.75 (+/- 0.41)	G	PAI 713 0.61	pCi/g	Prep Date: 2/6/2013 NA	PrepBy: SAM 2/28/2013 13:52
Ra-228	1.4 (+/- 0.6)	M3,G	1.05	pCi/g	NA	2/28/2013 13:52

ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-10A (MW-116 (15))
Legal Location:
Collection Date: 1/30/2013 09:10

Date: 04-Mar-13
Work Order: 1302030
Lab ID: 1302030-4
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.66 (+/- 0.22)	LT,G	0.46	pCi/g	NA	2/28/2013 13:52
Ra-228	ND (+/- 0.44)	U,G	0.75	pCi/g	NA	2/28/2013 13:52

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302030

Sample ID: 1302400-11A (MW-116 (20))

Lab ID: 1302030-5

Legal Location:

Matrix: SOIL

Collection Date: 1/30/2013 09:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.94 (+/- 0.29)	LT,G	0.5	pCi/g	NA	2/28/2013 13:52
Ra-228	1.06 (+/- 0.56)	G,TI	0.6	pCi/g	NA	2/28/2013 13:52

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302030

Sample ID: 1302400-12A (MW-116 (25))

Lab ID: 1302030-6

Legal Location:

Matrix: SOIL

Collection Date: 1/30/2013 09:35

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.78 (+/- 0.23)	LT,G	0.37	pCi/g	NA	2/28/2013 13:52
Ra-228	ND (+/- 0.4)	U,G	0.85	pCi/g	NA	2/28/2013 13:52

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-12A (MW-116 (25))
Legal Location:
Collection Date: 1/30/2013 09:35

Date: 04-Mar-13
Work Order: 1302030
Lab ID: 1302030-6
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302030

Sample ID: 1302400-12A (MW-116 (25))

Lab ID: 1302030-6

Legal Location:

Matrix: SOIL

Collection Date: 1/30/2013 09:35

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample. D - A pattern resembling diesel was detected in this sample. M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample. 4 - A pattern resembling JP-4 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: - gasoline - JP-8 - diesel - mineral spirits - motor oil - Stoddard solvent - bunker C						

ALS Environmental -- FC

Date: 3/4/2013 1:59:4

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1302030

Project: 1302400

Batch ID: GS130205-2-1

Instrument ID: GAMMA

Method: Gamma Spectroscopy Results

LCS	Sample ID: GS130205-2A				Units: pCi/g		Analysis Date: 2/28/2013 15:34			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	469 (+/- 55)	3	469.4		100	85-115				P,M3

LCS	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	479 (+/- 58)	14	475.4		101	85-115				P
Co-60	205 (+/- 24)	1	205.2		99.9	85-115				P
Cs-137	180 (+/- 21)	1	173.7		103	85-115				P

MB	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.35								U
Ra-228	ND	0.47								U

The following samples were analyzed in this batch:

1302030-1	1302030-2	1302030-3
1302030-4	1302030-5	1302030-6

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



March 4, 2013

Ms. Sonia West
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 13-02-031
Project Name: None Submitted
Project Number: 1302400

Dear Ms. West:

Six soil samples were received from ALS Environmental on February 02, 2013. The samples were scheduled for the following analysis:

Gamma Spectroscopy pages 1-17

The results for this analysis are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff Kujawa
Project Manager

JRK/mic
Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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Environmental

www.alsglobal.com

RIGHT SOLUTIONS. RIGHT PARTNER

ALS is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO00078
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO00078
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nevada (NV)	CO000782008A
New Jersey (NJ)**	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241-09-1
Utah (UT)	CO00078
Washington	C1280



1302031

Gamma Spectroscopy:

The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713.

These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans and stored for at least 21 days prior to analysis.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1302031

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1302400

Client PO Number: 10-1302400

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302400-01A (MW-115 (1))	1302031-1		SOIL	29-Jan-13	14:25
1302400-02A (MW-115 (5))	1302031-2		SOIL	29-Jan-13	14:35
1302400-03A (MW-115 (10))	1302031-3		SOIL	29-Jan-13	16:10
1302400-04A (MW-115 (15))	1302031-4		SOIL	29-Jan-13	15:20
1302400-05A (MW-115 (20))	1302031-5		SOIL	29-Jan-13	16:00
1302400-06A (MW-115 (25))	1302031-6		SOIL	29-Jan-13	15:45

[illegible]

The diagram illustrates a single neuron. It consists of a central cell body (soma) containing a nucleus. A dendrite is shown extending from the cell body, and an axon is shown extending from the cell body. The axon is covered by a myelin sheath. The diagram is labeled with 'a' and 'b'.



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX
Project Manager: JRK

Workorder No: 1302031
Initials: LAS Date: 2/2/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	☒ NO
2. Are custody seals on shipping containers intact?	NONE	☒ YES	NO
3. Are Custody seals on sample containers intact?	☒ NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		☒ YES	NO
5. Are the COC and bottle labels complete and legible?		☒ YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		☒ YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	☒ YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	☒ N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	☒ N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		☒ YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		☒ YES	NO
12. Are all samples within holding times for the requested analyses?		☒ YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		☒ YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	☒ N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	☒ N/A	YES	NO
16. Were the samples shipped on ice?		YES	☒ NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	☒ RAD ONLY	YES	☒ NO
Cooler #: <u>1</u>			
Temperature (°C): <u>AMB</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? ☒ YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

#10 - Limited Volume

If applicable, was the client contacted? ☒ YES / NO / NA Contact: S. West. Date/Time: 2-2-13

Project Manager Signature / Date: [Signature] 2-2-13



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS-TX

Workorder No: 1302031

Project Manager: JK

Initials: CDT Date: 2-5-13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<u>NO</u>
2. Are custody seals on shipping containers intact?	NONE	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?	<u>NONE</u>	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	<u>NO</u>
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<u>YES</u>	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	<u>N/A</u>	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	<u>N/A</u>	YES	NO
10. Is there sufficient sample for the requested analyses?		<u>YES</u>	NO
11. Were all samples placed in the proper containers for the requested analyses?		<u>YES</u>	NO
12. Are all samples within holding times for the requested analyses?		<u>YES</u>	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<u>YES</u>	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	<u>N/A</u>	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	<u>N/A</u>	YES	NO
16. Were the samples shipped on ice?		<u>YES</u>	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <u>#4</u>	RAD ONLY	<u>YES</u>	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>YES</u> / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

Extra volume that was requested.

If applicable, was the client contacted? YES / NO / NA Contact: _____

Date/Time: _____

Project Manager Signature / Date: _____

[Signature] 2-5-13

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

1302031

ORIGIN ID: SGRA (281).530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 01FEB13
ACTWGT: 21.0 LB
CAD: 300130/CAFE2606

BILL SENDER

TO **ROY FRENCH**
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1611 REF: SW/PL/JBA
DEPT: ENVIRONMENTAL



FedEx
Express



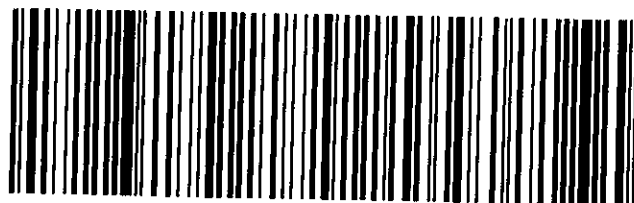
J12131210050125

TRK# 4340 2174 0732
0201

SATURDAY ### A2
PRIORITY OVERNIGHT

X0 FTCA

80524
CO-US DEN



Part # 156148-434 RTT2 04/12

DO NOT EAT USING THIS TAG

1302031

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04FEB13
ACTWGT: 49.1 LB
CAD: 300130/CAFE2606

BILL SENDER

TO ROY FRENCH
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

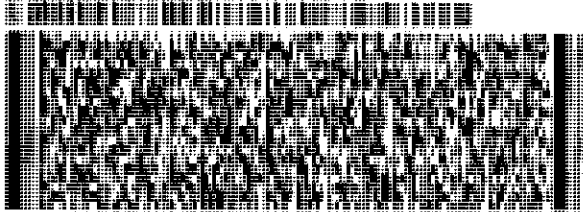
FORT COLLINS CO 80524

(970) 490-1511

REF: SUB SAMPLES

12
-2

51271/0724/FE0



FedEx
Express



J12131210050125

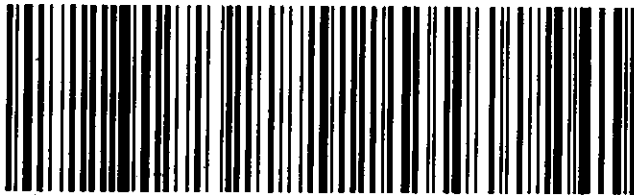
TRK# 4340 2174 0813
0201

TUE - 05 FEB A2
PRIORITY OVERNIGHT

NA FTCA

80524
CO-US DEN

Part # 156148-434 RT2 0412



ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-01A (MW-115 (1))
Legal Location:
Collection Date: 1/29/2013 14:25

Date: 04-Mar-13
Work Order: 1302031
Lab ID: 1302031-1
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.62 (+/- 0.38)	G	0.6	pCi/g	NA	2/28/2013 14:48
Ra-228	1.25 (+/- 0.67)	G,Tl	0.83	pCi/g	NA	2/28/2013 14:48

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302031

Sample ID: 1302400-02A (MW-115 (5))

Lab ID: 1302031-2

Legal Location:

Matrix: SOIL

Collection Date: 1/29/2013 14:35

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
Ra-226	1.29 (+/- 0.28)	G	PAI 713	0.41 pCi/g	Prep Date: 2/6/2013	PrepBy: SAM
Ra-228	0.78 (+/- 0.5)	LT,G,TI		0.7 pCi/g	NA	2/28/2013 14:48

ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-03A (MW-115 (10))
Legal Location:
Collection Date: 1/29/2013 16:10

Date: 04-Mar-13
Work Order: 1302031
Lab ID: 1302031-3
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS						
			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.39 (+/- 0.37)	G	0.64	pCi/g	NA	2/28/2013 14:49
Ra-228	1.03 (+/- 0.67)	G,NQ	0.91	pCi/g	NA	2/28/2013 14:49

ALS Environmental -- FC**SAMPLE SUMMARY REPORT**

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-04A (MW-115 (15))
Legal Location:
Collection Date: 1/29/2013 15:20

Date: 04-Mar-13
Work Order: 1302031
Lab ID: 1302031-4
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.57 (+/- 0.24)	LT,G	0.47	pCi/g	NA	2/28/2013 14:49
Ra-228	ND (+/- 0.46)	U,G	0.63	pCi/g	NA	2/28/2013 14:49

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302031

Sample ID: 1302400-05A (MW-115 (20))

Lab ID: 1302031-5

Legal Location:

Matrix: SOIL

Collection Date: 1/29/2013 16:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.58 (+/- 0.29)	LT,G,TI	0.49	pCi/g	NA	2/28/2013 14:49
Ra-228	ND (+/- 0.57)	U,G	0.81	pCi/g	NA	2/28/2013 14:49

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302031

Sample ID: 1302400-06A (MW-115 (25))

Lab ID: 1302031-6

Legal Location:

Matrix: SOIL

Collection Date: 1/29/2013 15:45

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GAMMA SPECTROSCOPY RESULTS			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	ND (+/- 0.23)	U,G	0.51	pCi/g	NA	2/28/2013 14:52
Ra-228	0.75 (+/- 0.51)	NQ	0.68	pCi/g	NA	2/28/2013 14:52

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental
Project: 1302400
Sample ID: 1302400-06A (MW-115 (25))
Legal Location:
Collection Date: 1/29/2013 15:45

Date: 04-Mar-13
Work Order: 1302031
Lab ID: 1302031-6
Matrix: SOIL
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.

Diesel Range Organics:

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental

Date: 04-Mar-13

Project: 1302400

Work Order: 1302031

Sample ID: 1302400-06A (MW-115 (25))

Lab ID: 1302031-6

Legal Location:

Matrix: SOIL

Collection Date: 1/29/2013 15:45

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
G - A pattern resembling gasoline was detected in this sample. D - A pattern resembling diesel was detected in this sample. M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample. 4 - A pattern resembling JP-4 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: - gasoline - JP-8 - diesel - mineral spirits - motor oil - Stoddard solvent - bunker C						

ALS Environmental -- FC

Date: 3/4/2013 2:01:2

Client: ALS Environmental

Work Order: 1302031

Project: 1302400

QC BATCH REPORT

Batch ID: GS130205-2-1

Instrument ID: GAMMA

Method: Gamma Spectroscopy Results

LCS	Sample ID: GS130205-2A				Units: pCi/g		Analysis Date: 2/28/2013 15:34			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013		DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	469 (+/- 55)	3	469.4		100	85-115				P,M3

LCS	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Am-241	479 (+/- 58)	14	475.4		101	85-115				P
Co-60	205 (+/- 24)	1	205.2		99.9	85-115				P
Cs-137	180 (+/- 21)	1	173.7		103	85-115				P

MB	Sample ID: GS130205-2				Units: pCi/g		Analysis Date: 2/28/2013 15:32			
Client ID:	Run ID: GS130205-2A				Prep Date: 2/6/2013			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226	ND	0.35								U
Ra-228	ND	0.47								U

The following samples were analyzed in this batch:

1302031-1	1302031-2	1302031-3
1302031-4	1302031-5	1302031-6

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy ± 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive OR tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.



13-Feb-2013

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

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

Re: RO Discharge Sampling

Work Order: **13011005**

Dear Robert,

ALS Environmental received 16 samples on 31-Jan-2013 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 50.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink that reads "Sonia West".

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager



Certificate No: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 13011005

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
13011005-01	MW-116 (1)	Soil		1/29/2013 16:05	1/31/2013 09:10	☐
13011005-02	MW-116 (3)	Soil		1/29/2013 16:18	1/31/2013 09:10	☐
13011005-03	MW-116 (5)	Soil		1/29/2013 16:32	1/31/2013 09:10	☐
13011005-04	MW-116 (7)	Soil		1/30/2013 08:55	1/31/2013 09:10	☐
13011005-05	MW-116 (9)	Soil		1/30/2013 08:55	1/31/2013 09:10	☐
13011005-06	MW-116 (10)	Soil		1/30/2013 09:02	1/31/2013 09:10	☐
13011005-07	MW-116 (11)	Soil		1/30/2013 09:05	1/31/2013 09:10	☐
13011005-08	MW-116 (13)	Soil		1/30/2013 09:05	1/31/2013 09:10	☐
13011005-09	MW-116 (15)	Soil		1/30/2013 09:10	1/31/2013 09:10	☐
13011005-10	MW-116 (17)	Soil		1/30/2013 09:15	1/31/2013 09:10	☐
13011005-11	MW-116 (19)	Soil		1/30/2013 09:15	1/31/2013 09:10	☐
13011005-12	MW-116 (20)	Soil		1/30/2013 09:20	1/31/2013 09:10	☐
13011005-13	MW-116 (21)	Soil		1/30/2013 09:30	1/31/2013 09:10	☐
13011005-14	MW-116 (23)	Soil		1/30/2013 09:30	1/31/2013 09:10	☐
13011005-15	MW-116 (25)	Soil		1/30/2013 09:35	1/31/2013 09:10	☐
13011005-16	Trip Blank 011813-15	Water		1/29/2013	1/31/2013 09:10	☐

Client: Navajo Refining Company
Project: RO Discharge Sampling
Work Order: 13011005

Case Narrative

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302400.

Batch 67579, TPH DRO/ORO, Sample 1302018-01: MS/MSD is for an unrelated sample.

Batch 67523, Metals, Sample MW-116 (1): MS/MSD recoveries were outside the control limits for several analytes due to high concentration to the background sample. Results are flagged with an O as applicable. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Batch 67523, Metals, Sample MW-116 (1): Duplicate RPD was outside the control limits for Boron and Sodium.

Batch 67656, Semivolatile Organics, Sample 1302140-04: MS/MSD is for an unrelated sample.

Batch 67656, Semivolatile Organics, Sample 1302140-04: MS/MSD RPD is for an unrelated sample.

Batch R141995, Volatile Organics, Sample 1301997-01: MS/MSD is for an unrelated sample.

Batch R142113, Volatile Organics, Sample 1302069-01: MS/MSD is for an unrelated sample.

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (1)
Collection Date: 1/29/2013 04:05 PM

Work Order: 13011005
Lab ID: 13011005-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	4.7		0.50	3.4	mg/Kg	1	2/6/2013 17:15
TPH (Diesel Range)	0.53	J	0.50	1.7	mg/Kg	1	2/6/2013 17:15
Surr: 2-Fluorobiphenyl	60.4			60-135	%REC	1	2/6/2013 17:15
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Analyst: KKP							
Gasoline Range Organics	U		0.020	0.050	mg/Kg	1	2/5/2013 18:23
Surr: 4-Bromofluorobenzene	89.6			70-130	%REC	1	2/5/2013 18:23
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	8.10		0.28	3.48	µg/Kg	1	2/5/2013 16:47
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: SKS							
Aluminum	14,600		17	82.6	mg/Kg	100	2/6/2013 14:59
Arsenic	4.38		0.083	0.413	mg/Kg	1	2/5/2013 15:17
Barium	130		0.066	0.413	mg/Kg	1	2/5/2013 15:17
Boron	7.77		2.3	4.13	mg/Kg	2	2/6/2013 12:45
Cadmium	0.407	J	0.041	0.413	mg/Kg	1	2/5/2013 15:17
Calcium	60,800		830	4,130	mg/Kg	100	2/6/2013 14:59
Chromium	14.0		0.074	0.413	mg/Kg	1	2/5/2013 15:17
Cobalt	5.52		0.058	0.413	mg/Kg	1	2/5/2013 15:17
Copper	11.1		0.083	0.413	mg/Kg	1	2/5/2013 15:17
Iron	10,100		8.3	41.3	mg/Kg	1	2/5/2013 15:17
Lead	14.7		0.041	0.413	mg/Kg	1	2/5/2013 15:17
Manganese	375		8.3	41.3	mg/Kg	100	2/6/2013 14:59
Molybdenum	0.585		0.12	0.413	mg/Kg	1	2/5/2013 15:17
Nickel	11.6		0.074	0.413	mg/Kg	1	2/5/2013 15:17
Potassium	3,770		21	82.6	mg/Kg	2	2/6/2013 12:45
Selenium	0.950		0.15	0.413	mg/Kg	1	2/5/2013 15:17
Silver	U		0.066	0.413	mg/Kg	1	2/5/2013 15:17
Sodium	135		18	82.6	mg/Kg	2	2/6/2013 12:45
Uranium	U		0.41	0.413	mg/Kg	1	2/5/2013 15:17
Zinc	37.3		0.21	0.413	mg/Kg	1	2/5/2013 15:17
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:07
2-Methylnaphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:07
Benzo(a)pyrene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:07
Naphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:07
Surr: 2,4,6-Tribromophenol	49.2			36-126	%REC	1	2/7/2013 17:07
Surr: 2-Fluorobiphenyl	57.2			43-125	%REC	1	2/7/2013 17:07

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (1)
Collection Date: 1/29/2013 04:05 PM

Work Order: 13011005
Lab ID: 13011005-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	49.1			37-125	%REC	1	2/7/2013 17:07
Surr: 4-Terphenyl-d14	70.1			32-125	%REC	1	2/7/2013 17:07
Surr: Nitrobenzene-d5	57.8			37-125	%REC	1	2/7/2013 17:07
Surr: Phenol-d6	53.0			40-125	%REC	1	2/7/2013 17:07
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		1.7	5.0	µg/Kg	1	2/1/2013 13:18
1,1,2,2-Tetrachloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 13:18
1,1,2-Trichloroethane	U		2.0	5.0	µg/Kg	1	2/1/2013 13:18
1,1-Dichloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 13:18
1,1-Dichloroethene	U		1.5	5.0	µg/Kg	1	2/1/2013 13:18
1,2-Dibromoethane	U		0.70	5.0	µg/Kg	1	2/1/2013 13:18
1,2-Dichloroethane	U		0.60	5.0	µg/Kg	1	2/1/2013 13:18
Benzene	U		0.60	5.0	µg/Kg	1	2/1/2013 13:18
Carbon tetrachloride	U		1.2	5.0	µg/Kg	1	2/1/2013 13:18
Chloroform	U		1.8	5.0	µg/Kg	1	2/1/2013 13:18
Ethylbenzene	U		0.90	5.0	µg/Kg	1	2/1/2013 13:18
Methylene chloride	U		2.5	10	µg/Kg	1	2/1/2013 13:18
Tetrachloroethene	U		1.0	5.0	µg/Kg	1	2/1/2013 13:18
Toluene	U		0.70	5.0	µg/Kg	1	2/1/2013 13:18
Trichloroethene	U		1.6	5.0	µg/Kg	1	2/1/2013 13:18
Vinyl chloride	U		1.0	2.0	µg/Kg	1	2/1/2013 13:18
Xylenes, Total	U		2.6	15	µg/Kg	1	2/1/2013 13:18
Surr: 1,2-Dichloroethane-d4	92.3			70-128	%REC	1	2/1/2013 13:18
Surr: 4-Bromofluorobenzene	92.8			73-126	%REC	1	2/1/2013 13:18
Surr: Dibromofluoromethane	103			71-128	%REC	1	2/1/2013 13:18
Surr: Toluene-d8	95.7			73-127	%REC	1	2/1/2013 13:18
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	22.2		2.0	4.99	mg/Kg	1	2/5/2013 19:40
Fluoride	14.7		0.30	0.999	mg/Kg	1	2/5/2013 19:40
Nitrogen, Nitrate (As N)	2.63		0.30	0.999	mg/Kg	1	2/5/2013 19:40
Nitrogen, Nitrite (As N)	U		0.30	0.999	mg/Kg	1	2/5/2013 19:40
Sulfate	330		2.0	4.99	mg/Kg	1	2/5/2013 19:40
Surr: Selenate (surr)	85.4			85-115	%REC	1	2/5/2013 19:40
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.58	1.94	mg/Kg	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (3)
Collection Date: 1/29/2013 04:18 PM

Work Order: 13011005
Lab ID: 13011005-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	19.1		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (5)
Collection Date: 1/29/2013 04:32 PM

Work Order: 13011005
Lab ID: 13011005-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	6.77		0.29	3.59	µg/Kg	1	2/5/2013 16:49
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	9,770		15	76.4	mg/Kg	100	2/6/2013 15:08
Arsenic	3.65		0.076	0.382	mg/Kg	1	2/5/2013 16:13
Barium	155		6.1	38.2	mg/Kg	100	2/6/2013 15:08
Boron	7.48		2.1	3.82	mg/Kg	2	2/6/2013 12:59
Cadmium	0.156	J	0.038	0.382	mg/Kg	1	2/5/2013 16:13
Calcium	122,000		760	3,820	mg/Kg	100	2/6/2013 15:08
Chromium	8.46		0.069	0.382	mg/Kg	1	2/5/2013 16:13
Cobalt	2.94		0.053	0.382	mg/Kg	1	2/5/2013 16:13
Copper	4.05		0.076	0.382	mg/Kg	1	2/5/2013 16:13
Iron	6,240		7.6	38.2	mg/Kg	1	2/5/2013 16:13
Lead	4.47		0.038	0.382	mg/Kg	1	2/5/2013 16:13
Manganese	163		7.6	38.2	mg/Kg	100	2/6/2013 15:08
Molybdenum	0.485		0.11	0.382	mg/Kg	1	2/5/2013 16:13
Nickel	6.19		0.069	0.382	mg/Kg	1	2/5/2013 16:13
Potassium	2,130		9.9	38.2	mg/Kg	1	2/5/2013 16:13
Selenium	0.485		0.14	0.382	mg/Kg	1	2/5/2013 16:13
Silver	U		0.061	0.382	mg/Kg	1	2/5/2013 16:13
Sodium	156		8.4	38.2	mg/Kg	1	2/5/2013 16:13
Uranium	0.523		0.38	0.382	mg/Kg	1	2/5/2013 16:13
Zinc	19.0		0.19	0.382	mg/Kg	1	2/5/2013 16:13
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	29.8		2.0	4.96	mg/Kg	1	2/5/2013 19:54
Fluoride	4.51		0.30	0.992	mg/Kg	1	2/5/2013 19:54
Nitrogen, Nitrate (As N)	U		0.30	0.992	mg/Kg	1	2/5/2013 19:54
Nitrogen, Nitrite (As N)	U		0.30	0.992	mg/Kg	1	2/5/2013 19:54
Sulfate	234		2.0	4.96	mg/Kg	1	2/5/2013 19:54
Surr: Selenate (surr)	87.5			85-115	%REC	1	2/5/2013 19:54
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/4/13		Analyst: EDG	
Cyanide	U		0.54	1.80	mg/Kg	1	2/4/2013 13:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	16.1		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (7)
Collection Date: 1/30/2013 08:55 AM

Work Order: 13011005
Lab ID: 13011005-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	16.0		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (9)
Collection Date: 1/30/2013 08:55 AM

Work Order: 13011005
Lab ID: 13011005-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	16.2		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (10)
Collection Date: 1/30/2013 09:02 AM

Work Order: 13011005
Lab ID: 13011005-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	7.74		0.27	3.36	µg/Kg	1	2/5/2013 16:51
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	7,550		17	86.4	mg/Kg	100	2/6/2013 15:11
Arsenic	2.48		0.086	0.432	mg/Kg	1	2/5/2013 16:15
Barium	43.5		0.069	0.432	mg/Kg	1	2/5/2013 16:15
Boron	9.23	J	6.0	10.8	mg/Kg	5	2/6/2013 13:02
Cadmium	0.114	J	0.043	0.432	mg/Kg	1	2/5/2013 16:15
Calcium	166,000		860	4,320	mg/Kg	100	2/6/2013 15:11
Chromium	6.73		0.078	0.432	mg/Kg	1	2/5/2013 16:15
Cobalt	2.58		0.060	0.432	mg/Kg	1	2/5/2013 16:15
Copper	2.97		0.086	0.432	mg/Kg	1	2/5/2013 16:15
Iron	4,720		8.6	43.2	mg/Kg	1	2/5/2013 16:15
Lead	3.63		0.043	0.432	mg/Kg	1	2/5/2013 16:15
Manganese	139		0.086	0.432	mg/Kg	1	2/5/2013 16:15
Molybdenum	0.331	J	0.13	0.432	mg/Kg	1	2/5/2013 16:15
Nickel	4.51		0.078	0.432	mg/Kg	1	2/5/2013 16:15
Potassium	1,620		11	43.2	mg/Kg	1	2/5/2013 16:15
Selenium	0.353	J	0.16	0.432	mg/Kg	1	2/5/2013 16:15
Silver	U		0.069	0.432	mg/Kg	1	2/5/2013 16:15
Sodium	121		9.5	43.2	mg/Kg	1	2/5/2013 16:15
Uranium	0.450		0.43	0.432	mg/Kg	1	2/5/2013 16:15
Zinc	14.2		0.22	0.432	mg/Kg	1	2/5/2013 16:15
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	8.03		2.0	4.98	mg/Kg	1	2/5/2013 20:09
Fluoride	5.76		0.30	0.995	mg/Kg	1	2/5/2013 20:09
Nitrogen, Nitrate (As N)	0.896	J	0.30	0.995	mg/Kg	1	2/5/2013 20:09
Nitrogen, Nitrite (As N)	U		0.30	0.995	mg/Kg	1	2/5/2013 20:09
Sulfate	82.1		2.0	4.98	mg/Kg	1	2/5/2013 20:09
Surr: Selenate (surr)	90.2			85-115	%REC	1	2/5/2013 20:09
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.59	1.96	mg/Kg	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	16.4		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (11)
Collection Date: 1/30/2013 09:05 AM

Work Order: 13011005
Lab ID: 13011005-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.0		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (13)
Collection Date: 1/30/2013 09:05 AM

Work Order: 13011005
Lab ID: 13011005-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	28.5		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (15)
Collection Date: 1/30/2013 09:10 AM

Work Order: 13011005
Lab ID: 13011005-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
Method: SW7471A				Prep: SW7471A / 2/5/13		Analyst: OFO	
Mercury	0.647	J	0.29	3.59	µg/Kg	1	2/5/2013 16:53
METALS							
Method: SW6020				Prep: SW3050A / 2/4/13		Analyst: SKS	
Aluminum	3,970		18	89.6	mg/Kg	100	2/6/2013 15:13
Arsenic	2.83		0.090	0.448	mg/Kg	1	2/5/2013 16:17
Barium	19.0		0.072	0.448	mg/Kg	1	2/5/2013 16:17
Boron	6.99	J	6.3	11.2	mg/Kg	5	2/6/2013 13:04
Cadmium	0.102	J	0.045	0.448	mg/Kg	1	2/5/2013 16:17
Calcium	216,000		900	4,480	mg/Kg	100	2/6/2013 15:13
Chromium	3.86		0.081	0.448	mg/Kg	1	2/5/2013 16:17
Cobalt	2.70		0.063	0.448	mg/Kg	1	2/5/2013 16:17
Copper	2.53		0.090	0.448	mg/Kg	1	2/5/2013 16:17
Iron	2,880		9.0	44.8	mg/Kg	1	2/5/2013 16:17
Lead	2.03		0.045	0.448	mg/Kg	1	2/5/2013 16:17
Manganese	351		9.0	44.8	mg/Kg	100	2/6/2013 15:13
Molybdenum	0.645		0.13	0.448	mg/Kg	1	2/5/2013 16:17
Nickel	5.57		0.081	0.448	mg/Kg	1	2/5/2013 16:17
Potassium	956		12	44.8	mg/Kg	1	2/5/2013 16:17
Selenium	0.252	J	0.16	0.448	mg/Kg	1	2/5/2013 16:17
Silver	U		0.072	0.448	mg/Kg	1	2/5/2013 16:17
Sodium	108		9.9	44.8	mg/Kg	1	2/5/2013 16:17
Uranium	U		0.45	0.448	mg/Kg	1	2/5/2013 16:17
Zinc	7.87		0.22	0.448	mg/Kg	1	2/5/2013 16:17
ANIONS - EPA 300.0 (1993)							
Method: E300				Prep: E300 / 2/5/13		Analyst: JKP	
Chloride	31.6		2.0	4.92	mg/Kg	1	2/5/2013 20:23
Fluoride	8.70		0.30	0.984	mg/Kg	1	2/5/2013 20:23
Nitrogen, Nitrate (As N)	U		0.30	0.984	mg/Kg	1	2/5/2013 20:23
Nitrogen, Nitrite (As N)	U		0.30	0.984	mg/Kg	1	2/5/2013 20:23
Sulfate	891		2.0	4.92	mg/Kg	1	2/5/2013 20:23
Surr: Selenate (surr)	87.2			85-115	%REC	1	2/5/2013 20:23
CYANIDE							
Method: SW9014				Prep: SW9010C / 2/5/13		Analyst: EDG	
Cyanide	U		0.55	1.82	mg/Kg	1	2/5/2013 16:30
MOISTURE							
Method: SW3550				Analyst: KAH			
Percent Moisture	15.3		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (17)
Collection Date: 1/30/2013 09:15 AM

Work Order: 13011005
Lab ID: 13011005-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	20.5		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (19)
Collection Date: 1/30/2013 09:15 AM

Work Order: 13011005
Lab ID: 13011005-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	24.0		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (20)
Collection Date: 1/30/2013 09:20 AM

Work Order: 13011005
Lab ID: 13011005-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B							
			Method: SW7471A		Prep: SW7471A / 2/5/13		Analyst: OFO
Mercury	8.29		0.28	3.44	µg/Kg	1	2/5/2013 16:55
METALS							
			Method: SW6020		Prep: SW3050A / 2/4/13		Analyst: SKS
Aluminum	8,370		18	92.0	mg/Kg	100	2/6/2013 15:15
Arsenic	6.28		0.092	0.460	mg/Kg	1	2/5/2013 16:20
Barium	19.9		0.074	0.460	mg/Kg	1	2/5/2013 16:20
Boron	4.74		2.6	4.60	mg/Kg	2	2/6/2013 13:07
Cadmium	0.283	J	0.046	0.460	mg/Kg	1	2/5/2013 16:20
Calcium	104,000		920	4,600	mg/Kg	100	2/6/2013 15:15
Chromium	7.41		0.083	0.460	mg/Kg	1	2/5/2013 16:20
Cobalt	2.95		0.064	0.460	mg/Kg	1	2/5/2013 16:20
Copper	4.92		0.092	0.460	mg/Kg	1	2/5/2013 16:20
Iron	7,120		9.2	46.0	mg/Kg	1	2/5/2013 16:20
Lead	7.08		0.046	0.460	mg/Kg	1	2/5/2013 16:20
Manganese	251		9.2	46.0	mg/Kg	100	2/6/2013 15:15
Molybdenum	0.837		0.14	0.460	mg/Kg	1	2/5/2013 16:20
Nickel	7.79		0.083	0.460	mg/Kg	1	2/5/2013 16:20
Potassium	1,280		12	46.0	mg/Kg	1	2/5/2013 16:20
Selenium	0.512		0.17	0.460	mg/Kg	1	2/5/2013 16:20
Silver	U		0.074	0.460	mg/Kg	1	2/5/2013 16:20
Sodium	142		10	46.0	mg/Kg	1	2/5/2013 16:20
Uranium	U		0.46	0.460	mg/Kg	1	2/5/2013 16:20
Zinc	19.8		0.23	0.460	mg/Kg	1	2/5/2013 16:20
ANIONS - EPA 300.0 (1993)							
			Method: E300		Prep: E300 / 2/5/13		Analyst: JKP
Chloride	33.3		2.0	4.99	mg/Kg	1	2/5/2013 20:38
Fluoride	3.92		0.30	0.997	mg/Kg	1	2/5/2013 20:38
Nitrogen, Nitrate (As N)	U		0.30	0.997	mg/Kg	1	2/5/2013 20:38
Nitrogen, Nitrite (As N)	U		0.30	0.997	mg/Kg	1	2/5/2013 20:38
Sulfate	310		2.0	4.99	mg/Kg	1	2/5/2013 20:38
Surr: Selenate (surr)	85.3			85-115	%REC	1	2/5/2013 20:38
CYANIDE							
			Method: SW9014		Prep: SW9010C / 2/5/13		Analyst: EDG
Cyanide	U		0.59	1.96	mg/Kg	1	2/5/2013 16:30
MOISTURE							
			Method: SW3550		Analyst: KAH		
Percent Moisture	19.2		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (21)
Collection Date: 1/30/2013 09:30 AM

Work Order: 13011005
Lab ID: 13011005-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	22.9		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (23)
Collection Date: 1/30/2013 09:30 AM

Work Order: 13011005
Lab ID: 13011005-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MOISTURE	Method: SW3550						Analyst: KAH
Percent Moisture	23.5		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (25)
Collection Date: 1/30/2013 09:35 AM

Work Order: 13011005
Lab ID: 13011005-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO Method: SW8015M Prep: SW3541 / 2/5/13 Analyst: KMB							
TPH (Oil Range)	U		0.50	3.4	mg/Kg	1	2/6/2013 14:17
TPH (Diesel Range)	U		0.50	1.7	mg/Kg	1	2/6/2013 14:17
Surr: 2-Fluorobiphenyl	61.6			60-135	%REC	1	2/6/2013 14:17
GASOLINE RANGE ORGANICS - SW8015C Method: SW8015 Prep: SW3541 / 2/5/13 Analyst: KKP							
Gasoline Range Organics	U		0.020	0.050	mg/Kg	1	2/5/2013 18:42
Surr: 4-Bromofluorobenzene	90.8			70-130	%REC	1	2/5/2013 18:42
MERCURY - SW7471B Method: SW7471A Prep: SW7471A / 2/5/13 Analyst: OFO							
Mercury	0.757	J	0.28	3.43	µg/Kg	1	2/5/2013 16:57
METALS Method: SW6020 Prep: SW3050A / 2/4/13 Analyst: SKS							
Aluminum	7,960		16	81.8	mg/Kg	100	2/6/2013 15:28
Arsenic	3.22		0.082	0.409	mg/Kg	1	2/5/2013 16:22
Barium	181		6.5	40.9	mg/Kg	100	2/6/2013 15:28
Boron	7.57		2.3	4.09	mg/Kg	2	2/6/2013 13:14
Cadmium	0.205	J	0.041	0.409	mg/Kg	1	2/5/2013 16:22
Calcium	76,500		820	4,090	mg/Kg	100	2/6/2013 15:28
Chromium	6.81		0.074	0.409	mg/Kg	1	2/5/2013 16:22
Cobalt	2.49		0.057	0.409	mg/Kg	1	2/5/2013 16:22
Copper	4.45		0.082	0.409	mg/Kg	1	2/5/2013 16:22
Iron	5,710		8.2	40.9	mg/Kg	1	2/5/2013 16:22
Lead	5.57		0.041	0.409	mg/Kg	1	2/5/2013 16:22
Manganese	169		8.2	40.9	mg/Kg	100	2/6/2013 15:28
Molybdenum	0.381	J	0.12	0.409	mg/Kg	1	2/5/2013 16:22
Nickel	6.75		0.074	0.409	mg/Kg	1	2/5/2013 16:22
Potassium	1,700		11	40.9	mg/Kg	1	2/5/2013 16:22
Selenium	0.433		0.15	0.409	mg/Kg	1	2/5/2013 16:22
Silver	U		0.065	0.409	mg/Kg	1	2/5/2013 16:22
Sodium	120		9.0	40.9	mg/Kg	1	2/5/2013 16:22
Uranium	U		0.41	0.409	mg/Kg	1	2/5/2013 16:22
Zinc	17.8		0.20	0.409	mg/Kg	1	2/5/2013 16:22
LOW-LEVEL SEMIVOLATILES Method: SW8270 Prep: SW3541 / 2/7/13 Analyst: LG							
1-Methylnaphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:28
2-Methylnaphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:28
Benzo(a)pyrene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:28
Naphthalene	U		1.6	6.6	µg/Kg	1	2/7/2013 17:28
Surr: 2,4,6-Tribromophenol	69.5			36-126	%REC	1	2/7/2013 17:28
Surr: 2-Fluorobiphenyl	81.4			43-125	%REC	1	2/7/2013 17:28

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: MW-116 (25)
Collection Date: 1/30/2013 09:35 AM

Work Order: 13011005
Lab ID: 13011005-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<i>Surr: 2-Fluorophenol</i>	70.7			37-125	%REC	1	2/7/2013 17:28
<i>Surr: 4-Terphenyl-d14</i>	98.5			32-125	%REC	1	2/7/2013 17:28
<i>Surr: Nitrobenzene-d5</i>	81.0			37-125	%REC	1	2/7/2013 17:28
<i>Surr: Phenol-d6</i>	75.6			40-125	%REC	1	2/7/2013 17:28
VOLATILES - SW8260C			Method: SW8260			Analyst: WLR	
1,1,1-Trichloroethane	U		1.7	5.0	µg/Kg	1	2/1/2013 13:41
1,1,2,2-Tetrachloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 13:41
1,1,2-Trichloroethane	U		2.0	5.0	µg/Kg	1	2/1/2013 13:41
1,1-Dichloroethane	U		0.50	5.0	µg/Kg	1	2/1/2013 13:41
1,1-Dichloroethene	U		1.5	5.0	µg/Kg	1	2/1/2013 13:41
1,2-Dibromoethane	U		0.70	5.0	µg/Kg	1	2/1/2013 13:41
1,2-Dichloroethane	U		0.60	5.0	µg/Kg	1	2/1/2013 13:41
Benzene	U		0.60	5.0	µg/Kg	1	2/1/2013 13:41
Carbon tetrachloride	U		1.2	5.0	µg/Kg	1	2/1/2013 13:41
Chloroform	U		1.8	5.0	µg/Kg	1	2/1/2013 13:41
Ethylbenzene	U		0.90	5.0	µg/Kg	1	2/1/2013 13:41
Methylene chloride	U		2.5	10	µg/Kg	1	2/1/2013 13:41
Tetrachloroethene	U		1.0	5.0	µg/Kg	1	2/1/2013 13:41
Toluene	U		0.70	5.0	µg/Kg	1	2/1/2013 13:41
Trichloroethene	U		1.6	5.0	µg/Kg	1	2/1/2013 13:41
Vinyl chloride	U		1.0	2.0	µg/Kg	1	2/1/2013 13:41
Xylenes, Total	U		2.6	15	µg/Kg	1	2/1/2013 13:41
<i>Surr: 1,2-Dichloroethane-d4</i>	88.4			70-128	%REC	1	2/1/2013 13:41
<i>Surr: 4-Bromofluorobenzene</i>	91.1			73-126	%REC	1	2/1/2013 13:41
<i>Surr: Dibromofluoromethane</i>	98.1			71-128	%REC	1	2/1/2013 13:41
<i>Surr: Toluene-d8</i>	103			73-127	%REC	1	2/1/2013 13:41
ANIONS - EPA 300.0 (1993)			Method: E300			Prep: E300 / 2/5/13	
Chloride	47.6		2.0	5.00	mg/Kg	1	2/5/2013 20:53
Fluoride	1.91		0.30	1.00	mg/Kg	1	2/5/2013 20:53
Nitrogen, Nitrate (As N)	U		0.30	1.00	mg/Kg	1	2/5/2013 20:53
Nitrogen, Nitrite (As N)	U		0.30	1.00	mg/Kg	1	2/5/2013 20:53
Sulfate	254		2.0	5.00	mg/Kg	1	2/5/2013 20:53
<i>Surr: Selenate (surr)</i>	86.3			85-115	%REC	1	2/5/2013 20:53
CYANIDE			Method: SW9014			Prep: SW9010C / 2/5/13	
Cyanide	U		0.57	1.90	mg/Kg	1	2/5/2013 16:30
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	23.2		0.010	0.0100	wt%	1	2/1/2013 13:00

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling
Sample ID: Trip Blank 011813-15
Collection Date: 1/29/2013

Work Order: 13011005
Lab ID: 13011005-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C			Method: SW8260			Analyst: AKP	
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/4/2013 12:29
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/4/2013 12:29
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Benzene	U		0.00020	0.0010	mg/L	1	2/4/2013 12:29
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Chloroform	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/4/2013 12:29
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/4/2013 12:29
Toluene	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/4/2013 12:29
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/4/2013 12:29
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/4/2013 12:29
Surr: 1,2-Dichloroethane-d4	91.7			71-125	%REC	1	2/4/2013 12:29
Surr: 4-Bromofluorobenzene	96.9			70-125	%REC	1	2/4/2013 12:29
Surr: Dibromofluoromethane	101			74-125	%REC	1	2/4/2013 12:29
Surr: Toluene-d8	98.0			78-123	%REC	1	2/4/2013 12:29

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

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67579** Instrument ID **FID-7** Method: **SW8015M**

MBLK	Sample ID: FBLKS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 11:56 AM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104153		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	2.092	0.10	3.33	0	62.8	60-135	0			

LCS	Sample ID: FLCSS1-130205-67579				Units: mg/Kg		Analysis Date: 2/6/2013 12:19 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104154		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	27.05	3.4	33.33	0	81.2	70-130	0			
TPH (Diesel Range)	35.72	1.7	33.33	0	107	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.536	0.10	3.33	0	76.2	60-135	0			

MS	Sample ID: 1302018-01BMS				Units: mg/Kg		Analysis Date: 2/6/2013 01:06 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104156		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEO
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
<i>Surr: 2-Fluorobiphenyl</i>	2.284	0.10	3.32	0	68.8	60-135	0			

MSD	Sample ID: 1302018-01BMSD				Units: mg/Kg		Analysis Date: 2/6/2013 01:29 PM			
Client ID:	Run ID: FID-7_130206A				SeqNo: 3104157		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEO
TPH (Diesel Range)	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
<i>Surr: 2-Fluorobiphenyl</i>	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

The following samples were analyzed in this batch:

13011005-01D	13011005-15D

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

QC Page: 1 of 24

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142225** Instrument ID **FID-9** Method: **SW8015**

MBLK	Sample ID: GBLKS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 01:02 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103619		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.050								
<i>Surr: 4-Bromofluorobenzene</i>	0.08374	0.0050	0.1	0	83.7	70-130	0			

LCS	Sample ID: GLCSS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:25 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103613		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.942	0.050	1	0	94.2	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	0.09701	0.0050	0.1	0	97	70-130	0			

LCSD	Sample ID: GLCSDS-130205-R142225				Units: mg/Kg		Analysis Date: 2/5/2013 12:44 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103616		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9525	0.050	1	0	95.2	70-130	0.942	1.11	30	
<i>Surr: 4-Bromofluorobenzene</i>	0.09686	0.0050	0.1	0	96.9	70-130	0.09701	0.146	30	

MS	Sample ID: 1302018-04ZMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103628		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8005	0.050	1	0	80	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	0.08728	0.0050	0.1	0	87.3	70-130	0			

MSD	Sample ID: 1302018-04ZMSD				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: FID-9_130205A				SeqNo: 3103632		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8125	0.050	1	0	81.2	70-130	0.8005	1.49	30	
<i>Surr: 4-Bromofluorobenzene</i>	0.08872	0.0050	0.1	0	88.7	70-130	0.08728	1.64	30	

The following samples were analyzed in this batch:

13011005-01B	13011005-15B

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/5/2013 03:05 PM**

Client ID: Run ID: **ICPMS05_130205A** SeqNo: **3102200** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4165	1.0								J
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Calcium	U	50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Manganese	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Potassium	U	50								
Selenium	U	0.50								
Silver	U	0.50								
Uranium	U	0.50								
Zinc	U	0.50								

MBLK Sample ID: **MBLKS1-020113-67523** Units: **mg/Kg** Analysis Date: **2/6/2013 12:35 PM**

Client ID: Run ID: **ICPMS05_130206A** SeqNo: **3103603** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	2.5								
Sodium	U	50								

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

LCS		Sample ID: MLCSS1-020113-67523				Units: mg/Kg		Analysis Date: 2/5/2013 03:08 PM		
Client ID:		Run ID: ICPMS05_130205A				SeqNo: 3102201		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	10.68	1.0	10	0	107	80-120	0			
Arsenic	9.673	0.50	10	0	96.7	80-120	0			
Barium	10.35	0.50	10	0	104	80-120	0			
Cadmium	9.748	0.50	10	0	97.5	80-120	0			
Calcium	992.3	50	1000	0	99.2	80-120	0			
Chromium	9.832	0.50	10	0	98.3	80-120	0			
Cobalt	9.927	0.50	10	0	99.3	80-120	0			
Copper	10.12	0.50	10	0	101	80-120	0			
Iron	974.8	50	1000	0	97.5	80-120	0			
Lead	9.786	0.50	10	0	97.9	80-120	0			
Manganese	9.681	0.50	10	0	96.8	80-120	0			
Molybdenum	9.985	0.50	10	0	99.8	80-120	0			
Nickel	9.83	0.50	10	0	98.3	80-120	0			
Potassium	956.7	50	1000	0	95.7	80-120	0			
Selenium	9.813	0.50	10	0	98.1	80-120	0			
Silver	10.22	0.50	10	0	102	80-120	0			
Uranium	9.429	0.50	10	0	94.3	80-120	0			
Zinc	9.937	0.50	10	0	99.4	80-120	0			

LCS		Sample ID: MLCSS1-020113-67523				Units: mg/Kg		Analysis Date: 2/6/2013 12:38 PM		
Client ID:		Run ID: ICPMS05_130206A				SeqNo: 3103604		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	47.92	2.5	50	0	95.8	80-120	0			
Sodium	981.7	50	1000	0	98.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/5/2013 03:22 PM		
Client ID: MW-116 (1)		Run ID: ICPMS05_130205A				SeqNo: 3102207		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13710	0.84	8.429	12570	13500	75-125	0			SEO
Arsenic	11.71	0.42	8.429	4.385	86.9	75-125	0			
Barium	138.7	0.42	8.429	129.6	107	75-125	0			O
Cadmium	8.001	0.42	8.429	0.4065	90.1	75-125	0			
Calcium	57470	42	842.9	57640	-19.7	75-125	0			SEO
Chromium	22.67	0.42	8.429	14.02	103	75-125	0			
Cobalt	13.02	0.42	8.429	5.519	89	75-125	0			
Copper	18.8	0.42	8.429	11.12	91.1	75-125	0			
Iron	11500	42	842.9	10120	164	75-125	0			SO
Lead	22.81	0.42	8.429	14.66	96.6	75-125	0			
Manganese	381.8	0.42	8.429	383.5	-20	75-125	0			SEO
Molybdenum	6.315	0.42	8.429	0.5853	68	75-125	0			S
Nickel	19.09	0.42	8.429	11.62	88.6	75-125	0			
Selenium	7.95	0.42	8.429	0.9501	83	75-125	0			
Silver	8.085	0.42	8.429	0.05106	95.3	75-125	0			
Uranium	8.095	0.42	8.429	0.408	91.2	75-125	0			
Zinc	46.05	0.42	8.429	37.34	103	75-125	0			O

MS		Sample ID: 13011005-01DMS				Units: mg/Kg		Analysis Date: 2/6/2013 12:50 PM		
Client ID: MW-116 (1)		Run ID: ICPMS05_130206A				SeqNo: 3103618		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	39.78	4.2	42.14	60.18	-48.4	75-125	0			S
Potassium	4808	84	842.9	3553	149	75-125	0			SO
Sodium	914.3	84	842.9	168.4	88.5	75-125	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/5/2013 03:25 PM		
Client ID: MW-116 (1)		Run ID: ICPMS05_130205A				SeqNo: 3102208		Prep Date: 2/4/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	12110	0.80	7.956	12570	-5790	75-125	13710	12.4	25	SEO
Arsenic	11.34	0.40	7.956	4.385	87.4	75-125	11.71	3.25	25	
Barium	134	0.40	7.956	129.6	54.7	75-125	138.7	3.43	25	SO
Cadmium	7.562	0.40	7.956	0.4065	89.9	75-125	8.001	5.64	25	
Calcium	52910	40	795.6	57640	-594	75-125	57470	8.27	25	SEO
Chromium	20.95	0.40	7.956	14.02	87.1	75-125	22.67	7.88	25	
Cobalt	12.38	0.40	7.956	5.519	86.3	75-125	13.02	5.05	25	
Copper	17.82	0.40	7.956	11.12	84.3	75-125	18.8	5.32	25	
Iron	10370	40	795.6	10120	31.2	75-125	11500	10.3	25	SO
Lead	22.24	0.40	7.956	14.66	95.2	75-125	22.81	2.51	25	
Manganese	389.4	0.40	7.956	383.5	74	75-125	381.8	1.96	25	SEO
Molybdenum	5.373	0.40	7.956	0.5853	60.2	75-125	6.315	16.1	25	S
Nickel	18.17	0.40	7.956	11.62	82.4	75-125	19.09	4.89	25	
Selenium	7.14	0.40	7.956	0.9501	77.8	75-125	7.95	10.7	25	
Silver	7.509	0.40	7.956	0.05106	93.7	75-125	8.085	7.4	25	
Uranium	7.518	0.40	7.956	0.408	89.4	75-125	8.095	7.39	25	
Zinc	44.04	0.40	7.956	37.34	84.2	75-125	46.05	4.46	25	O

MSD		Sample ID: 13011005-01DMSD				Units: mg/Kg		Analysis Date: 2/6/2013 12:52 PM		
Client ID: MW-116 (1)		Run ID: ICPMS05_130206A				SeqNo: 3103621		Prep Date: 2/4/2013		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	37.07	4.0	39.78	60.18	-58.1	75-125	39.78	7.06	25	S
Potassium	4552	80	795.6	3553	126	75-125	4808	5.48	25	SO
Sodium	855.4	80	795.6	168.4	86.4	75-125	914.3	6.65	25	

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67523** Instrument ID **ICPMS05** Method: **SW6020**

DUP Sample ID: **13011005-01DDUP** Units: **mg/Kg** Analysis Date: **2/5/2013 03:20 PM**
 Client ID: **MW-116 (1)** Run ID: **ICPMS05_130205A** SeqNo: **3102206** Prep Date: **2/4/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.109	0.42	0	0	0	0-0	4.385	6.5	25	
Barium	122.9	0.42	0	0	0	0-0	129.6	5.34	25	
Cadmium	0.3587	0.42	0	0	0	0-0	0.4065	0	25	J
Chromium	13.06	0.42	0	0	0	0-0	14.02	7.09	25	
Cobalt	5.04	0.42	0	0	0	0-0	5.519	9.08	25	
Copper	10.23	0.42	0	0	0	0-0	11.12	8.3	25	
Iron	9434	42	0	0	0	0-0	10120	7.01	25	
Lead	14.13	0.42	0	0	0	0-0	14.66	3.72	25	
Molybdenum	0.5423	0.42	0	0	0	0-0	0.5853	7.63	25	
Nickel	10.65	0.42	0	0	0	0-0	11.62	8.76	25	
Selenium	0.8324	0.42	0	0	0	0-0	0.9501	13.2	25	
Silver	U	0.42	0	0	0	0-0	0.05106	0	25	
Uranium	U	0.42	0	0	0		0.408	0	25	
Zinc	34.3	0.42	0	0	0	0-0	37.34	8.48	25	

DUP Sample ID: **13011005-01DDUP** Units: **mg/Kg** Analysis Date: **2/6/2013 12:47 PM**
 Client ID: **MW-116 (1)** Run ID: **ICPMS05_130206A** SeqNo: **3103614** Prep Date: **2/4/2013** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	6.159	4.2	0	0	0	0-0	60.18	163	25	R
Potassium	3479	83	0	0	0	0-0	3553	2.09	25	
Sodium	122.9	83	0	0	0	0-0	168.4	31.2	25	R

DUP Sample ID: **13011005-01DDUP** Units: **mg/Kg** Analysis Date: **2/6/2013 03:01 PM**
 Client ID: **MW-116 (1)** Run ID: **ICPMS05_130206A** SeqNo: **3103960** Prep Date: **2/4/2013** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	13720	83	0	0	0	0-0	14570	6.05	25	
Calcium	56380	4,200	0	0	0	0-0	60800	7.55	25	
Manganese	355.2	42	0	0	0	0-0	374.9	5.4	25	

The following samples were analyzed in this batch:

13011005-01D	13011005-03D	13011005-06D
13011005-09D	13011005-12D	13011005-15D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67585** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:01 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102354		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS1-020513-67585				Units: µg/Kg		Analysis Date: 2/5/2013 04:03 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102355		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	332.7	3.3	333.3	0	99.8	85-115	0			

MS	Sample ID: 1301997-01DMS				Units: µg/Kg		Analysis Date: 2/5/2013 04:09 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102358		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	376.9	3.5	354.9	14.76	102	85-115	0			

MSD	Sample ID: 1301997-01DMSD				Units: µg/Kg		Analysis Date: 2/5/2013 04:11 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102359		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	375.1	3.5	354.5	14.76	102	85-115	376.9	0.484	20	

DUP	Sample ID: 1301997-01DDUP				Units: µg/Kg		Analysis Date: 2/5/2013 04:07 PM			
Client ID:	Run ID: HG02_130205A				SeqNo: 3102357		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	15.21	3.6	0	0	0		14.76	3.04	20	

The following samples were analyzed in this batch:

13011005-01D	13011005-03D	13011005-06D
13011005-09D	13011005-12D	13011005-15D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MBLK Sample ID: **SBLKS2-130207-67656** Units: **µg/Kg** Analysis Date: **2/7/2013 04:24 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106635** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	6.6								
2-Methylnaphthalene	U	6.6								
Benzo(a)pyrene	U	6.6								
Naphthalene	U	6.6								
<i>Surr: 2,4,6-Tribromophenol</i>	104.3	6.6	166.7	0	62.6	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	132.1	6.6	166.7	0	79.2	43-125	0			
<i>Surr: 2-Fluorophenol</i>	126.1	6.6	166.7	0	75.7	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	166.2	6.6	166.7	0	99.7	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	134.1	6.6	166.7	0	80.4	37-125	0			
<i>Surr: Phenol-d6</i>	130.7	6.6	166.7	0	78.4	40-125	0			

LCS Sample ID: **SLCSS2-130207-67656** Units: **µg/Kg** Analysis Date: **2/7/2013 04:45 PM**
 Client ID: Run ID: **SV-6_130207A** SeqNo: **3106636** Prep Date: **2/7/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	131.8	6.6	166.7	0	79.1	50-120	0			
2-Methylnaphthalene	133.3	6.6	166.7	0	80	50-120	0			
Benzo(a)pyrene	148.1	6.6	166.7	0	88.8	50-130	0			
Naphthalene	128.1	6.6	166.7	0	76.9	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	125.4	6.6	166.7	0	75.2	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	128.4	6.6	166.7	0	77	43-125	0			
<i>Surr: 2-Fluorophenol</i>	122.2	6.6	166.7	0	73.3	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	159.7	6.6	166.7	0	95.8	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	126.5	6.6	166.7	0	75.9	37-125	0			
<i>Surr: Phenol-d6</i>	122.6	6.6	166.7	0	73.5	40-125	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67656** Instrument ID **SV-6** Method: **SW8270**

MS		Sample ID: 1302140-04DMS				Units: µg/Kg		Analysis Date: 2/7/2013 07:35 PM		
Client ID:		Run ID: SV-6_130207A				SeqNo: 3106643		Prep Date: 2/7/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	129.4	6.6	166.5	6.178	74	50-120	0			
2-Methylnaphthalene	107.7	6.6	166.5	6.039	61	50-120	0			
Benzo(a)pyrene	224.3	6.6	166.5	160.5	38.3	50-130	0			S
Naphthalene	102.2	6.6	166.5	5.73	57.9	50-125	0			
<i>Surr: 2,4,6-Tribromophenol</i>	91.94	6.6	166.5	0	55.2	36-126	0			
<i>Surr: 2-Fluorobiphenyl</i>	106.7	6.6	166.5	0	64.1	43-125	0			
<i>Surr: 2-Fluorophenol</i>	91.1	6.6	166.5	0	54.7	37-125	0			
<i>Surr: 4-Terphenyl-d14</i>	124.5	6.6	166.5	0	74.8	32-125	0			
<i>Surr: Nitrobenzene-d5</i>	105.2	6.6	166.5	0	63.2	37-125	0			
<i>Surr: Phenol-d6</i>	85.27	6.6	166.5	0	51.2	40-125	0			

MSD		Sample ID: 1302140-04DMSD				Units: µg/Kg		Analysis Date: 2/7/2013 07:56 PM		
Client ID:		Run ID: SV-6_130207A				SeqNo: 3106644		Prep Date: 2/7/2013		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	183.4	6.6	166.4	6.178	106	50-120	129.4	34.5	30	R
2-Methylnaphthalene	143.5	6.6	166.4	6.039	82.6	50-120	107.7	28.5	30	
Benzo(a)pyrene	307.6	6.6	166.4	160.5	88.4	50-130	224.3	31.3	30	R
Naphthalene	132.9	6.6	166.4	5.73	76.4	50-125	102.2	26.1	30	
<i>Surr: 2,4,6-Tribromophenol</i>	101.8	6.6	166.4	0	61.2	36-126	91.94	10.2	30	
<i>Surr: 2-Fluorobiphenyl</i>	123.6	6.6	166.4	0	74.2	43-125	106.7	14.6	30	
<i>Surr: 2-Fluorophenol</i>	108.3	6.6	166.4	0	65.1	37-125	91.1	17.3	30	
<i>Surr: 4-Terphenyl-d14</i>	150.5	6.6	166.4	0	90.4	32-125	124.5	18.9	30	
<i>Surr: Nitrobenzene-d5</i>	124.3	6.6	166.4	0	74.7	37-125	105.2	16.7	30	
<i>Surr: Phenol-d6</i>	101.4	6.6	166.4	0	60.9	40-125	85.27	17.3	30	

The following samples were analyzed in this batch:

13011005-01D	13011005-15D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MBLK Sample ID: **VBLKS1-020113-R141995** Units: **µg/Kg** Analysis Date: **2/1/2013 09:52 AM**

Client ID: Run ID: **VOA5_130201A** SeqNo: **3098471** 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	U	5.0								
1,1,2,2-Tetrachloroethane	U	5.0								
1,1,2-Trichloroethane	U	5.0								
1,1-Dichloroethane	U	5.0								
1,1-Dichloroethene	U	5.0								
1,2-Dibromoethane	U	5.0								
1,2-Dichloroethane	U	5.0								
Benzene	U	5.0								
Carbon tetrachloride	U	5.0								
Chloroform	U	5.0								
Ethylbenzene	U	5.0								
Methylene chloride	U	10								
Tetrachloroethene	U	5.0								
Toluene	U	5.0								
Trichloroethene	U	5.0								
Vinyl chloride	U	2.0								
Xylenes, Total	U	15								
<i>Surr: 1,2-Dichloroethane-d4</i>	42.8	0	50	0	85.6	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	46.86	0	50	0	93.7	73-126	0			
<i>Surr: Dibromofluoromethane</i>	48.11	0	50	0	96.2	71-128	0			
<i>Surr: Toluene-d8</i>	44.78	0	50	0	89.6	73-127	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

LCS				Sample ID: VLCSS1-020113-R141995			Units: µg/Kg		Analysis Date: 2/1/2013 08:43 AM		
Client ID:		Run ID: VOA5_130201A			SeqNo: 3098470		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	53.98	5.0	50	0	108	79-124	0				
1,1,2,2-Tetrachloroethane	53.32	5.0	50	0	107	75-123	0				
1,1,2-Trichloroethane	55.87	5.0	50	0	112	79-120	0				
1,1-Dichloroethane	52.6	5.0	50	0	105	75-124	0				
1,1-Dichloroethene	55.13	5.0	50	0	110	80-122	0				
1,2-Dibromoethane	57.09	5.0	50	0	114	79-120	0				
1,2-Dichloroethane	52.14	5.0	50	0	104	73-121	0				
Benzene	50.57	5.0	50	0	101	79-120	0				
Carbon tetrachloride	45.29	5.0	50	0	90.6	74-126	0				
Chloroform	55.04	5.0	50	0	110	78-120	0				
Ethylbenzene	54.99	5.0	50	0	110	80-122	0				
Methylene chloride	51.62	10	50	0	103	70-123	0				
Tetrachloroethene	47.09	5.0	50	0	94.2	80-121	0				
Toluene	49.54	5.0	50	0	99.1	79-120	0				
Trichloroethene	52.16	5.0	50	0	104	80-121	0				
Vinyl chloride	61.5	2.0	50	0	123	76-126	0				
Xylenes, Total	150.9	15	150	0	101	80-120	0				
Surr: 1,2-Dichloroethane-d4	51.49	0	50	0	103	70-128	0				
Surr: 4-Bromofluorobenzene	47.86	0	50	0	95.7	73-126	0				
Surr: Dibromofluoromethane	51.61	0	50	0	103	71-128	0				
Surr: Toluene-d8	43.85	0	50	0	87.7	73-127	0				

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MS	Sample ID: 1301997-01AMS				Units: µg/Kg		Analysis Date: 2/1/2013 11:46 AM			
Client ID:	Run ID: VOA5_130201A				SeqNo: 3098546		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	51.53	5.0	50	0	103	79-124	0			
1,1,2,2-Tetrachloroethane	45.86	5.0	50	0	91.7	75-123	0			
1,1,2-Trichloroethane	56	5.0	50	0	112	79-120	0			
1,1-Dichloroethane	49.56	5.0	50	0	99.1	75-124	0			
1,1-Dichloroethene	54.01	5.0	50	0	108	80-122	0			
1,2-Dibromoethane	49.35	5.0	50	0	98.7	79-120	0			
1,2-Dichloroethane	51.25	5.0	50	0	103	73-121	0			
Benzene	52.11	5.0	50	0	104	79-120	0			
Carbon tetrachloride	46.06	5.0	50	0	92.1	74-126	0			
Chloroform	48.72	5.0	50	0	97.4	78-120	0			
Ethylbenzene	50.85	5.0	50	0	102	80-122	0			
Methylene chloride	48.37	10	50	0	96.7	70-123	0			
Tetrachloroethene	43.7	5.0	50	0	87.4	80-121	0			
Toluene	53.36	5.0	50	0	107	79-120	0			
Trichloroethene	51.31	5.0	50	0	103	80-121	0			
Vinyl chloride	55.22	2.0	50	0	110	76-126	0			
Xylenes, Total	146.8	15	150	0	97.9	80-120	0			
Surr: 1,2-Dichloroethane-d4	49.29	0	50	0	98.6	70-128	0			
Surr: 4-Bromofluorobenzene	49	0	50	0	98	73-126	0			
Surr: Dibromofluoromethane	49.78	0	50	0	99.6	71-128	0			
Surr: Toluene-d8	51.55	0	50	0	103	73-127	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R141995** Instrument ID **VOA5** Method: **SW8260**

MSD		Sample ID: 1301997-01AMSD				Units: µg/Kg		Analysis Date: 2/1/2013 12:09 PM			
Client ID:		Run ID: VOA5_130201A				SeqNo: 3098547		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	54.79	5.0	50	0	110	79-124	51.53	6.13	30		
1,1,2,2-Tetrachloroethane	44.09	5.0	50	0	88.2	75-123	45.86	3.93	30		
1,1,2-Trichloroethane	54.9	5.0	50	0	110	79-120	56	1.98	30		
1,1-Dichloroethane	51.87	5.0	50	0	104	75-124	49.56	4.56	30		
1,1-Dichloroethene	52.81	5.0	50	0	106	80-122	54.01	2.24	30		
1,2-Dibromoethane	48.8	5.0	50	0	97.6	79-120	49.35	1.12	30		
1,2-Dichloroethane	46.29	5.0	50	0	92.6	73-121	51.25	10.2	30		
Benzene	51.81	5.0	50	0	104	79-120	52.11	0.568	30		
Carbon tetrachloride	47.75	5.0	50	0	95.5	74-126	46.06	3.61	30		
Chloroform	53.56	5.0	50	0	107	78-120	48.72	9.45	30		
Ethylbenzene	55.58	5.0	50	0	111	80-122	50.85	8.9	30		
Methylene chloride	53.37	10	50	0	107	70-123	48.37	9.82	30		
Tetrachloroethene	45.21	5.0	50	0	90.4	80-121	43.7	3.39	30		
Toluene	61.14	5.0	50	0	122	79-120	53.36	13.6	30	S	
Trichloroethene	51.76	5.0	50	0	104	80-121	51.31	0.863	30		
Vinyl chloride	58.35	2.0	50	0	117	76-126	55.22	5.51	30		
Xylenes, Total	157.7	15	150	0	105	80-120	146.8	7.13	30		
Surr: 1,2-Dichloroethane-d4	48.55	0	50	0	97.1	70-128	49.29	1.51	30		
Surr: 4-Bromofluorobenzene	46.51	0	50	0	93	73-126	49	5.21	30		
Surr: Dibromofluoromethane	48.96	0	50	0	97.9	71-128	49.78	1.67	30		
Surr: Toluene-d8	55.55	0	50	0	111	73-127	51.55	7.47	30		

The following samples were analyzed in this batch:

13011005-01A	13011005-15A

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MBLK Sample ID: **VBLKW-130204-R142113** Units: **µg/L** Analysis Date: **2/4/2013 11:16 AM**

Client ID: Run ID: **VOA4_130204A** SeqNo: **3100918** 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	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Carbon tetrachloride	U	1.0								
Chloroform	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Trichloroethene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	43.85	1.0	50	0	87.7	71-125	0			
Surr: 4-Bromofluorobenzene	49.08	1.0	50	0	98.2	70-125	0			
Surr: Dibromofluoromethane	48.08	1.0	50	0	96.2	74-125	0			
Surr: Toluene-d8	48.41	1.0	50	0	96.8	78-123	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCS		Sample ID: VLCSW-130204-R142113				Units: µg/L		Analysis Date: 2/4/2013 10:03 AM		
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100916		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	54.47	1.0	50	0	109	80-120	0			
1,1,2,2-Tetrachloroethane	46.02	1.0	50	0	92	74-123	0			
1,1,2-Trichloroethane	48.93	1.0	50	0	97.9	80-120	0			
1,1-Dichloroethane	46.62	1.0	50	0	93.2	80-120	0			
1,1-Dichloroethene	53.04	1.0	50	0	106	80-120	0			
1,2-Dibromoethane	53.39	1.0	50	0	107	80-120	0			
1,2-Dichloroethane	49.07	1.0	50	0	98.1	79-120	0			
Benzene	48.6	1.0	50	0	97.2	80-120	0			
Carbon tetrachloride	58.54	1.0	50	0	117	79-120	0			
Chloroform	46.57	1.0	50	0	93.1	80-120	0			
Ethylbenzene	48.8	1.0	50	0	97.6	80-120	0			
Methylene chloride	47.71	2.0	50	0	95.4	75-125	0			
Tetrachloroethene	53.4	1.0	50	0	107	80-120	0			
Toluene	48.37	1.0	50	0	96.7	80-121	0			
Trichloroethene	53.7	1.0	50	0	107	80-120	0			
Vinyl chloride	48.96	1.0	50	0	97.9	75-125	0			
Xylenes, Total	142.5	1.0	150	0	95	80-124	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	44.17	1.0	50	0	88.3	71-125	0			
<i>Surr: 4-Bromofluorobenzene</i>	52.31	1.0	50	0	105	70-125	0			
<i>Surr: Dibromofluoromethane</i>	49.72	1.0	50	0	99.4	74-125	0			
<i>Surr: Toluene-d8</i>	48.59	1.0	50	0	97.2	78-123	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

LCSD		Sample ID: VLCS DW-130204-R142113				Units: µg/L		Analysis Date: 2/4/2013 10:27 AM		
Client ID:		Run ID: VOA4_130204A				SeqNo: 3100917		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	51.78	1.0	50	0	104	80-120	54.47	5.06	20	
1,1,2,2-Tetrachloroethane	46.55	1.0	50	0	93.1	74-123	46.02	1.14	20	
1,1,2-Trichloroethane	48.97	1.0	50	0	97.9	80-120	48.93	0.0875	20	
1,1-Dichloroethane	44.74	1.0	50	0	89.5	80-120	46.62	4.11	20	
1,1-Dichloroethene	51.9	1.0	50	0	104	80-120	53.04	2.16	20	
1,2-Dibromoethane	53.91	1.0	50	0	108	80-120	53.39	0.979	20	
1,2-Dichloroethane	48.06	1.0	50	0	96.1	79-120	49.07	2.09	20	
Benzene	47	1.0	50	0	94	80-120	48.6	3.35	20	
Carbon tetrachloride	56.1	1.0	50	0	112	79-120	58.54	4.26	20	
Chloroform	45.18	1.0	50	0	90.4	80-120	46.57	3.02	20	
Ethylbenzene	46.79	1.0	50	0	93.6	80-120	48.8	4.2	20	
Methylene chloride	46.38	2.0	50	0	92.8	75-125	47.71	2.83	20	
Tetrachloroethene	50.41	1.0	50	0	101	80-120	53.4	5.75	20	
Toluene	46.08	1.0	50	0	92.2	80-121	48.37	4.84	20	
Trichloroethene	52.04	1.0	50	0	104	80-120	53.7	3.14	20	
Vinyl chloride	46.66	1.0	50	0	93.3	75-125	48.96	4.81	20	
Xylenes, Total	138	1.0	150	0	92	80-124	142.5	3.19	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	43.85	1.0	50	0	87.7	71-125	44.17	0.739	20	
<i>Surr: 4-Bromofluorobenzene</i>	51.57	1.0	50	0	103	70-125	52.31	1.41	20	
<i>Surr: Dibromofluoromethane</i>	48.7	1.0	50	0	97.4	74-125	49.72	2.09	20	
<i>Surr: Toluene-d8</i>	48.27	1.0	50	0	96.5	78-123	48.59	0.661	20	

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MS	Sample ID: 1302069-01AMS				Units: µg/L		Analysis Date: 2/4/2013 01:41 PM			
Client ID:	Run ID: VOA4_130204A				SeqNo: 3100924		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	56.87	1.0	50	0	114	80-120	0			
1,1,2,2-Tetrachloroethane	45.23	1.0	50	0	90.5	74-123	0			
1,1,2-Trichloroethane	50.26	1.0	50	0	101	80-120	0			
1,1-Dichloroethane	48.56	1.0	50	0	97.1	80-120	0			
1,1-Dichloroethene	57.49	1.0	50	0	115	80-120	0			
1,2-Dibromoethane	53.79	1.0	50	0	108	80-120	0			
1,2-Dichloroethane	50.8	1.0	50	0	102	79-120	0			
Benzene	51.17	1.0	50	0	102	80-120	0			
Carbon tetrachloride	61.34	1.0	50	0	123	79-120	0			S
Chloroform	49.2	1.0	50	0	98.4	80-120	0			
Ethylbenzene	50.6	1.0	50	0	101	80-120	0			
Methylene chloride	49.13	2.0	50	0	98.3	75-125	0			
Tetrachloroethene	55.78	1.0	50	0	112	80-120	0			
Toluene	49.91	1.0	50	0	99.8	80-121	0			
Trichloroethene	57.43	1.0	50	0	115	80-120	0			
Vinyl chloride	53.66	1.0	50	0	107	75-125	0			
Xylenes, Total	148.5	1.0	150	0	99	80-124	0			
Surr: 1,2-Dichloroethane-d4	44.59	1.0	50	0	89.2	71-125	0			
Surr: 4-Bromofluorobenzene	50.99	1.0	50	0	102	70-125	0			
Surr: Dibromofluoromethane	49.65	1.0	50	0	99.3	74-125	0			
Surr: Toluene-d8	48.21	1.0	50	0	96.4	78-123	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142113** Instrument ID **VOA4** Method: **SW8260**

MSD	Sample ID: 1302069-01AMSD				Units: µg/L		Analysis Date: 2/4/2013 02:06 PM			
Client ID:	Run ID: VOA4_130204A				SeqNo: 3100925		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	59.48	1.0	50	0	119	80-120	56.87	4.49	20	
1,1,2,2-Tetrachloroethane	47.09	1.0	50	0	94.2	74-123	45.23	4.04	20	
1,1,2-Trichloroethane	51.43	1.0	50	0	103	80-120	50.26	2.29	20	
1,1-Dichloroethane	50.19	1.0	50	0	100	80-120	48.56	3.31	20	
1,1-Dichloroethene	60.32	1.0	50	0	121	80-120	57.49	4.82	20	S
1,2-Dibromoethane	56.01	1.0	50	0	112	80-120	53.79	4.04	20	
1,2-Dichloroethane	52.53	1.0	50	0	105	79-120	50.8	3.34	20	
Benzene	52.17	1.0	50	0	104	80-120	51.17	1.94	20	
Carbon tetrachloride	63.38	1.0	50	0	127	79-120	61.34	3.27	20	S
Chloroform	50.81	1.0	50	0	102	80-120	49.2	3.21	20	
Ethylbenzene	51.95	1.0	50	0	104	80-120	50.6	2.63	20	
Methylene chloride	51.27	2.0	50	0	103	75-125	49.13	4.28	20	
Tetrachloroethene	57.11	1.0	50	0	114	80-120	55.78	2.36	20	
Toluene	50.87	1.0	50	0	102	80-121	49.91	1.91	20	
Trichloroethene	58.72	1.0	50	0	117	80-120	57.43	2.21	20	
Vinyl chloride	54.84	1.0	50	0	110	75-125	53.66	2.17	20	
Xylenes, Total	151	1.0	150	0	101	80-124	148.5	1.7	20	
Surr: 1,2-Dichloroethane-d4	44.99	1.0	50	0	90	71-125	44.59	0.903	20	
Surr: 4-Bromofluorobenzene	50.73	1.0	50	0	101	70-125	50.99	0.509	20	
Surr: Dibromofluoromethane	50.29	1.0	50	0	101	74-125	49.65	1.28	20	
Surr: Toluene-d8	48.15	1.0	50	0	96.3	78-123	48.21	0.13	20	

The following samples were analyzed in this batch:

13011005-16A

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67564** Instrument ID **UV-2450** Method: **SW9014** (Dissolve)

MBLK	Sample ID: WBLKS1-020413-67564				Units: mg/Kg		Analysis Date: 2/4/2013 01:30 PM			
Client ID:	Run ID: UV-2450_130204B				SeqNo: 3100816		Prep Date: 2/4/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS	Sample ID: WLCSS1-020413-67564				Units: mg/Kg		Analysis Date: 2/4/2013 01:30 PM			
Client ID:	Run ID: UV-2450_130204B				SeqNo: 3100817		Prep Date: 2/4/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.45	2.0	10	0	84.5	80-120	0			

LCSD	Sample ID: WLCSDS1-020413-67564				Units: mg/Kg		Analysis Date: 2/4/2013 01:30 PM			
Client ID:	Run ID: UV-2450_130204B				SeqNo: 3100821		Prep Date: 2/4/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.55	2.0	10	0	85.5	80-120	8.45	1.18	30	

MS	Sample ID: 13011005-03DMS				Units: mg/Kg		Analysis Date: 2/4/2013 01:30 PM			
Client ID: MW-116 (5)	Run ID: UV-2450_130204B				SeqNo: 3100819		Prep Date: 2/4/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.837	1.8	9.064	0.3149	94	75-125	0			

The following samples were analyzed in this batch:

13011005-03D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67583** Instrument ID **UV-2450** Method: **SW9014** **(Dissolve)**

MBLK	Sample ID: WBLKS1-020513-67583				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: UV-2450_130205C				SeqNo: 3103414		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	2.0								

LCS	Sample ID: WLCSS1-020513-67583				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: UV-2450_130205C				SeqNo: 3103415		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.05	2.0	10	0	90.5	80-120	0			

LCSD	Sample ID: WLCSDS1-020513-67583				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: UV-2450_130205C				SeqNo: 3103437		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	8.9	2.0	10	0	89	80-120	9.05	1.67	30	

MS	Sample ID: 1301997-09DMS				Units: mg/Kg		Analysis Date: 2/5/2013 04:30 PM			
Client ID:	Run ID: UV-2450_130205C				SeqNo: 3103436		Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	9.495	1.9	9.308	0.09611	101	75-125	0			

The following samples were analyzed in this batch:

13011005-01D	13011005-06C	13011005-06D
13011005-09D	13011005-12D	13011005-15D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** (Dissolve)

MBLK	Sample ID: WBLKS1-67633			Units: mg/Kg			Analysis Date: 2/5/2013 07:11 PM			
Client ID:	Run ID: ICS2100_130205C			SeqNo: 3103858			Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	5.0								
Fluoride	0.64	1.0								J
Nitrogen, Nitrate (As N)	U	1.0								
Nitrogen, Nitrite (As N)	U	1.0								
Sulfate	U	5.0								
<i>Surr: Selenate (surr)</i>	45.24	1.0	50	0	90.5	85-115	0			

LCS	Sample ID: WLCSS1-67633			Units: mg/Kg			Analysis Date: 2/5/2013 07:25 PM			
Client ID:	Run ID: ICS2100_130205C			SeqNo: 3103859			Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	219.8	5.0	200	0	110	90-110	0			
Fluoride	37.72	1.0	40	0	94.3	90-110	0			
Nitrogen, Nitrate (As N)	43.14	1.0	40	0	108	90-110	0			
Nitrogen, Nitrite (As N)	43.82	1.0	40	0	110	90-110	0			
Sulfate	208.7	5.0	200	0	104	90-110	0			
<i>Surr: Selenate (surr)</i>	47.79	1.0	50	0	95.6	85-115	0			

MS	Sample ID: 1302026-21DMS			Units: mg/Kg			Analysis Date: 2/6/2013 01:29 AM			
Client ID:	Run ID: ICS2100_130205C			SeqNo: 3103884			Prep Date: 2/5/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	126.4	5.0	98.97	16.2	111	75-125	0			
Fluoride	20.19	0.99	19.79	2.638	88.7	75-125	0			
Nitrogen, Nitrate (As N)	20.76	0.99	19.79	0	105	75-125	0			
Nitrogen, Nitrite (As N)	21.36	0.99	19.79	0	108	75-125	0			
Sulfate	319.3	5.0	98.97	213.5	107	75-125	0			
<i>Surr: Selenate (surr)</i>	42.66	0.99	49.48	0	86.2	80-120	0			

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **67633** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD Sample ID: **1302026-21DMSD** Units: **mg/Kg** Analysis Date: **2/6/2013 01:43 AM**

Client ID: Run ID: **ICS2100_130205C** SeqNo: **3103885** Prep Date: **2/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	124.6	4.9	98.65	16.2	110	75-125	126.4	1.49	20	
Fluoride	19.9	0.99	19.73	2.638	87.5	75-125	20.19	1.45	20	
Nitrogen, Nitrate (As N)	20.57	0.99	19.73	0	104	75-125	20.76	0.942	20	
Nitrogen, Nitrite (As N)	20.98	0.99	19.73	0	106	75-125	21.36	1.77	20	
Sulfate	315.2	4.9	98.65	213.5	103	75-125	319.3	1.29	20	
<i>Surr: Selenate (surr)</i>	42	0.99	49.33	0	85.1	80-120	42.66	1.58	20	

The following samples were analyzed in this batch:

13011005-01D	13011005-03D	13011005-06D
13011005-09D	13011005-12D	13011005-15D

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

Client: Navajo Refining Company
Work Order: 13011005
Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: **R142103** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **13011005-15DDUP** Units: **wt%** Analysis Date: **2/1/2013 01:00 PM**
Client ID: **MW-116 (25)** Run ID: **BALANCE1_130201B** SeqNo: **3100807** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	23.71	0.010	0	0	0	0-0	23.23	2.05	20	

The following samples were analyzed in this batch:

13011005-01D	13011005-02A	13011005-03D
13011005-04A	13011005-05A	13011005-06D
13011005-07A	13011005-08A	13011005-09D
13011005-10A	13011005-11A	13011005-12D
13011005-13A	13011005-14A	13011005-15D

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

Client: Navajo Refining Company
Project: RO Discharge Sampling
WorkOrder: 13011005

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	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

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
µg/Kg	Micrograms per Kilogram
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**Date/Time Received: **31-Jan-13 09:10**Work Order: **13011005**Received by: **RDH**Checklist completed by Johanna B. Allen
eSignature

31-Jan-13

Date

Reviewed by: Patricia L. Lynch
eSignature

01-Feb-13

Date

Matrices: soil/waterCarrier 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):	<u>1.4 C/uc</u> <u>IR 1</u>		
Cooler(s)/Kit(s):	<u>4028</u>		
Date/Time sample(s) sent to storage:	<u>1/31/13 14:30</u>		
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:	<u>-</u>		
Login Notes:	<u>Trip blank received, but not on COC. Ra-226/228 & cyanide not on COC. Incorrect metals list on COC.</u>		

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



Chain of Custody Form

Page 1 of 2

COC ID: 41210

- ☐ Cincinnati, OH
+1 513 733 5336
- ☐ Everett, WA
+1 425 356 2600
- ☐ Fort Collins, CO
+1 970 490 1511

13011005

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



ALS Project Manager:

Customer Information		Project Information					Parameter/Method Request for Analysis												
Purchase Order		Project Name	RO Discharge/Sampling				A	VOC (8260) NW GW List											
Work Order		Project Number	128823				B	GRO (8015M)											
Company Name	Navajo Refining	Bill To Company	Navajo Refining Co				C	DRO (8015M)											
Send Report To	Robert Camba	Invoice Attn.	Robert Camba				D	ORO (8015M)											
Address	501 East Main	Address	501 East Main				E	LL SVOC (8270) NW GW List											
City/State/Zip	Artesia, NM	City/State/Zip	Artesia, NM				F	Total Metals (6020/7000) RCRA 8											
Phone		Phone	575-748-6733				G	Dissolved Metals (6020/7000) RCRA 8											
Fax		Fax	575-746-5421				H	TDS											
e-Mail Address		e-Mail Address					I	Moisture											
							J												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	MW-116 (1)	1/29/13	1605	Soil	-	5	X	X	X	X	X	X	X		X				
2	MW-116 (3)	1/29/13	1618			1									X				
3	MW-116 (5)	1/29/13	1632			5	X	X	X	X	X	X	X		X				
4	MW-116 (7)	1/30/13	0855			1									X				
5	MW-116 (9)	1/30/13	0855			1									X				
6	MW-116 (10)	1/30/13	0902			5	X	X	X	X	X	X	X		X				
7	MW-116 (11)	1/30/13	0905			1									X				
8	MW-116 (13)	1/30/13	0905			1									X				
9	MW-116 (15)	1/30/13	0910			5	X	X	X	X	X	X	X		X				
10	MW-116 (17)	1/30/13	0915			1									X				

Sampler(s): Please Print & Sign <i>Eric Bergersen</i>		Shipment Method:		Required Turnaround Time: ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour		Results Due Date:	
Relinquished by: <i>Eric Bergersen</i>	Date: 1/30/13	Time: 1300	Received by: <i>ASR</i>		Notes: 10 Day TAT, Dissolved Metals Field Filtered		
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>ASR</i>		QC Package: (Check Box Below)		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		☒ Level II: Standard QC ☐ Level III: Std QC + Raw Data ☐ Level IV: SW846 CLP-Like Other:		
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035							

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Chain of Custody Form

Page 2 of 2

COC ID: **41190**

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☐ Salt Lake City, UT
+1 801 266 7700
☐ Spring City, PA
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☐ York, PA
+1 717 505 5280

ALS Project Manager:

Work Order #: **13011095**

Customer Information			Project Information				Parameter/Method Request for Analysis												
Purchase Order		Project Name	RO Discharge/Sampling				A	VOC (8260) NM GW List											
Work Order		Project Number	128823				B	GRO (8015M)											
Company Name	Navajo Refining	Bill To Company	Navajo Refining Co				C	DRO (8015M)											
Send Report To	Robert Combs	Invoice Attn.	Robert Combs				D	ORO (8015M)											
Address	501 East Main	Address	501 East Main				E	LL SVOC (8270) NM GW List											
City/State/Zip	Artesia, NM	City/State/Zip	Artesia, NM				F	Total Metals (6020/7000) RCRA 8											
Phone		Phone	575-748-6733				G	Dissolved Metals (6020/7000) RCRA 8											
Fax		Fax	575-746-5421				H	TDS											
e-Mail Address		e-Mail Address					I	Moisture											
J																			
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	MW-116 (19)	1/30/13	0925	Soil	-	1									X				
2	MW-116 (20)	1	0920	1	1	5	X	X	X	X	X	X	X		X				
3	MW-116 (21)																X		
4	MW-116 (23)																X		
5	MW-116 (25)																X		
6																			
7																			
8																			
9																			
10																			

Sampler(s): Please Print & Sign Eric Bergersen

Shipment Method: ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Required Turnaround Time: ☐ Other _____

Results Due Date: _____

Relinquished by: Eric Bergersen Date: 1/30/13 Time: 1300

Received by: ASR Date: 1/31/13 Time: 0910

Relinquished by: _____ Date: _____ Time: _____

Received by (Laboratory): _____ Date: _____ Time: _____

Logged by (Laboratory): _____ Date: _____ Time: _____

Checked by (Laboratory): _____ Date: _____ Time: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

QC Package: (Check Box Below)

☒ Level II: Standard QC

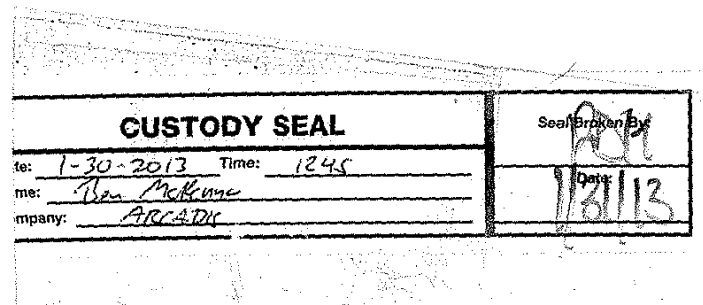
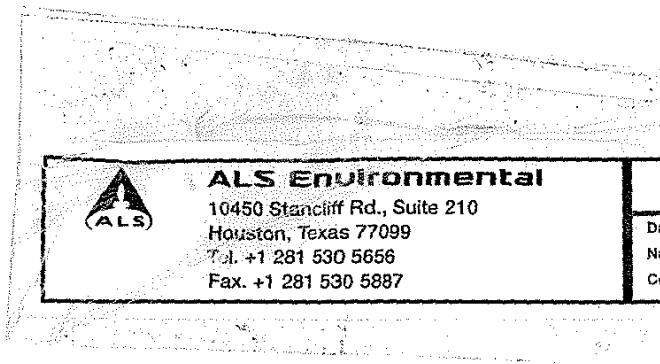
☐ Level III: Std QC + Raw Data

☐ Level IV: SW846 CLP-Like

Other: _____

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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DATA VALIDATION CHECKLIST**NAVAJO REFINING RO Discharge Sampling**

ARCADIS, Inc.
2929 Briarpark Dr.
Suite 300
Houston, TX 77042
Tel. (713) 953-4800

Sample Team:	ARCADIS
Sample Matrix:	Soil
Analytical Laboratory:	ALS Environmental
Laboratory Work Order No.:	1301997
Lab Project Manager:	Sonia West
Analyses:	VOCs, SVOCs, TPH, Metals, Mercury, Cyanide, and Anions
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX001027.0002

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
1301997	MW -115 (1)	1/29/2013	
1301997	MW -115 (3)	1/29/2013	
1301997	MW- 115 (5)	1/29/2013	
1301997	MW -115 (7)	1/29/2013	
1301997	MW- 115 (9)	1/29/2013	
1301997	MW- 115 (10)	1/29/2013	
1301997	MW -115 (11)	1/29/2013	
1301997	MW -115 (13)	1/29/2013	
1301997	MW- 115 (15)	1/29/2013	
1301997	MW -115 (17)	1/29/2013	
1301997	MW -115 (19)	1/29/2013	
1301997	MW -115 (20)	1/29/2013	
1301997	MW -115 (21)	1/29/2013	
1301997	MW- 115 (23)	1/29/2013	
1301997	MW-115 (25)	1/29/2013	
1301997	Trip Blank 011813-29	1/29/2013	

I. VOLATILE COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks	X						X
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X		X		
8. Matrix spike duplicate (MSD) (%R)		X		X		X	
9. MS/MSD (RPD)		X	X		X		
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for Volatiles by Method 8260. Performance was acceptable, with the following exceptions and notes.

- 7-9. Sample MW -115 (1) was used as the MS/MSD. The recovery for toluene was greater than the control limit in the MSD. Since toluene was not detected, qualification is not required.

II. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	YES	NO	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X	X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X	X			X	
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)		X	X		X		
8. MSD (%R)		X	X		X		
9. MS/MSD (RPD)		X	X		X		
10. Lab Duplicate (RPD)		X	X		X		
11. Field Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for metals by Methods 6020 and 7471A. Performance was acceptable, with the following exceptions and notes.

- 3A. Aluminum was detected in the associated method blank. The associated sample results were greater than five times the method blank concentration. No qualification of the sample results was required.
- 7-9. Sample MW -115 (1) was used as the MS/MSD for the mercury. The recoveries and RPD were acceptable.
- 10. Sample MW -115 (1) was used as the laboratory duplicate for mercury. The RPD was acceptable.

III. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Surrogate Recovery		X	X		X		
5. Laboratory control sample (LCS) (%R)		X	X		X		
6. LCSD (% R)	X						X
7. LCS/LCSD (RPD)	X						X
8. Matrix spike (MS) (%R)	X						X
9. MSD (%R)	X						X
10. MS/MSD (RPD)	X						X
11. Field Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for SVOCs by Method 8270. Performance was acceptable, with the following exceptions and notes.

IV. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Surrogate Recovery		X	X		X		
5. Laboratory control sample (LCS) (%R)		X	X		X		
6. LCSD (% R)	X						X
7. LCS/LCSD (RPD)	X						X
8. Matrix spike (MS) (%R)	X						X
9. MSD (%R)	X						X
10. MS/MSD (RPD)	X						X
11. Field Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

V. CYANIDE

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	YES	NO	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X	X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X	X			X	
5. LCSD (% R)		X	X			X	
6. LCS/LCSD (RPD)		X	X			X	
7. Matrix spike (MS) (%R)		X	X		X		
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Lab Duplicate (RPD)		X	X			X	

COMMENTS: The samples were analyzed for cyanide by Method 9014. Performance was acceptable, with the following exceptions and notes.

- Sample MW -115 (15) was used as the MS analysis for the cyanide. The recovery was acceptable.

VI. ANIONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	YES	NO	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X	X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X		X		X	
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Lab Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for chloride, fluoride, nitrate, nitrite, and sulfate by EPA Method 300.0. Performance was acceptable, with the following exceptions and notes.

- 3A. Fluoride was detected in the associated method blank. The associated sample results were greater than five times the method blank concentration except for sample location MW-115 (25). Sample location MW-115 (25) was qualified as not detected for fluoride. See the attached qualification summary for details of the qualification.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit (RL) or at the concentration reported if greater than the RL due to associated blank contamination.

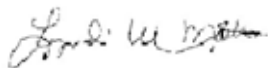
R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
MW-115 (25)	Fluoride	3.55	mg/kg	UB	Blank Contamination

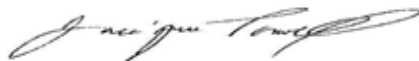
VALIDATION PERFORMED BY: Lyndi Mott

SIGNATURE:



DATE: March 4, 2013

PEER REVIEW:



DATE: March 12, 2013



Appendix C

Groundwater Sampling Logs