GW - 028

RO REJECT WATER FINAL REPORT

February 2014



Mr. John E. Kieling Chief, Hazardous Waste Bureau New Mexico Environmental Department 2905 Rodeo Park Drive East, Building 1 Santa Fe, NM 87505-6306

Mr. Carl Chavez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

July 8, 2014

RE:

Submittal of the Background Groundwater Evaluation Work Plan for the Navajo Refining

Company, Artesia Refinery EPA Facility NMD048918817

Dear Mr. Kieling and Mr. Chavez:

Enclosed is a work plan for performing an evaluation of background groundwater for Navajo Refining Company, LLC's (NRC) Artesia Refinery. The evaluation will be performed in order to determine whether alternative standards may be appropriate for individual constituents of concern that are present in shallow groundwater. NRC respectfully requests an expedited review of the work plan in order to complete the evaluation in a timely manner. In order to meet the compliance deadline of August 22, 2015, well installation and initial sampling are expected to occur in July 2014.

If you have any questions or comments regarding this work plan, please feel free to contact me at 575-746-5487.

Sincerely,

Dan Crawford, P.G.

Environmental Manager

CC:

Robert Combs, NRC

Pamela R. Krueger, ARCADIS





Background Groundwater Evaluation Work Plan NMD048918817 and DP GW-028

July 2014



Pamela R. Krueger

Senior Project Manager, ARCADIS

Background Groundwater Evaluation Work Plan NMD048918817 and DP GW-028

Prepared for:

Navajo Refining Company, LLC for submittal to:

New Mexico Environment Department, Hazardous Waste Bureau and New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division

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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.

Dan Crawford, P.G.

Environmental Manager, Navajo-Refining Company, LLC



Acronyms and Abbreviations

CMI Corrective Measures Implementation

COC Constituent of Concern
DO Dissolved Oxygen
DRO Diesel Range Organics
EP Evaporation Pond

EPA United States Environmental Protection Agency

ft bgs feet below ground surface

FWGMWP Facility Wide Groundwater Monitoring Work Plan

GRO Gasoline Range Organics
HFC HollyFrontier Corporation
MCL Maximum Contaminant Level

mg/L milligrams per liter
NCL North Colony Landfarm

NMAC New Mexico Administrative Code

NMED New Mexico Environment Department

NRC Navajo Refining Company, L.L.C.

OCD Oil Conservation Division
ORP Oxygen-Reduction Potential

PCC Post-Closure Care

PID Photo-ionization Detector

ppm parts per million

QA/QC Quality Assurance/Quality Control

RCRA Resource Conservation and Recovery Act

RFI RCRA Facility Investigation

RO Reverse Osmosis

SVOC Semivolatile Organic Compounds SWMU Solid Waste Management Unit

TDS Total Dissolved Solids

TEL Tetra Ethyl Lead Impoundment

TMD Three Mile Ditch

VOC Volatile Organic Compounds
WQCC Water Quality Control Commission



Navajo Refining – Artesia, New Mexico

Executive Summary

The HollyFrontier Corporation (HFC) owns and operates the Navajo Refining Company, L.L.C. (NRC), which is located in Artesia, New Mexico. HFC is an independent energy company engaged in crude oil refining and wholesale marketing of refined petroleum products.

In October 2003, the Secretary of the New Mexico Environment Department (NMED) issued a Post-Closure Care Permit (PCC Permit) for the Artesia Refinery, which has United States Environmental Protection Agency (EPA) ID Number NMD048918817 (NMED, 2003). The PCC Permit was modified in December 2010 (NMED, 2010). Among other action items, the PCC Permit authorizes and requires NRC (the Permittee) to conduct facility wide groundwater monitoring, with the purpose of evaluating the presence, nature and extent of hazardous and regulated constituents pursuant to Section 20.4.1.500 of the New Mexico Administrative Code (NMAC) and the Water Quality Control Commission (WQCC) standards included in NMAC 20.6.2.

Additionally, the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) issued a renewal to Discharge Permit GW-028 dated August 22, 2012 (OCD, 2012). The Discharge Permit also requires facility wide groundwater monitoring and submittal of an annual report summarizing the groundwater monitoring and abatement conducted throughout each year.

The groundwater data obtained from the facility wide groundwater monitoring program is evaluated using the standards provided in the WQCC regulations or the EPA maximum concentration levels (MCLs). Both the WQCC regulations and EPA guidance allow for alternative standards for constituents of concern (COCs) that are shown to be present at concentrations above the published standard. Although limited data is available from "background" wells associated with the Refinery, a formal background evaluation has not yet been completed.

This work plan outlines procedures that will be performed to complete a formal evaluation of background groundwater concentrations, and to potentially establish alternative standards for select COCs, as appropriate. NRC believes that there are existing wells in the monitoring network that can be used for this purpose and also proposes the installation of two additional monitoring wells to complete the evaluation.



Navajo Refining – Artesia, New Mexico

This work plan follows the general outline suggested for an investigation work plan provided in Appendix E of the PCC Permit, while incorporating suggestions for the evaluation provided by OCD.



Navajo Refining – Artesia, New Mexico

1. Introduction

The HollyFrontier Corporation (HFC) owns and operates the Navajo Refining Company., L.L.C. (NRC), which is located in Artesia, New Mexico. HFC is an independent energy company engaged in crude oil refining and wholesale marketing of refined petroleum products.

In October 2003, the Secretary of the New Mexico Environment Department (NMED) issued a Post-Closure Care Permit (PCC Permit) for the Artesia Refinery, which has United States Environmental Protection Agency (EPA) ID Number NMD048918817 (NMED, 2003). The PCC Permit was modified in December 2010 (NMED, 2010). Among other action items, the PCC Permit authorizes and requires Navajo (the Permittee) to conduct facility wide groundwater monitoring, with the purpose of evaluating the presence, nature and extent of hazardous and regulated constituents pursuant to Section 20.4.1.500 of the New Mexico Administrative Code (NMAC) and the Water Quality Control Commission (WQCC) standards included in 20 NMAC 6.2.

Additionally, the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) issued a renewal to Discharge Permit GW-028 dated August 22, 2012 (OCD, 2012). The Discharge Permit also requires facility wide groundwater monitoring and submittal of an annual report summarizing the groundwater monitoring and abatement conducted throughout each year.

The groundwater data obtained from the facility wide groundwater monitoring program is reviewed and screened using the standards provided in the WQCC regulations or the EPA maximum concentration levels (MCLs). Elevated concentrations of organic and inorganic compounds are present in groundwater associated with the Refinery and the inactive Evaporation Ponds (EPs), as described in the annual groundwater monitoring report (ARCADIS, 2014b) and in the final report summarizing the investigation of the Reverse Osmosis (RO) reject discharge fields (ARCADIS, 2014a), conducted according to the requirements of Section 6.D of Discharge Permit GW-028.

The WQCC regulations allow for alternative standards for constituents of concern (COCs) that are shown to be present at concentrations above the published standard. Although limited data is available from "background" wells associated with the Refinery, a formal background evaluation has not yet been completed. The OCD response letter to the RO reject discharge fields investigation report (OCD, 2014) requested that a background evaluation be performed to assist in determining if elevated concentrations



Navajo Refining – Artesia, New Mexico

of specific COCs in the groundwater beneath the RO reject discharge fields are a result of the discharge activities or are within expected background concentration ranges.

This work plan outlines procedures that will be performed to complete a formal evaluation of background groundwater concentrations, and to potentially establish alternative standards for select COCs, as appropriate. This work plan follows the general outline suggested for an investigation work plan provided in Appendix E of the PCC Permit, while incorporating suggestions for the evaluation provided by OCD.



Navajo Refining – Artesia, New Mexico

2. Facility Background

NRC's active petroleum refinery is 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. There are no plans to close the facility or reduce the size of the operation. Figure 1 depicts the general location of the Refinery and the inactive EPs, while Figure 2 shows the locations of wells included in the facility wide groundwater monitoring program.

In 1989, EPA and NMED required Navajo to identify all historical and current non-hazardous solid waste management units (SWMUs) and investigate those that had the potential to pose a threat to human health or the environment. SWMUs which pose a potential threat must undergo additional investigation (a RCRA Facility Investigation [RFI] and possibly Corrective Measures Implementation [CMI]) to minimize the threat.

Following completion of the Phase I RFI in December, 1990 (Mariah Associates, Inc., 1990), it was agreed by EPA and NMED that additional investigations were required for Three Mile Ditch (TMD) and the EPs located east of the refinery. The second phase of investigation of those areas was conducted from 1991 through 1993, resulting in the RFI Phase II Report finalized in November, 1993 (K.W. Brown Environmental Services, 1993). A final Phase III Investigation Report addressing comments from the EPA and NMED was submitted in January 1996 along with a proposed workplan for removal of waste soils from TMD (K.W. Brown Environmental Services, 1996). In December 1997, a consolidated report was submitted to NMED that summarized the various investigations performed up to that time along with recommendations for corrective actions in the TMD and the EP areas (Foster Wheeler Environmental Corporation, 1997).

At the request of NMED, Navajo submitted a Post-Closure Permit Application in June 1998. The original intent of this application, to address only closure and post-closure activities at the EPs and TMD, was expanded to include a complete RCRA Permit renewal application. The Secretary of the NMED issued a Post-Closure Care Permit (PCC Permit) to NRC, the operator of the Artesia Refinery Facility (EPA ID number NMD 048918817) effective October 5, 2003 (NMED, 2003). The PCC Permit was modified in December 2010 (NMED, 2010). The PCC Permit authorizes and requires the Permittee to monitor the groundwater, maintain all groundwater monitoring wells and comply with applicable regulations of 20.4.1.500 NMAC during the post-closure period. Specific groundwater monitoring requirements are included in the PCC Permit



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for the areas of the tetra-ethyl lead impoundment (TEL), the north colony landfarm (NCL), the EP area, and other areas identified through implementation of the investigations of various SWMUs and AOCs.

The OCD issued a renewal of Discharge Permit GW-028 dated August 22, 2012 (OCD, 2012). The Discharge Permit authorizes and requires the Permittee to maintain phase-separated hydrocarbon recovery systems and to conduct semiannual groundwater monitoring. The Discharge Permit requires submittal of an annual report summarizing the results of the monitoring and recovery programs. Furthermore, the Discharge Permit required investigation of the RO reject discharge fields to evaluate whether discharge to those fields has caused any impact to groundwater. The investigation of the RO reject discharge fields was conducted throughout 2013 and the final report of the investigation was submitted to OCD in February 2014 (ARCADIS, 2014a).

Facility wide groundwater monitoring is conducted according to the Facility Wide Groundwater Monitoring Work Plan (FWGMWP), which is updated annually as required by the PCC Permit and the Discharge Permit GW-028. The most recent version of the FWGMWP was submitted in June 2013 (ARCADIS, 2013) and was approved by NMED in January 2014 (NMED, 2014). The most recent annual groundwater report, which meets the requirements of the PCC Permit and the Discharge Permit, was submitted to NMED and OCD on March 4, 2014 (ARCADIS, 2014b).



Navajo Refining – Artesia, New Mexico

3. Site Conditions

The site conditions presented in this section are based on information obtained throughout various investigations performed to meet the requirements of both the PCC Permit and the Discharge Permit.

3.1 Surface Conditions

3.1.1 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 the west, southwest and northwest of the Refinery. The active Refinery and much of the surrounding property owned by NRC is fenced and guarded with controlled entry points. Figure 3 depicts the approximate locations of property boundaries and the approximate locations of previously identified underground utility pipelines in the areas that have been investigated.

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. Farther south of Highway 82 and to the southeast, the area is used for agricultural purposes. Most of the property for one-half mile north of the Refinery to East Richey Avenue and east of the Refinery toward Bolton Road is owned by Navajo. The majority of the area east and northeast to Haldeman Road is a cultivated pecan orchard or used for other agricultural and ranching purposes.

The area east of Haldeman Road to the EPs and the Pecos River is used for oil production, agricultural and ranching purposes. The EPs are located in a bend of the Pecos River, approximately three miles east of the Refinery. The EPs are surrounded by berms to prevent floodwater runon into the ponds and to prevent runoff from the ponds when they were in use. There is a production well located west of the EPs and another production well located south of the EPs. The land between the EPs and Highway 82 is used for ranching purposes, and is prone to flooding.

3.1.2 Topography

The Refinery 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



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level. The plain on which Artesia is located slopes eastward at about 20 feet per mile (0.378 percent).

3.1.3 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. The major drainage in the immediate area of the site is Eagle Creek (or Eagle Draw), an ephemeral watercourse normally flowing only following rain events, that runs southwest to northeast through the northern process area of the Refinery and then eastward to the Pecos River, as shown in Figure 3. Upstream of the Refinery, Eagle Draw functions as a major storm-water conveyance for the community. It also drains outlying areas west of the city and is periodically scoured by intense rain events.

Natural surface drainage at the Refinery is to the north and east. Storm-water within the process areas is captured and routed to the Refinery wastewater treatment system. Storm-water from non-process areas is contained within the Refinery property inside storm-water berms and routed to storm-water retention basins. Storm-water from within the Refinery boundary is not allowed to discharge to Eagle Draw.

The elevation of Eagle Draw is 3,360 feet above mean sea level at its entrance to the Refinery and decreases to approximately 3,305 feet above mean sea level at its confluence with the Pecos River. Eagle Draw was 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 was cemented to provide further protection during flood events. A check dam was also constructed west of Artesia along Eagle Draw. Federal floodplain maps indicate that most of the city and the refinery have been effectively removed from the 100 year floodplain.

From the 1930's to 1987, a three-mile-long unlined earthen ditch was used to convey process wastewater from the Refinery to the EPs (Figure 1), located three miles east of the Refinery. TMD was originally constructed in an easement located on the south side of Eagle Creek in the 1930's to convey process wastewater from the refinery to the EPs. Soil excavated to construct the ditch was used to construct berms on either side of the ditch to prevent inflow of surface water. TMD was approximately 3 to 4 feet wide and 1 to 2 feet deep. The bottom of the ditch was typically between 4 to 10 feet above the bed of Eagle Creek. In 1987, an underground pipeline was installed to replace TMD, and the ditch was filled in and graded to match the surrounding area.



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3.2 Subsurface Conditions

3.2.1 Soils

Soils at the Refinery are primarily of the Pima and Karro series, which have similar properties. Pima soils are deep, well drained, dark colored, calcareous soils, which occur on floodplains of narrow drainageways (e.g. – Eagle Creek). The Karro soils are also highly calcareous.

Previous subsurface investigations have confirmed the presence of interbedded clays and silts with channels of sand and/or gravel in the shallow subsurface.

3.2.2 Regional Geology

The Refinery is located on the northwest shelf of the Permian Basin. In this region, the deposits are comprised of approximately 250 to 300 feet of Quaternary alluvium uncomformably overlying approximately 2,000 feet of Permian clastic and carbonate rocks. The Quaternary alluvium in the Refinery area is dominantly comprised of clays, silts, sands and gravels deposited in the Pecos River Valley. These "valley fill" deposits extend in a north-south belt approximately 20 miles wide, generally west of the Pecos River. The thickness of the valley fill varies from a thin veneer on the western margins of the Pecos River valley to a maximum of 300 feet in depressions, one of which is located beneath the Refinery. Lithologic logs of wells completed in the Refinery area confirm the presence unconsolidated alluvial deposits from depths of about 20 feet to over 250 feet.

3.2.3 Regional Groundwater

The principal aquifers in the Artesia area are within the San Andres Formation and the valley fill alluvium. A near-surface water-bearing zone is present in the vicinity of the Refinery process area. It is apparently limited in vertical extent, and shallow with respect to the surface, but exhibits artesian properties at some monitoring wells. The deeper carbonate aquifer is referred to as the deep artesian aquifer, whereas the water-bearing zones of the shallower valley fill alluvium are referred to as the shallow saturated zone and the valley fill zone.



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3.2.3.1 Shallow Saturated Zone

Lithologic logs from monitor wells installed within and near the Refinery 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 below ground surface. 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.

Figure 2 depicts the monitoring wells installed in the area of the Refinery and the EPs east of the Refinery. Isopleths of the potentiometric surface, as measured in September 2013 in the shallow saturated zone, are shown in Figure 4. It should be noted that additional monitoring wells installed in early 2014, while shown in Figure 4, were not included in the potentiometric surface survey and are not included in the calculation of the potentiometric surface contours. The general direction of flow in this near-surface saturated zone is to the east toward the Pecos River, then southward subparallel to the river.

The water in the shallow saturated zone is highly variable in quality, volume, areal extent and saturated thickness. Concentrations of total dissolved solids (TDS) exceeding 2,000 milligrams per liter (mg/L) and sulfate exceeding 500 mg/L have been recorded on the northwest side of the Refinery near the NCL. In the area of the EPs, concentrations of TDS range from approximately 1,800 mg/L to over 34,000 mg/L and concentrations of sulfate range from approximately 900 mg/L to 8,700 mg/L. The most probable sources of the water present in the shallow saturated zone are thought to recharge from Eagle Creek and lawn watering runoff from the grass-covered urban park that occupies the Eagle Creek Channel immediately upstream of the Refinery. The primary source of water present in the shallow saturated zone in the area of the EPs is believed to recharge from the Pecos River, which has been shown to be a losing stream both upstream and downstream of the EPs (Daniel B. Stephens, 1995).

As reported in the 2013 Annual Groundwater Report (ARCADIS, 2014b), the shallow groundwater beneath the Refinery and beneath the EPs is impacted with hydrocarbon constituents. Concentrations of the organic constituents in the shallow groundwater exhibit a stable or declining trend in most locations (ARCADIS, 2014b).

3.2.3.2 Valley Fill Zone

Irrigation and water production wells completed in the valley fill zone typically are screened across one to five water-producing zones. Thicknesses of up to 170 feet



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have been reported for water-production zones, but most are less than 20 feet. Producing zones are principally sand and gravel separated by less permeable lenses of silt and clay. Wells in the valley fill range from 40 to 60 feet below ground level and the formation yields water containing 500 to 1,500 parts per million (ppm) TDS. The average transmissivity of the alluvium has been estimated at 100,000 to 150,000 gallons per day per square foot.

Approximately 19 monitoring wells have been installed in the valley fill zone in the vicinity of the refinery and the evaporation ponds. Isopleths of the potentiometric surface, as measured in September 2013 in the valley fill zone, are shown in Figure 5. The well installed in 2014 within the valley fill zone, MW-126B, is shown in Figure 5 for reference purposes only and was not used in constructing the isopleths.



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4. Scope of Services

This section of the work plan describes regulatory guidance regarding establishment of background measurements in the RCRA corrective action program and the activities that will be completed to establish an appropriate background data set to potentially develop alternative screening values for inorganic COCs.

4.1 Regulatory Guidance on Establishing Background Data Sets

The measurement of background concentrations of COCs in groundwater, for the purpose of detecting, evaluating, and responding to releases from regulated units, has been a key concept of the RCRA Subtitle C program since its inception. According to the EPA:

The most important quality of background is that it reflects the historical conditions unaffected by the activities it is designed to be compared to. These conditions could range from an uncontaminated aquifer to an historically contaminated site baseline unaffected by recent RCRA-actionable contaminant releases. Representative background data will therefore have numerical characteristics closely matching those arising from the site-specific aquifer being evaluated (EPA, 2009).

The Unified Guidance further observes that background data analysis is important if it is suspected that naturally occurring levels of a constituent are higher than the comparison standard being used in the particular regulatory evaluation (EPA, 2009).

NMAC 20.6.2.7.E provides that, for groundwater abatement plans only, "background" is defined as "...the amount of ground-water contaminants naturally occurring from undisturbed geologic sources *or* water contaminants which...[occur] from a source other than the responsible person's facility..." (emphasis added).

This work plan is proposed to implement groundwater abatement under authority of a New Mexico groundwater discharge permit GW-028 as provided for in NMAC 20.6.2.3000 through 20.6.2.3114 (outlining equivalency for implementation of groundwater abatement via a permit), rather than the groundwater abatement plan provisions of NMAC 20.6.2.4000 through 20.6.2.4115 (see also NMAC 20.6.2.4105A(6) – exemptions from abatement plan requirements for abatement of water pollution addressed under the authority of a discharge plan). Although the definition of "background" in NMAC may not be strictly applicable to Navajo's



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implementation of GW-028, the concept is relevant to and consistent with the federal guidance presented above.

In addition to the implementation of GW-028, the background data set established as a result of this proposed work plan may be used to request alternate screening standards for specific inorganic COCs for groundwater evaluation under the PCC Permit.

The regulatory documents and definitions discussed above have guided selection of the wells proposed for use in evaluation of the background concentrations of COCs, as described below.

4.2 Proposed Background Well Locations

The background groundwater evaluation will be performed utilizing existing monitoring wells, to the extent possible. The monitoring wells proposed for inclusion in the background evaluation were selected based on geographic location, historic analytical results, and historic land usage.

4.2.1 Existing Monitoring Wells

Existing monitoring wells that will be included in the background groundwater evaluation include the following:

Refinery Area:

- MW-55 located east of Tank 835, west of the southwestern corner of the north RO reject discharge field and the northwestern corner of the south RO reject discharge field.
- NP-5 located northeast of the north RO reject discharge field.
- UG-1 located west of Highway 285, near the intersection of James Avenue and North 4th Street.
- UG-2 located west of Highway 285, on North Roselawn Avenue, between West Texas Avenue and West Chisum Avenue
- UG-3R located west of Highway 285, on North 7th Street near West Bates Avenue.



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Evaporation Ponds:

- MW-12 located north of the Pecos River, across the river from Pond 6
- MW-13 located north of the Pecos River, across the river from Pond 1
- MW-17 located north of Eagle Creek, northeast of the City of Artesia wastewater treatment plant, and northwest of the EPs
- MW-25 located northwest of the EPs and south of the Pecos River

All of the existing monitoring wells described above are located either upgradient or crossgradient from the areas of interest. Historical groundwater sample analytical results for these wells was reviewed to determine if the wells would be appropriate for use in determining background concentrations. No detectable organic COCs have been detected in any of the samples collected from wells MW-17, MW-25, UG-1, UG-2, and UG-3R. No detectable concentrations of organic COCs have been present in samples collected from NP-5 since April 2008 and no detectable concentrations of organic COCs have been present in samples collected from MW-55 since September 2009. No organic COCs were detected in the samples collected from MW-12 or MW-13 during the investigation conducted in 1992 and no samples have been collected from these two wells since that time.

Based on the locations of these wells with respect to the groundwater gradient and the lack of identifiable impacts from Refinery operations or operation of the EPs, the wells are considered appropriate for use in establishing naturally occurring or background concentrations.

4.2.2 New Monitoring Wells

Two new monitoring wells are proposed to be installed to the north and northwest of the Refinery to provide additional background data for the RO reject discharge fields area, as follows:

 One monitoring well is recommended to be installed in the northwest corner of property owned by Navajo that is north of the north RO reject discharge field. The well will be installed as close to the northwest corner of the property as possible.
 The exact location of the well will be dependent on utility clearance. This well will be located cross-gradient from the RO reject discharge fields.



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One monitoring well is recommended to be installed within a park owned by the City of Artesia, located west of Highway 285 and north of Eagle Creek. The park is bounded by West Logan Avenue on the north, North 4th Street on the east, Cannon Avenue on the south and North 6th Street on the west. This park is located west and upgradient of the RO reject discharge fields. The well will only be installed if the City of Artesia will grant access for installation in a location clear of utilities.

The proposed locations are shown in Figure 6. Installation methods for the two proposed new monitoring wells are described in Section 5 of this work plan.

4.3 Groundwater Sampling

The background groundwater evaluation will include the following sampling activities:

- Monthly gauging of the new and existing monitoring wells described above for a period of 12 months
- Monthly collection of analytical samples from new and existing monitoring wells described above for a period of 12 months
- Collection and disposal of purge water generated during sample collection and decontamination water generated during gauging and sample collection

Specific sample collection and analysis procedures are provided in Section 5 of this work plan.

4.4 Data Evaluation

Analytical data from the monthly groundwater sampling events will be examined to evaluate the groundwater quality within each well and to determine similarity of the groundwater quality from each background area. Statistical analyses will be performed, as appropriate, according to the Unified Guidance (EPA, 2009). Specifically, each COC will be evaluated to determine whether the data represents a single statistical population, and if not, to establish appropriate groupings of data for that COC. Statistical analyses will be performed for each COC population to determine basic statistical parameters, which may then be used to establish an estimate of the concentrations expected to be present in the background groundwater. Actual



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statistical methods and evaluations will be described in detail in the final background groundwater evaluation report.



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5. Investigation Methods

This section of the work plan describes the methodology that will be implemented for installation of the proposed new monitoring wells and groundwater sample collection. This section also provides a description of the laboratory analyses that will be performed.

5.1 Well Installation

The monitoring wells will be installed by a State of New Mexico licensed well driller, using a truck-mounted hollow-stem auger rig. A qualified geologist will be present during the drilling of each well to continuously log samples, monitor drilling operations, record depth to groundwater and other groundwater data, prepare borehole logs and well construction diagrams and record well installation procedures.

5.1.1 Subsurface Clearance

Prior to drilling, a well installation permit will be obtained by the licensed driller from the Office of the State Engineer. Each proposed location will be inspected and cleared as necessary to allow access by the drill rig and crew. Public utilities and the Refinery safety coordinator will be advised of the proposed drilling locations to obtain clearance prior to actual commencement of drilling.

5.1.2 Soil Sample Collection

Subsurface soil samples will be collected continuously ahead of the auger flight using either a Shelby tube or split spoon sampler, depending on the type of soil encountered. Soil samples will be field screened using a photo-ionization detector (PID) and through visual observation. The PID will be calibrated to measure volatile organics typically associated with gasoline and diesel range hydrocarbons. PID readings, visual observations and odor will be noted in the field boring log and will be included on the boring log/well completion diagram.

Discrete soil samples will be selected from each boring for laboratory analysis based on the following guidelines:

 Surface soil: A shallow soil sample will be collected from the near surface soils, defined as the interval from the surface to 1 foot below ground surface (ft bgs).



Navajo Refining – Artesia, New Mexico

- 1 ft bgs to groundwater: At least one sample will be collected in the interval between 1 ft bgs and the depth at which saturated soil is encountered, as follows:
 - One sample will be collected from the interval exhibiting the highest potential contamination based on field screening by PID, visual observation or odor; and
 - One sample will be collected from 2 to 4 feet below the deepest positive PID reading or other indication of contamination. If indications of contamination extend to groundwater, then only the interval with the highest potential contamination will be sampled.

OR

- If no PID reading above background or other indication of contamination is observed between 1 ft bgs and the depth at which saturated soil is encountered, one sample will be obtained from the 3 to 5 ft bgs interval and one sample will be obtained from the 8 to 10 ft bgs interval.
- Capillary zone: A sample will be collected from immediately above the top of the saturated zone if the saturated zone can be clearly identified.

5.1.3 Soil Sample Analyses

Soil samples chosen to be submitted for laboratory analyses from the boring will be placed into appropriate containers (2 ounce or 4 ounce glass jars), labeled and then placed in a cooler with ice. Soil samples will be analyzed for the following COCs:

- Gasoline Range Organics (GRO) by Method 8015 Modified
- Diesel Range Organics (DRO) by Method 8015 Modified
- Volatile organic compounds (VOCs) by Method 8260, if GRO is above the laboratory detection limit
- Semivolatile organic compounds (SVOCs) by Method 8270, if DRO is detected at greater than 1,000 mg/kg



Navajo Refining – Artesia, New Mexico

- Metals (aluminum, arsenic, barium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, uranium, vanadium, and zinc) by Methods 6020 and 7470
- Anions (chloride, fluoride, sulfate, nitrate/nitrite) by Method 300

5.1.4 Drilling Equipment Decontamination

Drilling equipment will be decontaminated using a pressure-washer and/or steam cleaner. All non-disposable sampling equipment will be decontaminated by washing with a non-phosphate detergent, such as AlconoxTM, and water, followed by rinsing with distilled water. All decontamination liquids will be collected and disposed of in the Refinery process wastewater system, upstream of the oil/water separator.

5.1.5 Well Completion

Each monitoring well will be completed using new, pre-cleaned well materials including threaded 2-inch poly-vinyl chlorinated (PVC) well screens and risers. Figure 7 illustrates the well completion details.

The field geologist will record measurements of various well dimensions, including distance from the top of the well casing to the:

- Bottom of the well
- Top and bottom of the screened interval
- Top of the sand pack
- Top of the bentonite seal

Boring / well completion logs will be prepared in accordance with Appendix C of the PCC Permit and will include soil lithology, field screening results, and depth to water. Monitoring well construction diagrams will include construction details as well as the observed depth to water during drilling and following well completion and development. Copies of the logs will be included in the final background groundwater evaluation report.



Navajo Refining – Artesia, New Mexico

5.1.6 Well Survey

Elevations and locations of the additional wells, if installed, will be measured by a registered surveyor at the completion of the installation. The elevation of the ground surface and top of well casing will be measured to within 0.01 ft msl in relation to a previously established benchmark. The location of each well will be measured by a registered surveyor in relation to the known benchmark.

5.1.7 Well Development

All wells installed as part of this investigation will be developed through bailing or pumping groundwater to remove fine grained-materials accumulated in the well casing until the bottom of the well casing can be reached. Conductivity, pH and temperature will be monitored throughout the development process. The development process will be considered complete after the parameters stabilize (i.e. less than 10% variability between readings) and at least three well casing volumes are removed.

All fluids produced during development will be collected and disposed of in the Refinery wastewater treatment system, upstream of the separator.

5.2 Groundwater Sample Collection

Specific procedures that will be used to complete the activities are provided in the following subsections. Figure 8 depicts the wells that will be included in the background groundwater evaluation.

5.2.1 Well Gauging

At the beginning of each sampling event, all of the background monitoring wells will be gauged to record the depth to water and the total depth of the well. The gauging will be performed using a water level meter attached to a measuring tape capable of recording measurements to the nearest 0.01 foot. All readings will be made in relation to the marked survey datum at the top of casing of each well. All survey measurements were made at the northern edge of each well casing. In the event that the survey datum mark is not present, the measurements will be made on the northern side at the top of the well casing. Gauging measurements will be recorded on a field gauging form or entered into an electronic data gathering tool.



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5.2.2 Well Purging

Each monitoring well will be purged by removing groundwater prior to sampling in order to ensure that formation water is being sampled. Purging will be accomplished with the use of a peristaltic or submersible electric sampling pump, applying low-flow/low-stress purging and sampling procedures.

Parameters that will be monitored during purging include, at a minimum, groundwater pH, specific conductance, temperature, dissolved oxygen (DO) concentrations, and oxidation-reduction potential (ORP). These measurements will be made using appropriate equipment, such as a multiparameter water quality monitoring meter such as a YSI 600XL or similar device, and a flow-through cell. The readings and the volume of water purged between intervals will be obtained at routine intervals during the purging process and recorded on the field log or in an electronic data gathering tool.

Purging will be considered complete when four of the five purge parameters have stabilized. The specified stabilization criteria for pH, temperature and DO are plus or minus 0.2 units (standard pH units for pH, degrees Celsius for temperature, and milligrams per liter for DO), specific conductance is plus or minus 0.02 units (Siemens per meter or milliSiemens per centimeter) and ORP is plus or minus 20 units (millivolts). The units used for measurement of purge parameters will be recorded.

If a well should purge dry, then it will be allowed to recover. When the water level has returned to a minimum of 75 percent of the level measured at the beginning of the sampling event, a sample will be collected for analysis.

The equipment used for the field measurements (such as a YSI multiparameter water quality meter or similar device) will be calibrated at least once during each day of the sampling event. Calibration will be performed according to the equipment manufacturer's directions. Calibration data will be recorded in the daily field notes.

Purged groundwater will be collected and disposed of at the Refinery in the process wastewater system, upstream of the oil/water separator.

5.2.3 Groundwater Sample Collection and Handling

Samples will be collected following purging and will consist of pumping groundwater directly into the laboratory provided sample containers. Dedicated tubing will be used



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for each well to prevent the potential for cross-contamination. Unfiltered samples will be collected for organic and total metals analyses. A dedicated, disposable 0.45 micron filter will then be attached to the tubing and used to collect filtered samples for analysis of dissolved metals, as appropriate.

Containers will be labeled and placed into appropriate containers (coolers) with ice for shipment to the analytical laboratory. Each label will clearly identify the sample identifier, the date and time of collection, the analytical method to be performed, and the sampler's initials. Separate sample identifications will be used to indicate filtered samples for analysis of dissolved metals.

Shipping containers (coolers) will be packed with ice or similar cooling materials to maintain appropriate sample temperatures. Adequate padding will be provided to prevent breakage or puncture of sample containers during shipment. The containers will be shipped via express courier to the laboratory for analyses. Chain-of-custody forms will be shipped inside each container to properly track the samples in each container. A chain-of-custody seal will be placed on each shipping container and inspected upon arrival at the laboratory to ensure the integrity of the shipped samples.

5.2.4 Groundwater Analytical Methods

The samples collected for the background groundwater evaluation will be analyzed for WQCC parameters, listed in 20 NMAC 6.2.3103, and other parameters included in the FWGMWP, as follows:

- GRO by Method 8015 Modified
- DRO by Method 8015 Modified
- VOCs by Method 8260;
- SVOCs by Method 8270
- Dissolved metals (aluminum, arsenic, barium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, uranium, vanadium, and zinc) by Method 6020
- Total mercury by Method 7471



Navajo Refining – Artesia, New Mexico

- Cyanide by Method 9014
- Anions (chloride, fluoride, sulfate, nitrate/nitrite) by Method 300
- Radium-226 and Radium-228 by Method 903.1
- Total dissolved solids by Method 2540C

Many of the parameters for which a WQCC standard has been established are not expected to be present in the background groundwater. Therefore, the analytical results from the first three monthly samples will be reviewed to evaluate whether it is necessary to continue analyzing all of the parameters in the remaining sampling events. For instance, if the analytical results for a particular COC, such as cyanide, do not include any reportable concentrations above laboratory detection limits, and the detection limits are below the WQCC standards, then it would be determined that the background groundwater does not contain that COC and it would not be necessary to continue analyzing the background groundwater samples for that particular COC.

A letter report listing of all COCs that meet the criteria for removal from the evaluation will be submitted following completion of the third monthly sampling event and prior to the subsequent monthly sampling event.

5.2.5 Groundwater Equipment Decontamination

All reusable groundwater sampling and gauging equipment will be decontaminated prior to coming in contact with the sample media to minimize the potential for cross-contamination of samples. This equipment includes all downhole well gauging devices, submersible pumps, water quality parameter meters and flow-through cell. The equipment will be washed with a brush in a bath of soap and water then rinsed twice with distilled water. The soap and water bath will consist of clean water and a non-phosphate detergent such as LiquinoxTM or AlconoxTM or similar.

5.3 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) samples will be collected to monitor the validity of the sample collection procedures, both during the well installation and the monthly groundwater sampling events. The following samples will be collected for QA/QC purposes:



Navajo Refining – Artesia, New Mexico

- Field duplicates will be collected at a rate of 10 percent, or 1 field duplicate for every 10 normal samples. Field duplicates will be analyzed for the same COCs as the parent sample.
- Equipment blanks will be collected from non-dedicated sampling apparatus at a frequency of 5 percent, with a minimum of 1 equipment blank per day. Equipment blank samples will be analyzed for the same COCs as the sample associated with the equipment blank (sample collected immediately prior to the equipment blank). When dedicated sampling materials are used, such as dedicated tubing and a peristaltic pump, no equipment blank samples will be collected.
- Trip blanks will accompany each shipping container (cooler) that contains samples to be analyzed for VOCs.

Laboratory QA/QC samples will be performed according to the EPA test methodologies specified for each method run on a field sample. The laboratory QA/QC samples will include reagent or method blanks, surrogates, matrix spike/matrix spike duplicates, blank spike/blank spike duplicates and/or laboratory duplicates, as appropriate for each method. The laboratory QA/QC samples will be run at the frequency specified by each method.

5.4 Investigation Derived Waste

All investigation derived waste will be contained and disposed of properly. Specifically, soil cuttings will be placed into containers and characterized to determine the appropriate disposal method. All other solid waste, including gloves and general trash, will be collected and disposed of in the Refinery trash.

Decontamination and purge fluids will be contained and placed in a 55 gallon drum or similar container for later disposal in the plant wastewater treatment system, upstream of the oil/water separator. Records of the volume of liquid wastes disposed of at the Refinery will be maintained and included in the final background groundwater evaluation report.

5.5 Data Validation

Laboratory reports will be validated for a minimum of ten percent of the analytical data. The data verification will be performed at a Level II and will include review of data package completeness, laboratory control samples and method blanks, matrix spike



Navajo Refining – Artesia, New Mexico

precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory validation reports will be included in the final background groundwater evaluation report.



Navajo Refining – Artesia, New Mexico

6. Monitoring and Sampling Program

The background groundwater evaluation will include twelve monthly monitoring events, as described in Sections 4 and 5 of this work plan. At this time, it is not anticipated that additional monitoring of the background monitoring wells will be required. However, a recommendation for discontinuing the monitoring or for incorporation in the site-wide groundwater monitoring program will be made in the final background groundwater evaluation report.



Navajo Refining – Artesia, New Mexico

7. Schedule

Immediately upon receipt of approval of this work plan, negotiations with the City of Artesia for access to install the proposed monitoring well in Guadalupe Park will commence. The amount of time required to complete the negotiations cannot be estimated. NRC expects to install the new wells in July to begin sampling and data collection at that time.

Installation of the two proposed monitoring wells, following completion of access negotiations, is anticipated to require approximately one week. Monthly sampling will begin immediately following completion of the well installation.

Preliminary data validation and evaluation will occur following each monthly sampling event. The final statistical evaluation of the full data set is anticipated to require a minimum of one month. A final background groundwater evaluation report will be prepared and submitted within 14 months of well installation.



Navajo Refining – Artesia, New Mexico

8. References

- ARCADIS, 2013, 2013 Facility Wide Groundwater Monitoring Workplan, June 2013.
- ARCADIS, 2014a, Reverse Osmosis Reject Water Discharge Fields Investigation Final Report, February 2014.
- ARCADIS, 2014b, 2013 Annual Groundwater Report, March 2014.
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- K.W. Brown Environmental Services, 1993. RFI Three-Mile Ditch and Evaporation Ponds Phase II Report (Revised, Prepared for Navajo Refining Company, Artesia, New Mexico, November 1993. K.W. Brown Environmental Services, 1996
- Mariah Associates, Inc., 1990. RCRA Facility Investigation Three-Mile Ditch and Evaporation Ponds, Phase I (Revised), Navajo Refinery, Artesia, New Mexico. Prepared for U.S. EPA, Region VI, Dallas, Texas, two volumes, December 1990.
- NMED, 2003. Navajo Refining Company Artesia Refinery Post-Closure Care Permit, September 2003.
- NMED, 2010. Navajo Refining Company Artesia Refinery Post-Closure Care Permit, December 2010.
- NMED, 2014. Approval with Modifications, 2013 Facility Wide Groundwater Monitoring Workplan, January 29, 2014.



Background Groundwater Evaluation Work Plan

Navajo Refining – Artesia, New Mexico

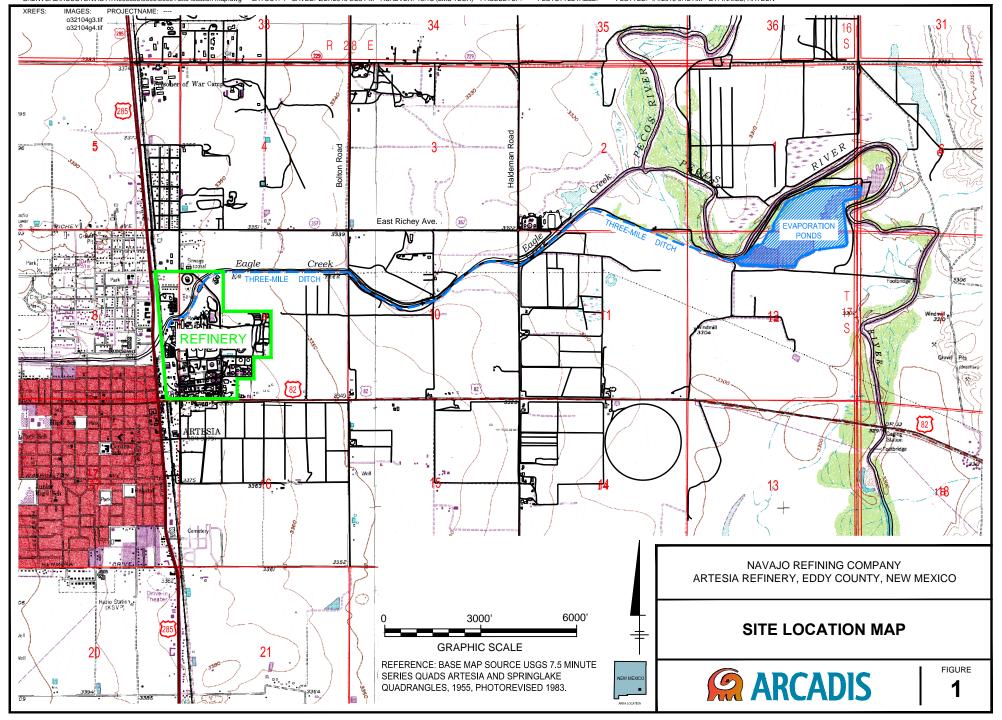
OCD, 2012. Discharge Permit GW-028, August 22, 2012.

OCD, 2014. Artesia Refinery (GW-028) "Reverse Osmosis Reject Water discharge Fields Investigation Final Report", February 2014, Eddy County, New Mexico. April 9, 2014.

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Figures





RECOVERY WELL

■ IRRIGATION WELL

ABANDONED WELL

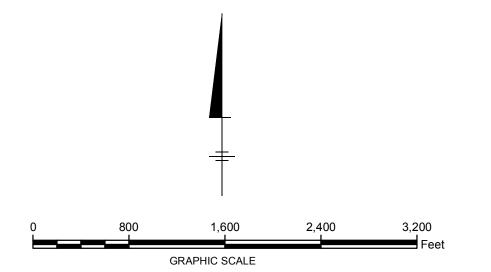
---- RAIL LINE

BERMS

---- WATER WAYS

---- US HIGHWAY

TEL = TETRA ETHYL LEAD IMPOUNDMENT





BACKGROUND GROUNDWATER EVALUATION WORK PLAN

WELL LOCATIONS



FIGURE

GRAPHIC SCALE

THREE MILE DITCH

- WATER WAYS

US HIGHWAY

RAIL LINE

—— ABANDONED RECOVERY PIPING

WASTE WATER

—— POTW

----- ELECTRIC & WATER

REFINERY BOUNDARY AND AREA FEATURES



FIGURE

♦ MONITORING WELL

RECOVERY WELL

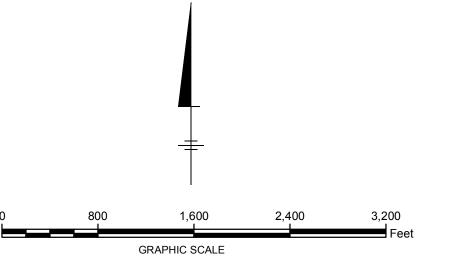
SHALLOW SATURATED ZONE POTENTIOMETRIC SURFACE CONTOURS (HASHED WHERE DEPRESSED)

POTENTIOMETRIC SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL.

* = NOT USED TO CONSTRUCT CONTOURS

** = DRY OR INACESSIBLE WELL

WELLS INSTALLED IN 2014 ARE SHOWN FOR REFERENCE PURPOSES ONLY.





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





LEGEND:

◆ MONITORING WELL

RECOVERY WELL

VALLEY FILL ZONE POTENTIOMETRIC SURFACE CONTOURS

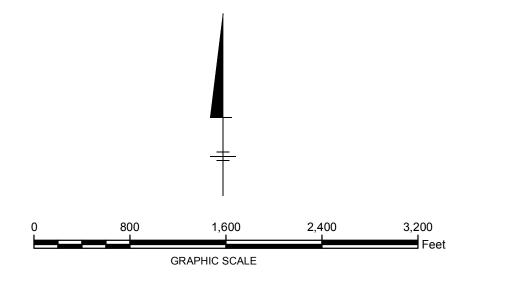
NOTE:

POTENTIOMETRIC SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL.

** = DRY OR INACESSIBLE WELL

WELLS INSTALLED IN 2014 ARE SHOWN FOR REFERENCE PURPOSES ONLY.

DEFINITIONS: NCL = NORTH COLONY LANDFARM TEL = TETRA ETHYL LEAD IMPOUNDMENT





NAVAJO REFINING COMPANY ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

BACKGROUND GROUNDWATER EVALUATION WORK PLAN

VALLEY FILL ZONE POTENTIOMETRIC SURFACE MAP 2013 SECOND SEMIANNUAL EVENT (OCT)



FIGURI

5

GRAPHIC SCALE

PROPOSED NEW WELL LOCATIONS

ARCADIS

FIGURE

6

Document Path: Z\GISPROJECTS\ ENV\NavajoRefining\ArtesiaRefinery\Background GW

ABANDONED WELL

PROPOSED WELL

NAVAJO PROPERTY BOUNDARY

RAIL LINE

WATER WAYS

saturated interval or if heaving sands are encountered. Total Depth = X + Y + 2 to X + Y + 5

in = inches

Boring will be terminated 2 to 5 feet below shallow ft = feet

NAVAJO REFINING COMPANY ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

BACKGROUND GROUNDWATER EVALUATION WORK PLAN

WELL CONSTRUCTION DETAILS



FIGURE

BERMS RECOVERY WELL

----- WATER WAYS

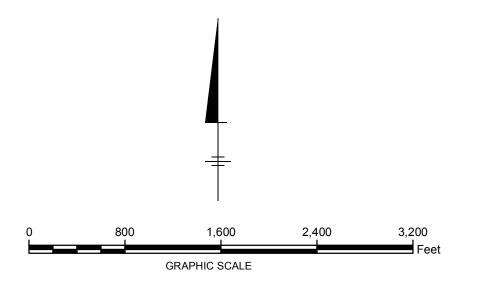
US HIGHWAY

■ IRRIGATION WELL

ABANDONED WELL

PROPOSED WELL

BACKGROUND WELL TO
BE SAMPLED MONTHLY
FOR 12 MONTHS



New Mexico

BACKGROUND SAMPLING PLAN



FIGURE

State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez

Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D. Deputy Cabinet Secretary Jami Bailey, Division Director Oil Conservation Division



MAY 8, 2014

Mr. Dan Crawford Environmental Manager Navajo Refining Company, L.L.C. 501 East Main Artesia, New Mexico 88210

RE: ARCADIS Letter: "Response to Requests for Evaluation of Background Groundwater Concentrations" dated May 7, 2014

Mr. Crawford,

The New Mexico Oil Conservation Division (OCD) has completed its review of the above subject letter from Pamela Krueger of Arcadis on behalf of Navajo Refining Company, L.L.C. (Navajo).

Pollutants have been identified which exceed the standards for ground water in the State of New Mexico. Based on events to date, Navajo is required under their OCD Discharge Permit to determine the "background" (20.6.2.7(E) NMAC) ground water quality for the RO Reject Farm Fields. Navajo has the option of determining background for other locations of environmental interest, i.e., from "UG Wells" and other proposed monitor wells located within, upgradient, and crossgradient of the refinery, and more recently near the Pecos River.

The location of existing and proposed monitor wells for the determination of background concentration(s) is based on environmental ground water monitoring, vastness, and variation in hydrogeologic settings within the refinery property. The OCD has identified the following locations where background determinations are recommended: 1) Refinery, 2) North & South RO Reject Farm Fields (Required by OCD Permit), and 3) The Pecos River.

The OCD is in general agreement with the concept of the environmental background evaluation work plan(s) (plan) with submittal date(s) proposed by the operator in the letter; however, it is recommended that one plan be submitted that will address background water quality for the refinery, the RO Reject Farm Fields, and the Pecos River within 45 days of receipt of this letter.

Be aware the OCD is concerned about Arcadis' estimated period for the background study (i.e., 12-15 months) as stated in their response. The period may take half the time if a high frequency of sampling is implemented over a given time.

Please contact the New Mexico Environment Department-Hazardous Waste Bureau to discuss any Resource Conservation and Recovery Act considerations for the plan.

May 8, 2014 Page 2

Please contact Mr. Carl Chávez of my staff at (505) 476-3490 if you have questions. Thank you.

Sincerely,

Scott Dawson Deputy Director

SD/cjc

cc: Mrs. Leona Tsinnajinnie, NMED- Hazardous Waste Bureau

Ms. Pamela R. Krueger, Arcadis OCD Artesia District Office

Chavez, Carl J, EMNRD

From: Krueger, Pamela <pam.krueger@arcadis-us.com>

Sent: Wednesday, May 07, 2014 1:47 PM

To: Chavez, Carl J, EMNRD; Dawson, Scott, EMNRD

Cc: Tsinnajinnie, Leona, NMENV; Robert Combs; dan.crawford@hollyfrontier.com **Subject:** Navajo Refinery - response letter to background groundwater requests

Attachments: BG GW Evaluation Requests Response Letter.pdf

Carl and Scott -

The attached letter is being submitted via Federal Express to you in response to the March 7, 2014 email from Carl and the April 9, 2014 letter from Scott, with a copy to NMED HWB.

Pamela R. Krueger | Senior Project Manager | pam.krueger@arcadis-us.com

ARCADIS U.S., Inc. | 2929 Briarpark Dr. Suite 300 | Houston, TX 77043 T: 713.953.4816 | M: 713.249.8548 | F: 713-977-4620 Connect with us! www.arcadis-us.com | LinkedIn | Twitter | Facebook

ARCADIS, Imagine the result

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Subject:

Response to Requests for Evaluation of Background Groundwater Concentrations

Dear Mr. Dawson:

Navajo Refining Company, LLC (Navajo) has received comments from the Oil Conservation Division (OCD) regarding evaluation of background groundwater concentrations for both the area of the inactive evaporation ponds and the reverse osmosis (RO) reject discharge fields. This letter, submitted by ARCADIS on behalf of Navajo, provides a summary of the communications, a general response to the requests for background concentration evaluations and specific responses to OCD requests.

The facility-wide groundwater monitoring program for the Navajo Refinery (Refinery) complies with requirements of the Discharge Permit GW-028 administered by the OCD and the Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit NMD048918817 (Permit) administered by the NMED. Because both NMED and OCD regulate groundwater monitoring and remediation activities for the Refinery, the background groundwater evaluation will be conducted in line with applicable regulatory requirements.

Summary of Communications

Inactive Evaporation Ponds Area

NMED provided approval with modifications of the 2013 update to the Facility Wide Groundwater Monitoring Work Plan (FWGMWP) in a letter dated January 29, 2014. Among the modifications was a statement that NMED would defer to OCD for approval of the request for changing the monitoring frequency as three wells (OCD-2A, OCD-3, and OCD-4) near the inactive evaporation ponds. An email was sent to OCD on February 21, 2014 with a listing of the wells that were included in the sampling frequency request within the 2013 FWGMWP, whether NMED had approved or denied the request, and a request for concurrence from OCD.

ENVIRONMENT

Date:

May 7, 2014

Contact:

Pamela R. Krueger

Phone:

713.953-4816

Email

pam.krueger@arcadis-us.com

Our ref: TX000836

Imagine the result

OCD responded in an email on March 5, 2014 stating that it would not approve the monitoring changes requested. A conference call was conducted on March 7, 2014 to discuss the March 5, 2014 response from OCD. The conference call was attended by the following:

- Robert Combs, Navajo
- Glenn von Gonten, OCD
- Carl Chavez, OCD
- David Cobrain, NMED
- Leona Tsinnijinnie, NMED
- Pam Krueger, ARCADIS
- Maisha Turner, ARCADIS

The primary agenda item for the conference call was clarification of whether the March 5, 2014 email was stating that OCD denied the request to reduce the monitoring frequency for the three specific wells (OCD-2A, OCD-3, and OCD-4) or if OCD disagreed with all of the changes to the monitoring plan that had been approved by NMED. It was clarified that the OCD was specifically requesting that the monitoring frequency for wells OCD-2A, OCD-3, and OCD-4 not be modified.

Further discussion throughout the remainder of the conference call was focused on the status of determining naturally occurring or background concentrations of inorganic constituents in the vicinity of the Evaporation Ponds and evaluation of whether active remediation methods of inorganic constituents is required for this area.

After the conference call, the following email was sent from OCD to the meeting attendees:

The New Mexico Oil Conservation Division (OCD) requests the following from the operator subsequent to this morning's meeting:

1. Provide OCD and NMED (state agencies) with the status on ground water "Background" determination within 14 days of receipt of this message.

2. Within 60-days (or by COB May 7, 2014) of this message, provide an analysis of the ground water in comparison with WQCC water quality standards and background as determined by the operator from MWs within the vicinity of the surface impoundments and Pecos River. If the greater of the WQCC water quality standards and/or "Background" is exceeded, the operator shall propose a remedy (ies) based on the analysis to the state agencies.

 The above could be completed with the submittal of the Surface Impoundments Closure Report submitted to the NMED with copy to the OCD.

A response to the first item within the March 7, 2014 email was provided on March 21, 2014. That response and responses to the other two items are discussed in the specific responses section below.

Reverse Osmosis Reject Discharge Fields Area

Throughout 2013, Navajo performed an investigation of groundwater beneath the two RO reject discharge fields, located in the northwest portion of the Refinery. This investigation was performed to comply with Section 6.D of the discharge permit GW-028.

On April 9, 2014, Navajo received a letter from the OCD with comments on the Reverse Osmosis Reject Water Discharge Fields Investigation Final Report, which was submitted in February 2014. The letter stated the following:

Based on the report, and lack of ground water "background" determinations for the RO North and South Reject Fields (fields), the potential for assessment and determination of impacts from historical RO effluent discharges into the fields remain unknown.

Please resubmit the report with "background" water quality sections related to the North and South Reject Fields in comparison to associated monitor well water quality monitoring conducted under Section 6.D of the permit with conclusions derived thereof.

The OCD requests a resubmittal of the report addressing the items of the report within 90 days of the date of this letter.

A response to this letter is provided in both the general response and specific response section below.

General Response

Both the March 7, 2014 email and the April 9, 2014 letter request a determination of background concentrations in groundwater. There are several existing monitoring wells that may provide an adequate evaluation of the background or naturally occurring concentrations of constituents of concern (COCs). These wells are located in areas either up-gradient or cross-gradient of the refinery operations and/or the inactive evaporation ponds. However, the data available from these wells may not be adequate to perform a statistically significant evaluation of naturally occurring background concentrations due to the following reasons:

- The list of COCs has not been fully defined at this time and it may be possible that not all of the COCs were analyzed in historic samples collected from all of the wells proposed to be included in the evaluation.
- Not all of the wells proposed to be included in the evaluation are sampled as part
 of the routine groundwater monitoring program and thus have not been sampled
 since 1992.
- The background evaluation may include installation of additional monitoring wells, and data from those areas is not currently available to be used in the statistical evaluation.

In order to provide an appropriate response to the March 7, 2014 and April 9, 2014 requests, Navajo proposes to submit a work plan that will include the following information:

- Locations of proposed monitoring wells to be installed north and west of the Refinery to provide additional information on background conditions upgradient and crossgradient of the RO reject discharge fields.
- Existing monitoring wells to be sampled specifically for the background evaluation.
- COCs to be included in the background evaluation and justification for inclusion of those COCs in the evaluation.
- Frequency of sample collection.

- Duration of the sample collection period.
- Schedule for performing statistical evaluation and submittal of summary report.

The work plan will provide additional details for each of the activities described above and will be submitted to OCD and NMED by June 6, 2014. Navajo and ARCADIS respectfully request an expedited review from both OCD and NMED in order to expedite completion of the background evaluation.

Specific Responses

March 7, 2014 email

Item 1: On March 21, 2014, a response emailed to Carl Chavez stating the following:

On March 7, 2014, you requested the following that Navajo "Provide OCD and NMED with the status on groundwater "background" determination within 14 days of the receipt of this message." Below is the current status on the background determination:

ARCADIS has reviewed the data available for three wells located north of the EPs, across the Pecos River, MW-12, MW-13, and MW-69 (formerly identified as MW-23), and for one well located northeast of the City of Artesia wastewater treatment plant and northwest of the EPs, MW-17. All four of these wells are located in areas that would not be expected to be impacted by historic operation of the EPs but would be representative of naturally occurring groundwater conditions in the vicinity of the EPs. The most recent data available from these wells is from samples collected in 1992 through 1994. The samples collected in 1992 through 1994 were not analyzed for all of the constituents that OCD is requesting be evaluated (chloride, fluoride, iron, manganese, sulfate) and thus are not appropriate to perform the requested background evaluation.

Three up-gradient wells, UG-1, UG-2, and UG-3R, are located west of the Refinery, approximately four miles from the EPs. Although these wells provide adequate evaluation of groundwater conditions up-gradient of the Refinery, they may not be representative of naturally occurring groundwater conditions near the Pecos River. Therefore, ARCADIS does not recommend using data from these wells as the only source of background groundwater evaluation.

Navajo will continue to evaluate whether a background determination will be performed or whether to continue to use the WQCC standards for screening groundwater data. Navajo and ARCADIS will communicate with OCD regarding the decisions over the next several weeks.

Item 2: The annual groundwater monitoring report, submitted to both NMED and OCD on March 4, 2014, provided an analysis of the groundwater in comparison with WQCC water quality standards. As described above, Navajo plans to perform a rigorous evaluation of background concentrations in groundwater. An analysis of the groundwater in comparison to background concentrations will be completed as soon as a statistically valid data set for background concentrations has been obtained. At that time, Navajo may petition NMED and OCD to utilize background concentrations as screening levels for specific COCs instead of the WQCC water quality standards, as per New Mexico Administrative Code (NMAC) Chapter 20.6.2.3101.A(2). Furthermore, additional remediation activities, beyond those currently being conducted, will be proposed if such activities are indicated.

Item 3: NMED is currently reviewing the Evaporation Ponds Phase IV Corrective Action Investigation Report, submitted in August 2013. That report presented the defined extent of soil and groundwater impacts due to historic operations of the Evaporation Ponds and recommended that a Corrective Measures Study be conducted to evaluate appropriate risk-based corrective measures, which will include an evaluation of appropriate risk-based cleanup goals. An updated closure report will be submitted to NMED once the corrective measures study has been completed and appropriate closure activities have been selected.

April 9, 2014 letter

The Reverse Osmosis Reject Water Discharge Fields Investigation Final Report concluded that TPH, VOCs, semivolatile organic compounds (SVOCs), and radium were either not detected in groundwater samples, or the concentrations were below the WQCC water quality standards. However, the report also concluded that inorganic COCs were present above the WQCC water quality standards, including arsenic, boron, chloride, fluoride, manganese, nitrate/nitrite, sulfate, total dissolved solids, and uranium. OCD is correct that the lack of a background evaluation means that it is not currently possible to evaluate whether these inorganic COCs are a result of discharge to the fields.

It is not possible to obtain a statistically significant background data set in order to resubmit the report within the requested 90 days. Therefore, Navajo will not be able to comply with this request. Navajo proposes to perform the background evaluation

described in this letter and will submit an addendum to the report with an updated evaluation of background concentrations and an updated evaluation of whether discharge activities may have potentially adversely impacted groundwater beneath the fields.

Summary

Navajo will submit the background evaluation work plan described in this letter within 45 days, which will be prior to the requested 90 days for a response to the April 9, 2014 letter. Completion of the background study is expected to require approximately 12 to 15 months following receipt of agency approval of the work plan.

If you have any questions or comments, Navajo and ARCADIS are available for further discussion regarding evaluation of background groundwater concentrations.

Sincerely,

ARCADIS U.S., Inc.

Pamela R. Krueger Senior Project Manager

Copies:

Mr. Carl Chavez, OCD

Ms. Leona Tsinnijinnie, NMED

Mr. Dan Crawford, Navajo

Mr. Robert Combs, Navajo





Navajo Refining Company Artesia Refinery

Reverse Osmosis Reject Water Discharge Fields Investigation Final Report

OCD Discharge Permit GW-028

February 2014



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Senior Project Manager, ARCADIS

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Reverse Osmosis Reject Water Discharge Fields Investigation Final Report

OCD Discharge Permit GW-028

Prepared for:

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February 2014

Reverse Osmosis Reject Water Discharge Fields Investigation Final Report

Navajo Refining – Artesia, New Mexico

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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.

Michael W. Holder

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Environmental Manager, Navajo Refining



Reverse Osmosis Reject Water Discharge Fields Investigation Final Report

Navajo Refining – Artesia, New Mexico

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 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

Work plan

RO Reject Water Discharge Fields Site Investigation

Work Plan

WQCC

Water Quality Control Commission

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

Executive Summary

The Navajo Refining Company (Navajo) is a subsidiary of the Holly Frontier Corporation. Navajo 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.

Navajo 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 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 Navajo to perform a site investigation of the two RO reject water discharge fields. The *Reverse Osmosis Reject Water Discharge Fields Site Investigation Work Plan* (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 work plan throughout 2013. 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 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;
- Collection and analysis of soil samples from each well location;

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- 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 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. 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. 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). Critical SSLs were selected according to the following hierarchy:

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- The lower 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, 2012a). 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, 2012b) of the Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2012a). 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 Critical Groundwater Screening Level (CGWSL) for each COC is provided in the groundwater data summary table discussed in the body of this report.

Summary of Results and Conclusions

TPH, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and most of the inorganic compounds were either not detected in soil samples, or the concentrations were below the screening levels. Arsenic and fluoride were detected

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above the soil screening levels. Chloride, sulfate, and radium do not have soil screening levels and were detected above the laboratory reporting limits.

TPH, VOCs, semivolatile organic compounds (SVOCs), radium were either not detected in groundwater samples, or the concentrations were below the groundwater screening levels. Arsenic, boron, manganese, uranium, chloride, fluoride, and nitrate/nitrite were detected in one or more of the groundwater samples collected in 2013. The concentrations of sulfate and total dissolved solids were detected above the screening levels in all of the groundwater samples.

Recommendations

The investigation has confirmed that discharge of the RO stream has caused limited localized mounding of groundwater in the immediate vicinity of the fields. When discharging ceases the effects of the discharge are expected to disperse within a short period of time. No further action is recommended regarding the hydrogeology at this time.

The investigation has also confirmed minor impacts to the geochemistry of the groundwater beneath the fields. It is inconclusive whether the RO reject discharge stream may potentially be contributing to elevated constituents of concern in groundwater, or if there may be upgradient sources of these compounds. It is recommended to continue monitoring of the six groundwater monitoring wells in the RO reject discharge field on a semiannual basis. Following discharge termination, it should be possible to determine whether the RO reject discharge was a source of the elevated compounds.

Background concentrations of several constituents, such arsenic, boron, manganese, uranium, chloride, fluoride, and nitrate/nitrite, have not been adequately established at this time. Therefore, installation of an additional upgradient monitoring well west of US 285 is also recommended.

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

1. Introduction

The Navajo Refining Company (Navajo) is a subsidiary of the Holly Frontier Corporation (HFC). Navajo 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.

Navajo 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 Navajo to perform a site investigation of the two RO reject water discharge fields. The *Reverse Osmosis Reject Water Discharge Fields Site Investigation Work Plan* (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 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.

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

2. Background

2.1 Site Description

Navajo operates a 100,000 barrel-per-day 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 Navajo, 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 Navajo. 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 work plan 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.

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

3. Scope of Services

The 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 Navajo 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 (AlconoxTM) 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.

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

New Mexico

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

screening indicated the potential presence of hydrocarbon impacts, were also analyzed for the organic parameters listed in Table 2.

samples from the shallowest and deepest intervals, and any intervals where field

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 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



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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:

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

- 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 Navajo. 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 Navajo 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 Navajo 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 Navajo 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.

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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.

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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-

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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 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

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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.

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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 approximately15 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.

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5. Regulatory Criteria

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

5.1 New Mexico Soil Screening Levels

Navajo 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 on June 14, 2012 (NMED, 2012b) 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.



The SSL for subsurface soils at a depth of greater than 10 feet was set to the DAF-20 SSL.

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, 2012a).

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 (NMED, 2012b) of the *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012a). 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 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 0.262 milligrams per kilogram (mg/kg) in subsurface soil samples at all soil boring locations. No exceedances of the construction worker soil SSL (53 mg/kg) and/or the industrial/occupational SSL (17.7 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).

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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 above the SSL were detected in subsurface soil samples collected from boring locations MW-116, MW-118, MW-119, and RO-SB-1, as follows:

Fluoride was detected above the DAF 20 SSL (8.37 mg/kg) in soil samples collected from MW-116 at 15 ft bgs, MW-118 at 15 ft bgs, MW-119 at 15 ft bgs, and RO-SB-1 at 5, 10, 15, 20, and 25 ft bgs. Detected concentrations above the DAF 20 SSL ranged from 8.59 mg/kg (MW-118, 15 ft bgs) to 21.5 mg/kg (RO-SB-1, 10 ft bgs). Exceedances at RO-SB-1 were greatest within the top 15 feet; however, no significant increasing or decreasing trend in concentrations was observed within the intervals above the SSL.

It should be noted that RO-SB-1 is located outside the northwestern corner of the north RO reject field. Thus, shallow soil at this location is not expected to be impacted by the RO reject discharge water.

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.

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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.

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6.2.2.1 Total Metals

Concentrations of metals above CGWSLs were detected in groundwater samples collected from monitoring wells MW-114, MW-115, MW-116, and MW-118. Exceedances of CGWSLs were as follows:

- 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 boron in the groundwater sample collected from monitoring well MW-114 in November 2013 (0.816 mg/L) and from the groundwater samples collected from monitoring well MW-115 in February, September, and November 2013 (0.865 mg/L, 0.782 mg/L, and 0.858 mg/L, respectively) were above the CGWSL of 0.75 mg/L. The concentrations of boron from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for boron. The boron concentrations in the RO reject water discharge samples ranged from 0.0934 to 0.143 mg/L, also below the CGWSL.
- The reported concentrations of manganese in the groundwater samples collected from monitoring well MW-114 in February, May, and September 2013 (1.51 mg/L, 0.844 mg/L, and 1.42 mg/L, respectively) and from the groundwater sample collected from monitoring well MW-115 in February 2013 (0.255 mg/L) were above the CGWSL of 0.20 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.</p>
- The reported concentrations of uranium in the groundwater samples collected from monitoring well MW-114 in November 2013 (0.0856 mg/L), from monitoring well MW-115 in all four quarterly events (0.0843 mg/L, 0.0825 mg/L, 0.0731 mg/L [duplicate sample], 0.0936 mg/L, and 0.0874 mg/L), from monitoring well MW-116 in all four quarterly events 2013 (0.0331 mg/L, 0.0343 mg/L, 0.04 mg/L)

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0.0388 mg/L [duplicate sample], 0.0391 mg/L, and 0.0387 mg/L [duplicate sample],), and from monitoring well MW-118 in all four quarterly events (0.037 mg/L, 0.033 mg/L, 0.0395 mg/L, and 0.0311 mg/L) were above the CGWSL of 0.03 mg/L. The concentrations of uranium from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for uranium. The uranium concentrations in the RO reject water discharge samples ranged from <0.005 mg/L to 0.00601 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 above CGWSLs were detected in all water samples collected during the monitoring event. Exceedances of CGWSLs observed for chloride, fluoride, nitrate/nitrite, and sulfate are detailed below.

- The reported concentrations of chloride in the groundwater samples collected from monitoring well MW-114 in November 2013 (422 mg/L), from monitoring well MW-115 in all four quarterly events (422 mg/L, 373 mg/L, 364 mg/L [duplicate sample], 530 mg/L, and 428 mg/L), from monitoring well MW-116 in all four quarterly events 2013 (389 mg/L, 330 mg/L, 334 mg/L, 339 mg/L [duplicate sample], 331 mg/L, and 331 mg/L [duplicate sample]), and from monitoring well MW-118 in February and May 2013 (296 mg/L, and 287 mg/L) were above the CGWSL of 250 mg/L. The concentrations of chloride from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were below the CGWSL for chloride. The chloride concentrations in the RO reject water discharge samples ranged from 38.2 mg/L to 134 mg/L, also below the CGWSL.
- The reported concentrations of fluoride in the groundwater samples collected from monitoring well MW-114 in February, May, and September 2013 (1.76 mg/L, 1.91 mg/L, and 1.82 mg/L), from monitoring well MW-116 in November 2013 (1.61 mg/L), from monitoring well MW-117 in all four quarterly events of 2013 (2.73 mg/L, 2.29 mg/L, 2.80 mg/L, and 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 all four quarterly events of 2013 (2.36 mg/L, 2.43 mg/L, 2.28 mg/L, and 3.17 mg/L) were above the CGWSL of



1.6 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, also above the CGWSL. It should be noted that all reported concentrations of fluoride, with the exception of groundwater samples from MW-118, are all below the USEPA MCL of 4 mg/L.

- The reported concentrations of nitrate/nitrite in the groundwater samples collected from monitoring well MW-114 in February 2013 (1.43 mg/L), from monitoring well MW-116 in February 2013 (1.37 mg/L), from monitoring well MW-118 in February and May 2013 (2.39 mg/L and 2.09 mg/L), and from monitoring well MW-119 in February and May 2013 (2.35 mg/L and 1.91 mg/L) were above the CGWSL of 1.0 mg/L. The concentrations of nitrate/nitrite from all other groundwater samples collected from the monitoring wells within the RO reject water discharge fields were either not detected or were below the CGWSL for nitrate/nitrite. It should be noted that some of the detection limits exceeded the CGWSL. The nitrate/nitrite concentrations in the RO reject water discharge samples ranged from 1.06 mg/L to 3.22 mg/L, also above the CGWSL.
- All of the reported concentrations of sulfate in the groundwater samples collected from all of the monitoring wells were above the CGWSL of 600 mg/L, ranging from 1,800 mg/L to 3,090 mg/L. Concentrations of sulfate ranged from 1,030 to 1,690 mg/L in the RO reject water discharge samples.

6.2.2.3 Total Dissolved Solids

All of the reported concentrations of total dissolved solids (TDS) in the groundwater samples collected from the monitoring wells were above the CGWSL of 1,000 mg/L, ranging from 3,650 mg/L to 6,130 mg/L. The reported concentrations of TDS in the RO reject water discharge samples ranged from 2,290 mg/L to 3,150 mg/L.

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7. Conclusions

The site investigation of the RO reject discharge fields has been completed according to the approved 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 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 boron in all soil samples were below the screening levels. The reported concentrations of boron in one groundwater sample from MW-114 and three of the groundwater samples from MW-115 were above the screening level of 0.75 mg/L. The concentrations of boron in the remaining groundwater samples from the monitoring wells and in all of the RO reject water discharge samples were below the screening levels. These results indicate that the RO reject water discharge is not a significant source of dissolved boron in groundwater.

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- The reported concentrations of manganese in all soil samples were below the applicable screening levels. The reported concentrations of manganese in three groundwater samples from MW-114 and in one groundwater sample from MW-115 were above the screening level of 0.20 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 uranium in all soil samples were below the screening levels. The reported concentrations of uranium in various groundwater samples collected from four of the six monitoring wells (MW-114, MW-115, MW-116 and MW-118) were above the screening level of 0.03 mg/L. The concentrations of uranium in all of the groundwater samples collected from the remaining two monitoring wells (MW-117 and MW-119) and 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 uranium in groundwater.
- There is no soil screening level for chloride, but chloride was present in all of the soil samples collected. The reported concentrations of chloride in various groundwater samples collected from four of the six monitoring wells (MW-114, MW-115, MW-116 and MW-118) were above the screening level of 250 mg/L. The concentrations of chloride in all of the groundwater samples collected from the remaining two monitoring wells (MW-117 and MW-119) and 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 chloride in groundwater.
- Concentrations of fluoride in soil samples were detected above the soil leachate screening level at locations MW-116, MW-118, MW-119, and RO-SB-1. The reported concentrations of fluoride in various groundwater samples collected from MW-114, MW-116, MW-117, MW-118, and MW-119 exceeded the screening level of 1.6 mg/L for fluoride. The concentration of fluoride in the RO reject water discharge sample was also above the screening level; however, the concentrations of fluoride reported in the RO reject water discharge sample were typically below the corresponding concentrations in the groundwater samples. Due to the concentration of fluoride in the groundwater samples relative to the concentrations found in the RO reject water discharge samples, it is inconclusive

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whether the discharge is a significant source for this contaminant. It is recommended that these monitoring wells be added to the semiannual groundwater monitoring program and with long-term data following discharge termination, it will be possible to determine if the discharge was the source of elevated fluoride.

- The reported concentrations of nitrite and nitrate in all soil samples were below the screening levels. The reported concentrations of nitrate/nitrite (combined) in various groundwater samples collected from four of the six monitoring wells (MW-114, MW-116, MW-118 and MW-119) were above the screening level of 1.0 mg/L. The concentrations of nitrate/nitrite in all of the groundwater samples collected from the remaining two monitoring wells (MW-115 and MW-117) were below the screening level. The concentrations of nitrate/nitrite in all of the samples collected from the RO reject water discharge exceeded the screening level. These results indicate that the RO reject water discharge may potentially contribute to elevated nitrate/nitrite in groundwater. It is recommended that these monitoring wells be added to the semiannual groundwater monitoring program and with long-term data following discharge termination, it will be possible to determine if the discharge was the source of elevated nitrate/nitrite or if there is an upgradient source.
- There is no soil screening level for sulfate, but sulfate was present in all of the soil samples collected. The reported concentrations of sulfate in groundwater exceeded the screening level of 250 mg/L in all groundwater samples collected from the monitoring wells during the four quarterly monitoring events. The reported concentrations of sulfate in the RO reject water discharge samples were also above the screening level, but at lower concentrations than reported for the groundwater samples. These results indicate that the RO reject water discharge is not a significant source of elevated sulfate concentrations in groundwater.
- There is no soil screening level for radium-226 or for radium-228, but both compounds were present in all of the soil samples collected. Radium-226 and radium-228 were present in all of the groundwater samples at concentrations below the screening level.

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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 Navajo to cease discharge to the fields by August 22, 2015. 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 minor impacts to the geochemistry of the groundwater immediately beneath the fields. No organic compounds were reported at elevated concentrations. It is inconclusive whether the RO reject water discharge stream is a significant source of elevated fluoride and nitrate/nitrite in the groundwater. Additionally, reported concentrations in at least one of the groundwater samples collected throughout 2013 of arsenic, boron, manganese, uranium, chloride, and sulfate were above the respective screening levels for those compounds.

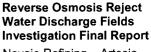
It is recommended that the six monitoring wells installed in the RO reject water discharge fields continue to be monitored on a semiannual basis. It is recommended that the groundwater samples be analyzed for the following parameters:

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

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.



Background concentrations of several constituents, such arsenic, boron, manganese, uranium, chloride, fluoride, and nitrate/nitrite, have not been adequately established at this time. Therefore, installation of an additional upgradient monitoring well west of US 285 is also recommended.



Navajo Refining – Artesia, New Mexico

ARCADIS

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- NMED, 2012a. Risk Assessment Guidance for Site Investigations and Remediation. February 2012.
- NMED, 2012b. SSLs Summary Table A-1, corrected, June 14, 2012.
- OCD, 2012. New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division. 2012 Discharge Permit (GW-028), Navajo Refining Company Artesia Refinery. August 2012.
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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	8015 Mod	Total Petroleum	Gasoline Range Organics
Reject Water		Hydrocarbons	Diesel Range Organics
			Oil Range Organics
Soil / Groundwater / RO	6020 and 7470/7471	Metals (Dissolved Metals	Aluminum
Reject Water		for Groundwater and RO	Arsenic
_		Reject Water Samples)	Barium
			Boron
			Cadmium
			Calcium
			Chromium
<u> </u>			Cobalt
		}	Copper
1			Iron
			Lead
			Manganese
			Mercury
			Molybdenum
			Nickel
Ì			Potassium
			Selenium
			Silver
			Sodium
			Uranium
			Zinc
Soil / Groundwater / RO	8260	Volatile Organic	Target Compound List to include specific
Reject Water		Compounds	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	8270	Semivolatile Organic	Target Compound List to include specific
Reject Water		Compounds	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	9014	Cyanide	Cyanide
Reject Water		1	
Soil / Groundwater / RO	300	Anions/Cations	Chloride
Reject Water			Fluoride
			Sulfate
			Nitrite/Nitrate
Soil / Groundwater / RO	903.1	Radioactive Parameters	Radioactivity (combined Radium-226
Reject Water			and Radium-228)
Soil	2540	Moisture	Percent Moisture
Soil / Groundwater / RO	2540C	Water Quality	Total Dissolved Solids
Reject Water			
Soil / Groundwater / RO	Field instrument	Water Quality	pH
Reject Water			

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)
			2/3/2013	8.59	3353.09
			3/21/2013	5.56	3356.12
MW-114	20-35	3361.68	5/15/2013	7.75	3353.93
IVIVV- I 14	20-35	3301.00	9/5/2013	9.44	3352.24
			10/8/2013	6.99	3354.69
	İ		11/18/2013	5.48	3356.20
	T		2/3/2013	7.49	3351.82
			3/21/2013	3.20	3356.11
MW-115	10-25	3359.31	5/15/2013	8.10	3351.21
MVV-115	10-25	3338.31	9/4/2013	8.23	3351.08
			10/8/2013	7.22	3352.09
			11/18/2013	5.47	3353.84
			2/3/2013	9.91	3343.86
			3/21/2013	5.61	3348.16
ABA(440	40.05	2252.77	5/16/2013	10.25	3343.52
MW-116	10-25	3353.77	9/4/2013	12.21	3341.56
			10/8/2013	10.82	3342.95
			11/18/2013	9.90	3343.87
			2/3/2013	7.07	3355.94
			3/22/2013	9.82	3353.19
MW-117	10-25	3363.01	5/15/2013	8.52	3354.49
IVIVV-117	10-25	3303.01	9/4/2013	6.09	3356.92
			10/8/2013	6.13	3356.88
	1		11/18/2013	10.01	3353.00
			2/5/2013	13.71	3348.24
			3/22/2013	10.16	3351.79
MW-118	10-25	3361.95	5/15/2013	4.63	3357.32
IVIVV-118	10-25	3301.95	9/4/2013	4.49	3357.46
			10/8/2013	5.15	3356.80
			11/18/2013	10.96	3350.99
			2/5/2013	6.67	3349.44
			3/22/2013	10.27	3345.84
MW-119	10.05	3356.11	5/15/2013	7.65	3348.46
WW-119	10-25	3356.11	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:

- 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-1 19	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

	Boring Location (Depth				MW-114 (1)			W-114	(5)	MW-114 (10)			MW-114 (15)			MW-114 (20)			
			Depth:		1			5			10		15			20			
			Date:	1	/28/20	13	1	/28/201	13	1/	28/20	13	1/28/2013			1/28/2013			
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	
Moisture (%) Percent Moisture				17.0		0.01	20		0.04	25.2		0.01	19.9	T	0.01	27	r -	0.01	
Metals (mg/kg)				17.9		0.01	28	L	0.01	25.2	<u> </u>	0.01	19.9		0.01	21	<u> </u>	0.01	
Aluminum	1.13E+06	4.075+04	1.10E+06	13900		117	5490		117	8230		113	8150		99.8	8460		120	
Arsenic		4.07E+04		4.67		0.584	2.19		0.584	3.1	<u> </u>	0.564	3.48		0.499	2.97	-	0.6	
Barium	1.77E+01	5.30E+01	2.62E-01	115	-	0.584	99.2	_	0.584	131		0.564	50.7		0.499	191		0.6	
Boron	2.23E+05	4.35E+03	6.03E+03	5.29		2.92	5.78		5.84	6.34		5.64	7.64		4.99	3.21		3	
Cadmium	2.27E+05	4.65E+04	4.80E+02	0.403	-	0.584	0.0884	1	0.584	0.126		0.564	0.149	1	0.499	0.186	-	0.6	
Calcium	8.97E+02	2.77E+02	2.75E+01	58900	-	5840	150000		5840	141000		5640	146000	-	4990	120000		6000	
Chromium	1.70E+06	4.65E+05	1.97E+09	14.3		0.584	5.44		1.17	7.76		1.13	9.03		0.998	3.77		0.6	
Cobalt	1.702100	4.03E103	1.37 = 103	4.91		0.584	1.3		0.584	2.14	<u> </u>	0.564	2.92	-	0.499	2.65		0.6	
Copper	4.54E+04	1.24E+04	1.03E+03	26.4	-	0.584	1.67		0.584	2.82		0.564	3.34	-	0.499	3.97		0.6	
Iron	7.95E+05	2.17E+05	1.29E+04	9110	-	58.4	3330		58.4	4890		56.4	5630	 	49.9	5630		60	
Lead	8.00E+02	8.00E+02	1.290+04	37.3		0.584	2.59		0.584	3.86		0.564	4.96	-	0.499	4.37		0.6	
Manganese	2.67E+04	4.40E+02	1.14E+03	192	_	0.584	45.8		0.584	78		0.564	129		0.499	137		0.6	
Mercury	7.36E+01	1.36E+01	6.54E-01	0.0199	-	0.00431	70.0	Ū	0.00471	0.00371	J	0.00474	0.00127	ī	0.00424	107	U	0.00458	
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.58		0.584	0.273	J	0.584	0.406	J	0.564	0.808	ا	0.499	0.594	-	0.6	
Nickel	2.25E+04	6.19E+03	9.53E+02	10.7	۲	0.584	3.16	<u> </u>	0.584	4.48	١ <u> </u>	0.564	6.38		0.499	5.71		0.6	
Potassium	2.231.104	0.19L103	9.552+02	3520		58.4	1060	<u> </u>	58.4	1650		56.4	1240		49.9	1610		60	
Selenium	5.68E+03	1.55E+03	1.93E+01	1.12	-	0.584	0.307	J	0.584	0.64		0.564	0.537	-	0.499	0.453		0.6	
Silver	5.68E+03	1.55E+03	3.13E+01	2	U	0.584	0.007	Ū	0.584	0.0.	U	0.564		U	0.499	00	Ü	0.6	
Sodium	J.00E+03		J. 13E 101	157	 	58.4	110	⊢—	58.4	136	<u> </u>	56.4	113		49.9	108		60	
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.584		U	0.584		U	0.564		U	0.499		U	0.6	
Zinc	3.41E+05	9.29E+04	1.36E+04	40	<u> </u>	0.584	9.61		0.584	14.9		0.564	16.1		0.499	18.2		0.6	
Anions (mg/kg)																			
Chloride				21	i	6.06	24.9		6.93	20.6		6.56	27.8		6.22	24.6		6.78	
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	11.1		1.21	7.73		1.39	5.02		1.31	7.12		1.24	4.19		1.36	
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.21		U	1.39		U	1.31		U	1.24		U	1.36	
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.21		U	1.39		U	1.31		U	1.24		U	1.36	
Sulfate				1120		6.06	796		6.93	6970		65.6	1270		6.22	320		6.78	
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.41		U	2.66		U	2.46		U	2.29		U	2.5	
Radium (pci/g)																			
Radium-226				1.83	G	0.65	1.9	G	0.38	1.13	G	0.41	0.9	LT,G	0.43	0.94	LT,G	0.46	
Radium-228					U,G	0.99	1.12	G,NQ	1		U,G	0.66		U,G	0.89	1.06	G,NQ	0.77	

		Boring Location (Depth)				(1)	M	W-114	(5)	MW-114 (10)			MV	/-114 (⁻	15)	MW-114 (20)			
			Depth:		1			5			10			15			20		
			Date:	1	/28/20	13	1	/28/201	13	1/	28/201	3	1/	28/201	3	1	/28/201	3	
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	
TPH (mg/kg)																			
Gasoline Range Organics					U	0.061	NA			NA			NA			NA			
Diesel Range Organics	1.00E+03				U	2.1	NA			NA			NA			NA			
Motor Oil Range Organics	1.00E+03			0.83	J	4.1	NA			NA			NA			NA			
VOCs (mg/kg)																			
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01		U	0.0061	NA			NA			NA			NA			
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03		U	0.0061	NA			NA			NA			NA			
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03		U	0.0061	NA			NA			NA			NA			
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01		U	0.0061	NA			NA			NA			NA			
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00		U	0.0061	NA			NA			NA			NA			
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04		U	0.0061	NA			NA			NA			NA			
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03		U	0.0061	NA			NA			NA			NA			
Benzene	8.47E+01	1.38E+02	3.45E-02		U	0.0061	NA ·			NA			NA			NA			
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02		U	0.0061	NA			NA			NA			NA			
Chloroform	3.27E+01	1.54E+02	9.18E-03		U	0.0061	NA			NA			NA			NA			
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	0.0032	J	0.012	NA			NA			NA			NA			
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01		U	0.0061	NA			NA			NA			NA			
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03		U	0.0061	NA			NA			NA			NA			
Toluene	5.77E+04	1.34E+04	2.53E+01		U	0.0061	NA			NA			NA			NA			
Total Xylenes	3.98E+03	7.43E+02	3.13E+00		U	0.018	NA			NA			NA			NA			
Trichloroethene	4.13E+01	7.68E+00	2.11E-02		U	0.0061	NA			NA			NA			NA			
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03		U	0.0024	NA			NA			NA			NA			
PAHs (mg/kg)																			
1-Methylnaphthalene					U	0.008	NA			NA			NA			NA			
2-Methylnaphthalene					U	0.008	NA			NA			NA			NA			
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01		U	0.008	NA			NA			NA			NA			
Naphthalene	2.41E+02	1.58E+02	7.13E-02		U	0.008	NA			NA			NA			NA			

		Boring I	MW	-114 (2	25)	M	N-114	(29)	M	W-114 (3	(0)	MW-114 (35)			MW -115 (1)			
			Depth:		25			29			30			35			1	
			Date:	1/2	1/28/2013			/28/20	13		1/28/2013	3		1/28/201	13	1	/29/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)				00.0		0.04	- NIA			07.4	1	0.04	47.5		1 - 2 - 2 -			
Percent Moisture				23.6	-	0.01	NA			27.4		0.01	17.5		0.01	19		0.01
Metals (mg/kg)	1		1 105.00	40400		101	NIA			11100		110	0000		1 00 4	40000		440
Aluminum	1.13E+06	4.07E+04	1.10E+06	10100	-	124	NA			11100	ļ	118	8660		88.4	13800		118
Arsenic	1.77E+01	5.30E+01	2.62E-01	3.14		1.24	NA			1.13	J	1.18	1.09		0.442	3.6		0.591
Barium	2.23E+05	4.35E+03	6.03E+03	27		0.618	NA			111		0.592	75.2		0.442	147		0.591
Boron	2.27E+05	4.65E+04	4.80E+02	5.2	J	6.18	NA			3.95	J	5.92	2.39		2.21	6.45		2.95
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.279	J	0.618	NA			0.183	J	0.592	0.129	J	0.442	0.39	J	0.591
Calcium				138000		6180	NA			146000		5920	50400		4420	64700		5910
Chromium	1.70E+06	4.65E+05	1.97E+09	11.2		1.24	NA			11.4		1.18	7.82		0.442	12.8		0.591
Cobalt				4.08		1.24	NA			3.6		1.18	2.38		0.442	4.78		0.591
Copper	4.54E+04	1.24E+04	1.03E+03	3.57		1.24	NA			5.59		1.18	2.71		0.442	11.4		0.591
Iron	7.95E+05	2.17E+05	1.29E+04	9390		124	NA			8870		118	5410		44.2	9060		59.1
Lead	8.00E+02	8.00E+02		6.42		0.618	NA			5.54		0.592	4.82		0.442	23.7		0.591
Manganese	2.67E+04	4.40E+02	1.14E+03	125		1.24	NA			217		59.2	88.1		0.442	357		59.1
Mercury	7.36E+01	1.36E+01	6.54E-01	0.00738		0.00460	NA				C	0.00479		U	0.00412	0.0182		0.00439
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.592	J	0.618	NA			0.289	J	0.592	0.187	J	0.442	0.742		0.591
Nickel	2.25E+04	6.19E+03	9.53E+02	5.62		1.24	NA			6.9		1.18	5.19		0.442	9.67		0.591
Potassium				1660		61.8	NA			1840		59.2	1860		44.2	3360		59.1
Selenium	5.68E+03	1.55E+03	1.93E+01		U	1.24	NA				U	1.18	0.258	J	0.442	0.949		0.591
Silver	5.68E+03	1.55E+03	3.13E+01		J	0.618	NA				U	0.592		J	0.442		U	0.591
Sodium				181		124	NA			208		118	125		44.2	327		59.1
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.618	NA				U	0.592		J	0.442		U	0.591
Zinc	3.41E+05	9.29E+04	1.36E+04	23		1.24	NA			23.4		1.18	14.4		0.442	33.8		0.591
Anions (mg/kg)																		
Chloride				19.8		6.52	NA			20.8		6.87	19.6		6.01	58.8		6.14
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	4.63		1.3	NA			2.25		1.37	3.2		1.2	5.2		1.23
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.3	NA				U	1.37		U	1.2		U	1.23
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.3	NA				U	1.37		U	1.2	- '	U	1.23
Sulfate				390		6.52	NA			338		6.87	259		6.01	1160		6.14
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.49	NA				U	2.7		U	2.18		U	2.3
Radium (pci/g)																		
Radium-226				0.8	LT,G	0.45	NA			0.73	LT,G,TI	0.38	0.82	LT,G	0.5	1.62	G	0.6
Radium-228					U,G		NA				LT,G,TI		0.99	LT,G,TI	0.88	1.25		0.83

	Boring Location (Depth)				V-114 (25)	M\	N -114	(29)	M	W-114 (3	(0)	T 1	/IW-114 (35)	MW -115 (1)				
			Depth:		25			29			30			35			1			
			Date:	1/	/28/201	3	1	/28/20	013	1/28/2013			1/28/2013			1/29/201		13		
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Oual	RL		
TPH (mg/kg)	(99)	(9,9)	(9.1.9)	11000.11			71000	4		rtouit	quai		Nesuk	Quai	NL	Nesuit	Quai	NL NL		
Gasoline Range Organics				NA			NA			NA	Ι			T U	0.061	T	U	0.062		
Diesel Range Organics	1.00E+03			NA	_		NA			NA NA				U	2.1		U	2.1		
Motor Oil Range Organics	1.00E+03			NA			NA			NA			0.63	1	0.63	1.4	1	1.4		
VOCs (mg/kg)									L		I		5.55		0.00	1.1				
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA		· ·		U	0.005	NA				Ū	0.0061		U	0.0062		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA		., .		U	0.005	NA				U	0.0061		Ū	0.0062		
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA				U	0.005	NA				U	0.0061		Ü	0.0062		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA			1	U	0.005	NA				U	0.0061		U	0.0062		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA			1	U	0.005	NA				U	0.0061		U	0.0062		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA				U	0.005	NA				U	0.0061		Ü	0.0062		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA				U	0.005	NA				U	0.0061		U	0.0062		
Benzene	8.47E+01	1.38E+02	3.45E-02	NA				U	0.005	NA				U	0.0061		U	0.0062		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA				U	0.005	NA				U	0.0061		U	0.0062		
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA				U	0.005	NA				Ü	0.0061		U	0.0062		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			0.003	J	0.0025	NA			0.0038	J	0.0038		U	0.012		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA				U	0.005	NA				U	0.0061		U	0.0062		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA				U	0.005	NA				U	0.0061		U	0.0062		
Toluene	5.77E+04	1.34E+04	2.53E+01	NA				U	0.005	NA				U	0.0061		U	0.0062		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA				U	0.015	NA				U	0.018		U	0.019		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA				J	0.005	NA				U	0.0061		U	0.0062		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA				J	0.002	NA				U	0.0024		U	0.0025		
PAHs (mg/kg)																				
1-Methylnaphthalene				NA			NA			NA				Ū	0.008		U	0.0081		
2-Methylnaphthalene				NA			NA			NA				U	0.008		U	0.0081		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA			NA			NA				U	0.008		U	0.0081		
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA			NA			NA				U	0.008		U	0.0081		

		Boring	Location (Depth)	M\	N- 115 (5	5)	M\	N- 115	(10)	MW	/- 115	(15)	M	W -115 (20)	MV	V-115	(25)
			Depth:		5			10			15			20			25	
			Date:	1	/29/2013			/29/20	13	1,	<u>/29/20</u>	13		1/29/201	3	1,	/29/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)				20.0		T 0 04	10.0	<u> </u>	0.04	10.0	Τ	L 0.04	40.0		1 004	00.0		
Percent Moisture				26.9		0.01	19.9		0.01	16.3	J	0.01	18.9		0.01	20.9	<u></u>	0.01
Metals (mg/kg)	1.425.00	4.075+04	1.405.00	13200	1	120	12100		117	4980		110	10200	1	115	5210		110
Aluminum	1.13E+06	4.07E+04	1.10E+06					_					10300		115	5210		112
Arsenic	1.77E+01	5.30E+01	2.62E-01	2.42		0.599	2.9		0.587	0.893		0.549	2.53	<u> </u>	0.573	1.05		0.558
Barium	2.23E+05	4.35E+03	6.03E+03	79.7		0.599	120		0.587	458	<u> </u>	54.9	179	<u> </u>	0.573	68	L	0.558
Boron	2.27E+05	4.65E+04	4.80E+02	9.03		5.99	6.04	<u> </u>	2.94	3.78	J.	5.49	4.85	J_	5.73	- 1	U	13.9
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.257	J	0.599	0.449	J	0.587	0.117	J	0.549	0.251	J	0.573	0.173	J	0.558
Calcium				90500		5990	63400		5870	157000		5490	161000		5730	219000		5580
Chromium	1.70E+06	4.65E+05	1.97E+09	13		0.599	14.3		0.587	5.84		1.1	9.21		1.15	5.52		2.79
Cobalt				4.55		0.599	4.7		0.587	1.62		0.549	3.7		0.573	1.33		0.558
Copper	4.54E+04	1.24E+04	1.03E+03	7.86		0.599	15.5		0.587	1.31		0.549	3.3		0.573	1.19		0.558
Iron	7.95E+05	2.17E+05	1.29E+04	8880		59.9	8210		58.7	3200		54.9	7710		57.3	2980		55.8
Lead	8.00E+02	8.00E+02		8.22		0.599	44.9		0.587	3.28		0.549	7.03		0.573	3.73		0.558
Manganese	2.67E+04	4.40E+02	1.14E+03	211		0.599	175		0.587	62.9		0.549	132		0.573	48		0.558
Mercury	7.36E+01	1.36E+01	6.54E-01	0.00569		0.0049	0.0146		0.00422		U	0.00415		U	0.00435		U	0.00449
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.68		0.599	0.614		0.587		U	0.549	0.228	J	0.573		C	0.558
Nickel	2.25E+04	6.19E+03	9.53E+02	8.77		0.599	9.68		0.587	3.12		0.549	6.69		0.573	2.74		0.558
Potassium				2630		59.9	3490		58.7	860		54.9	1690		57.3	773		55.8
Selenium	5.68E+03	1.55E+03	1.93E+01	0.843		0.599	1.2		0.587	0.348	J	0.549	0.699		0.573	0.428	J	0.558
Silver	5.68E+03	1.55E+03	3.13E+01		C	0.599	0.11	J	0.587		U	0.549		U	0.573		U	0.558
Sodium				216		59.9	288		58.7	122		54.9	186		57.3	129		55.8
Uranium	3.41E+03	9.29E+02	9.86E+02	0.856		0.599		U	0.587		U	0.549		U	0.573		U	0.558
Zinc	3.41E+05	9.29E+04	1.36E+04	31.4		0.599	37.9		0.587	8.52		0.549	20.5		0.573	8.99		0.558
Anions (mg/kg)															· · · · · · · · · · · · · · · · · · ·			
Chloride				51.5		6.79	55		6.17	49.1		5.93	51.6		6.15	50.4		6.2
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	5.92		1.36	7.73		1.23	3.85		1.19	5.04		1.23	0	UB	3.55
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.36		U	1.23		U	1.19		J	1.23		U	1.24
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.36		U	1.23		U	1.19		U	1.23		U	1.24
Sulfate				1070		6.79	722		6.17	383		5.93	463		6.15	326		6.2
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.71		U	2.43		U	2.3		U	2.3		J	2.52
Radium (pci/g)																	<u> </u>	
Radium-226				1.29	G	0.41	1.39	G	0.64	0.57	LT,G	0.47	0.58	LT,G,TI	0.49		U,G	0.51
Radium-228				0.78	LT,G,TI	0.7	1.03	G,NQ	0.91		U,G	0.63		U,G	0.81	0.75	NQ	0.68

		Boring	Location (Depth)	M\	W- 115 (5	5)	MV	V- 115	(10)	MW	- 115 ((15)	M	W -115 (20)	MV	V-115 ((25)
			Depth:		5			10		<u> </u>	15		L	20			25	
			Date:	1	/29/2013		1	/29/201	13	1/	29/201	3		1/29/201	3	1,	/29/201	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/kg)	(1119) 119)	(9/1.9)	(99/															
Gasoline Range Organics				NA	T		NA	I		NA			NA	Γ		Τ	ΙυΙ	0.063
Diesel Range Organics	1.00E+03			NA			NA			NA			NA				Ū	2.1
Motor Oil Range Organics	1.00E+03			NA			NA			NA			NA			0.77	J	0.77
VOCs (mg/kg)										•				•		•		
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA			NA			NA			NA			Ī	U	0.0063
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA			NA			NA			NA				U	0.0063
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA			NA			NA			NA				Ü	0.0063
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA			NA			NA			NA				U	0.0063
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA			NA			NA			NA				U	0.0063
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA			NA			NA			NA				U	0.0063
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA			NA			NA			NA				U	0.0063
Benzene	8.47E+01	1.38E+02	3.45E-02	NA			NA			NA			NA				U	0.0063
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA			NA			NA			NA				U	0.0063
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA			NA			NA			NA				U	0.0063
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			NA			NA			NA				U	0.013
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA			NA			NA			NA				U	0.0063
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA			NA			NA			NA				U	0.0063
Toluene	5.77E+04	1.34E+04	2.53E+01	NA			NA			NA			NA			<u> </u>	U	0.0063
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA			NA			NA			NA				U	0.019
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA			NA			NA			NA				U	0.0063
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA			NA			NA			NA				U	0.0025
PAHs (mg/kg)																_		
1-Methylnaphthalene				NA			NA			NA			NA				U	0.0083
2-Methylnaphthalene				NA			NA			NA			NA				U	0.0083
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA			NA			NA			NA				U	0.0083
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA			NA			NA			NA				U	0.0083

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

		Boring l	Location (Depth)	M	W-116	(1)	MV	V-116	(5)	MV	V-116 (10)	MW	-116 (15)	MW	V-116 (20)
			Depth:		1			5			10			15			20	
			Date:	1	/29/20	13	1/	29/201	3	1,	/30/20 ⁻	13	1/:	30/201	3	1/	30/201	3
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%) Percent Moisture				17.9	T	0.01	16.1		0.01	16.4	1	0.01	15.3		0.01	19.2		0.01
				17.9		0.01	10.1		0.01	10.4		0.01	10.0		0.01	19.2		0.01
Metals (mg/kg) Aluminum	1.13E+06	4.07E+04	1.10E+06	14600		82.6	9770		76.4	7550	1	86.4	3970		89.6	8370		92
Arsenic	1.77E+01	5.30E+01	2.62E-01	4.38		0.413	3.65	 	0.382	2.48	 	0.432	2.83	1	0.448	6.28		0.46
Barium	2.23E+05	4.35E+03	6.03E+03	130		0.413	155	-	38.2	43.5		0.432	19		0.448	19.9		0.46
Boron	2.27E+05	4.65E+04	4.80E+02	7.77		4.13	7.48		3.82	9.23		10.8	6.99	J	11.2	4.74		4.6
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.407		0.413	0.156		0.382	0.114	J	0.432	0.102	ij	0.448	0.283	ı.	0.46
Calcium		2.112102	2.752.101	60800	Ť	4130	122000	-	3820	166000	<u> </u>	4320	216000	 	4480	104000		4600
Chromium	1.70E+06	4.65E+05	1.97E+09	14		0.413	8.46		0.382	6.73		0.432	3.86		0.448	7.41		0.46
Cobalt				5.52		0.413	2.94		0.382	2.58		0.432	2.7		0.448	2.95		0.46
Copper	4.54E+04	1.24E+04	1.03E+03	11.1		0.413	4.05		0.382	2.97	 	0.432	2.53		0.448	4.92		0.46
Iron	7.95E+05	2.17E+05	1.29E+04	10100		41.3	6240		38.2	4720		43.2	2880		44.8	7120		46
Lead	8.00E+02	8.00E+02	1.202 01	14.7		0.413	4.47		0.382	3.63		0.432	2.03		0.448	7.08		0.46
Manganese	2.67E+04	4.40E+02	1.14E+03	375		41.3	163		38.2	139		0.432	351		44.8	251		46
Mercury	7.36E+01	1.36E+01	6.54E-01	0.0081		0.00348	0.00677		0.00359	0.00774		0.00336	0.000647	J	0.00359	0.00829		0.00344
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.585		0.413	0.485		0.382	0.331	J	0.432	0.645		0.448	0.837		0.46
Nickel	2.25E+04	6.19E+03	9.53E+02	11.6		0.413	6.19		0.382	4.51		0.432	5.57		0.448	7.79		0.46
Potassium				3770		82.6	2130		38.2	1620		43.2	956		44.8	1280		46
Selenium	5.68E+03	1.55E+03	1.93E+01	0.95		0.413	0.485		0.382	0.353	J	0.432	0.252	J	0.448	0.512		0.46
Silver	5.68E+03	1.55E+03	3.13E+01		U	0.413		U	0.382		U	0.432		U	0.448		U	0.46
Sodium				135		82.6	156		38.2	121		43.2	108		44.8	142		46
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.413	0.523		0.382	0.45		0.432		U	0.448		U	0.46
Zinc	3.41E+05	9.29E+04	1.36E+04	37.3		0.413	19		0.382	14.2		0.432	7.87		0.448	19.8		0.46
Anions (mg/kg)																		
Chloride				22.2		4.99	29.8		4.96	8.03		4.98	31.6		4.92	33.3		4.99
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	14.7		0.999	4.51		0.992	5.76		0.995	8.7		0.984	3.92		0.997
Nitrate-N	1.82E+06	4.96E+05	3.35E+02	2.63		0.999		U	0.992	0.896	J	0.995		U	0.984		U	0.997
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	0.999		U	0.992		U	0.995		U	0.984		U	0.997
Sulfate				330		4.99	234		4.96	82.1		4.98	891		4.92	310		4.99
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	1.94		U	1.8		U	1.96		U	1.82		U	1.96
Radium (pci/g)																		
Radium-226				1.87	G	0.53	0.86	LT,G		1.75	G	0.61	0.66	LT,G	0.46		LT,G	
Radium-228				1.2	G,TI	0.64		U,G	8.0	1.4	M3,G	1.05		U,G	0.75	1.06	G,TI	0.6

		Boring I	Location (Depth)	М	W-116	(1)	M\	W-116	(5)	MV	V-116 (10)	MV	/-116 (1	(5)	MV	/-116 (20)
			Depth:		1			5			10			15			20	
			Date:	1	/29/20	13	1/	<u>/29/201</u>	3	1.	30/201	3	1/	30/201	3	1/	30/201	3
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (ma/ka)																	4,444	
Gasoline Range Organics					Ū	0.05	NA			NA			NA			NA		
Diesel Range Organics	1.00E+03			0.53	J	0.53	NA			NA			NA			NA		
Motor Oil Range Organics	1.00E+03			4.7		4.7	NA			NA			NA			NA		
VOCs (mg/kg)								•						<u>'</u>				
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01		U	0.005	NA		-	NA			NA			NA		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03		U	0.005	NA			NA			NA			NA		
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03		U	0.005	NA			NA		·	NA			NA		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01		U	0.005	NA			NA			NA	1		NA		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00		U	0.005	NA			NA			NA			NA		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04		U	0.005	NA			NA			NA			NA		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03		U	0.005	NA			NA			NA			NA		
Benzene	8.47E+01	1.38E+02	3.45E-02		U	0.005	NA			NA			NA			NA		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02		U	0.005	NA			NA			NA			NA		
Chloroform	3.27E+01	1.54E+02	9.18E-03		U	0.005	NA			NA			NA			NA		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01		U	0.01	NA			NA			NA			NA		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01		U	0.005	NA			NA			NA			NA		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03		U	0.005	NA			NA			NA			NA		
Toluene	5.77E+04	1.34E+04	2.53E+01		U	0.005	NA			NA			NA			NA		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00		U	0.015	NA			NA			NA			NA		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02		U	0.005	NA			NA			NA		_	NA		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	_	U	0.002	NA			NA			NA			NA		
PAHs (mg/kg)																		
1-Methylnaphthalene					U	0.0066	NA			NA			NA			NA		
2-Methylnaphthalene					U	0.0066	NA			NA			NA			NA		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01		U	0.0066	NA			NA			NA			NA		
Naphthalene	2.41E+02	1.58E+02	7.13E-02		U	0.0066	NA			NA		7	NA			NA		

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

		Boring l	Location (Depth)	MW	-116 (2	25)	MV	V-117	(1)	MV	V-117	(5)	M\	N-117 (10)	MV	V-117	(15)
			Depth:		25			1			5			10			15	
			Date:	1/3	30/201	3	1/	31/201	13	1/	31/20	13	1	/31/201	3	. 1	/31/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)				23.2		0.01	22.5		0.01	19		0.01	26.4	1	0.01	23.9	F	0.01
Percent Moisture				25.2		0.01	22.5		0.01	13		0.01	20.4		0.01	23.9	L	0.01
Metals (mg/kg)	1.13E+06	4.07E+04	1.10E+06	7960		81.8	15200		127	5020		119	6140		133	5400	r -	121
Aluminum		5.30E+01	2.62E-01	3.22		0.409	4.74		0.634	1.4		0.593	2.48	-	0.665	7.29		0.607
Arsenic	1.77E+01		6.03E+03	181		40.9	182	-	0.634	62.2		0.593	49.2		0.665	8.33		0.607
Barium	2.23E+05	4.35E+03	4.80E+02	7.57		4.09	8.67		6.34	7.89		5.93	5.92		6.65	2.96		3.03
Boron	2.27E+05	4.65E+04		0.205		0.409	0.374	J	0.634	0.133	1	0.593	0.195	1 -	0.665	2.30	II.	0.607
Cadmium	8.97E+02	2.77E+02	2.75E+01	76500		4090	83700		6340	151000	J	5930	119000	-	6650	26700	-	6070
Calcium	1.70E+06	4.65E+05	1.97E+09	6.81		0.409	15.4		0.634	7.26		0.593	8.28		0.665	6.81		0.607
Chromium		4.05=+05	1.97 = +09	2.49		0.409	5.45		0.634	1.54		0.593	2.23		0.665	3.54		0.607
Cobalt	4.545.04		4.025.02	4.45		0.409	9.7		0.634	2.51		0.593	2.09	_	0.665	2.2		0.607
Copper	4.54E+04	1.24E+04	1.03E+03	5710		40.9	10800		63.4	3570		59.3	5340		66.5	8050		60.7
Iron	7.95E+05	2.17E+05	1.29E+04	5.57		0.409	11.9		0.634	2.9		0.593	4.46		0.665	3.04		0.607
Lead	8.00E+02	8.00E+02	4.445.00	169		40.9	410	_	63.4	105		0.593	69.2		0.665	91		0.607
Manganese	2.67E+04	4.40E+02	1.14E+03	0.000757		0.00343	0.00702	_	0.00455	103	U	0.00417	0.00201	 	0.003			0.00458
Mercury	7.36E+01	1.36E+01	6.54E-01	0.000737	J	0.409	1.01		0.634	0.457		0.593	0.00201	1	0.665	0.606	- 1	
Molybdenum	5.68E+03	1.55E+03	7.40E+01		J						J		3.85	J			J	0.607
Nickel	2.25E+04	6.19E+03	9.53E+02	6.75		0.409	11.4		0.634	3.48		0.593			0.665	5.09		0.607
Potassium				1700		40.9	3310		63.4	1110		59.3	1310	<u> </u>	66.5	1230		60.7
Selenium	5.68E+03	1.55E+03	1.93E+01	0.433		0.409	0.98		0.634	0.415	J	0.593	0.422	J	0.665		U	0.607
Silver	5.68E+03	1.55E+03	3.13E+01	100	U	0.409	000	U	0.634	101	U	0.593	110	U	0.665	45.4	U	0.607
Sodium				120		40.9	332	<u> </u>	127	164		119	119	J	133	154		60.7
Uranium	3.41E+03	9.29E+02	9.86E+02	4-0	U	0.409		U	0.634	44.0	U	0.593	40.0	U	0.665	10.4	U	0.607
Zinc	3.41E+05	9.29E+04	1.36E+04	17.8		0.409	38.7		0.634	11.6		0.593	12.2	<u> </u>	0.665	10.1		0.607
Anions (mg/kg)			Г	47.0			04.4		0.00	07.5		0.07	20.7		0.70	00.5		0.51
Chloride				47.6		5	81.1		6.38	37.5		6.07	28.7	<u> </u>	6.76	33.5		6.54
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	1.91		1	15.4		1.28	8.01		1.21	6.49	<u> </u>	1.35	5.93		1.31
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1	0.804	J	1.28		U	1.21		U	1.35		U	1.31
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1		U	1.28		U	1.21	1700	U	1.35	0.100	U	1.31
Sulfate				254		5	777		6.38	3960		60.7	1790		67.6	2100		65.4
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	1.9		U	2.52		U	2.2		U	2.53		U	2.53
Radium (pci/g)														. = ==	2.22			
Radium-226				0.78	LT,G		1.55	G	0.57	0.5	LT,TI		0.68	LT,TG			U,G	0.44
Radium-228					U,G	0.85		U,G	0.93		U	0.82	L	U,G	0.81		U,G	0.73

		Boring	Location (Depth)	MV	/-116 (25)	MV	V-117	(1)	M	N-117	(5)	M	N -117 (′	10)	M	V-117	(15)
			Depth:		25			1_			5			10			15	
			Date:	1/	30/201	3	1/	31/20	13	1	/31/201	13	1	/31/201	3	1	/31/20	13
	Industrial/ Occupational SSL	Construction Worker SSL	DAF 20 SSL	Dogust	01	D.	Doguit	0	RL	Pagult	Oval	DI.	D. ault		5.	D	01	Б.
Analyte	(mg/kg)	(mg/kg)	(mg/kg)	Result	Qual	RL	Result	Qual	KL	Result	Quai	RL	Result	Qual	RL	Result	Quai	RL
TPH (mg/kg)							T		0.005									
Gasoline Range Organics					U	0.05		U	0.065	NA			NA			NA		
Diesel Range Organics	1.00E+03				U	1.7		U	2.2	NA			NA			NA		
Motor Oil Range Organics	1.00E+03				U	3.4	<u> </u>	U	4.4	NA			NA			NA		
VOCs (mg/kg)															_			
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01		U	0.005		U	0.0065	NA			NA			NA		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03		U	0.005		U	0.0065	NA			NA			NA		
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03		U	0.005		U	0.0065	NA			NA			NA		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01		U	0.005		U	0.0065	NA			NA			NA		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00		U	0.005		U	0.0065	NA			NA			NA		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04		U	0.005		U	0.0065	NA			NA			NA		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03		U	0.005		U	0.0065	NA			NA			NA		
Benzene	8.47E+01	1.38E+02	3.45E-02		U	0.005		U	0.0065	NA			NA			NA		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02		U	0.005		U	0.0065	NA			NA			NA		
Chloroform	3.27E+01	1.54E+02	9.18E-03		U	0.005		U	0.0065	NA			NA			NA		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01		U	0.01	0.0086	J	0.0086	NA			NA			NA		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01		U	0.005		U	0.0065	NA			NA			NA		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03		U	0.005		U	0.0065	NA			NA			NA		
Toluene	5.77E+04	1.34E+04	2.53E+01		U	0.005		U	0.0065	NA			NA			NA		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00		U	0.015		U	0.019	NA			NA			NA		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02		U	0.005		U	0.0065	NA			NA			NA		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03		U	0.002		U	0.0026	NA			NA			NA		
PAHs (mg/kg)																		
1-Methylnaphthalene					U	0.0066		U	0.0085	NA			NA			NA		
2-Methylnaphthalene					U	0.0066		U	0.0085	NA			NA			NA		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01		U	0.0066		U	0.0085	NA			NA			NA		
Naphthalene	2.41E+02	1.58E+02	7.13E-02		U	0.0066		U	0.0085	NA			NA			NA		

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

		Boring	Location (Depth)	MV	N-117	(20)	М	W-117 (2	25)	M	W-118	(1)	MW	-118 (5)	MV	V-118 (10)
			Depth:		20			25			1			5			10	
			Date:	1	/31/20	13		1/31/201	3		2/4/201	3	2/-	4/2013		2	/4/2013	
Analyte Moisture (%)	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Percent Moisture	T			20.7	Γ	0.01	21		0.01	25.7		0.01	34.8		0.01	29.3	Γ	0.01
Metals (mg/kg)				20.7		0.01			0.01	20.7		0.01	34.0		10.01	29.5		10.01
Aluminum	1.13E+06	4.07E+04	1.10E+06	11200	Γ***	121	8180		126	14300	-	117	8560	1	143	7230		127
Arsenic	1.77E+01	5.30E+01	2.62E-01	1.12		0.603	0.526	J	0.631	4.08		0.585	3.53		0.72	2.53		0.64
Barium	2.23E+05	4.35E+03	6.03E+03	23.2		0.603	6.58		0.631	105		0.585	85.6		0.72	84		0.64
Boron	2.27E+05	4.65E+04	4.80E+02	2.45	J	3.01	- 5.55	Ü	3.16	7.25	-	5.85	7.21		7.15	4.16	J	6.35
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.234	J	0.603		U	0.631	0.353	J	0.585	0.13	J	0.72	0.172	J	0.64
Calcium				95400		6030	2810		63.1	55400		5850	115000		7150	187000		6350
Chromium	1.70E+06	4.65E+05	1.97E+09	11.9		0.603	7.67		0.631	14.1		0.585	8.08		0.72	7.53		0.64
Cobalt				3.43		0.603	2.05		0.631	4.33		0.585	2.15		0.72	1.81		0.64
Copper	4.54E+04	1.24E+04	1.03E+03	4.44		0.603	3.35		0.631	21.3		0.585	3.19		0.72	3.38		0.64
Iron	7.95E+05	2.17E+05	1.29E+04	6600		60.3	4590		63.1	9280		58.5	5220		71.5	4430		63.5
Lead	8.00E+02	8.00E+02		7.99		0.603	4.74		0.631	295		58.5	3.67		0.72	6.52	_	1.27
Manganese	2.67E+04	4.40E+02	1.14E+03	72		0.603	37.5		0.631	261		58.5	62.9		0.72	98.8		0.64
Mercury	7.36E+01	1.36E+01	6.54E-01	0.0033	J	0.00445	0.00000	U	0.0044	0.0401		0.00461	0.00739		0.01	0.00351	J	0.01
Molybdenum	5.68E+03	1.55E+03	7.40E+01		U	0.603		U	0.631	0.627		0.585	0.416	J	0.72	0.464	J	0.64
Nickel	2.25E+04	6.19E+03	9.53E+02	6.31		0.603	4.4		0.631	9.1		0.585	4.78		0.72	4.37		0.64
Potassium				1760		60.3	1490		63.1	3020		58.5	1610		71.5	1530		63.5
Selenium	5.68E+03	1.55E+03	1.93E+01	0.699		0.603		U	0.631	0.652		0.585	0.286	J	0.72	0.344	J	0.64
Silver	5.68E+03	1.55E+03	3.13E+01		U	0.603		U	0.631		U	0.585		C	0.72		U	0.64
Sodium				208		60.3	153		63.1	152		58.5	248		71.5	158		63.5
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.603		U	0.631		C	0.585	0.953		0.72		U	0.64
Zinc	3.41E+05	9.29E+04	1.36E+04	22		0.603	14.5		0.631	37.5		0.585	13.5		0.72	13.7		0.64
Anions (mg/kg)																		
Chloride				24.4		6.29	26.3		6.29	34		6.08	56.9		7.67	74.6		6.83
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	5.11		1.26	5.18		1.26	5.27		1.22	4.29		1.53	3.8		1.37
Nitrate-N	1.82E+06	4.96E+05	3.35E+02	0.415	J	1.26	0.566	J	1.26		U	1.22		U	1.53		U	1.37
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.26		U	1.26		U	1.22		U	1.53		U	1.37
Sulfate				349		6.29	396		6.29	3100		60.8	10700		76.7	3020		68.3
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.45		U	2.23		U	2.5		U	2.83		U	2.67
Radium (pci/g)																		
Radium-226				0.87	LT,G		0.51	LT,G	0.37	1.5	G	0.58	1.64		0.55	0.62	LT, G, TI	
Radium-228					U,G	0.75	0.82	LT,G,TI	0.64	0.89	NQ, G	0.86	0.96	NQ, G	0.84		U,G	0.74

		Boring	Location (Depth) Depth:	M\	N-117	(20)	М	W-117 (25	25)	N	IW-118 1	(1)	MV	/-118 (5) 5)	MV	/-118 (10) 10)
			Date:	1	/31/20	13		1/31/201	3		2/4/201	3	2/	4/2013		2	/4/2013	
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/kg)																		
Gasoline Range Organics				NA				U	0.063		U	0.067	NA			NA		
Diesel Range Organics	1.00E+03			NA				U	2.1		U	2.3	NA			NA		
Motor Oil Range Organics	1.00E+03			NA				U	4.3		U	4.6	NA			NA		
VOCs (mg/kg)																		
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA				U	0.0063		U	0.0067	NA			NA		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA				U	0.0063		U	0.0067	NA			NA		
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA				U	0.0063		J	0.0067	NA			NA		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA				U	0.0063		υ	0.0067	NA			NA		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA				U	0.0063		ט	0.0067	NA			NA		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA				U	0.0063		U	0.0067	NA			NA		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA				U	0.0063		U	0.0067	NA			NA		
Benzene	8.47E+01	1.38E+02	3.45E-02	NA				U	0.0063		U	0.0067	NA			NA		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA				U	0.0063		U	0.0067	NA			NA		
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA				U	0.0063		U	0.0067	NA			NA		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			0.0069	J	0.0069		U	0.0083	NA			NA		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA				U	0.0063		U	0.0067	NA			NA		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA				U	0.0063		U	0.0067	NA			NA		
Toluene	5.77E+04	1.34E+04	2.53E+01	NA				U	0.0063		U	0.0067	NA			NA		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA				U	0.019		U	0.02	NA			NA		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA				U	0.0063		U	0.0067	NA			NA		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA				U	0.0025		U	0.0027	NA			NA		
PAHs (mg/kg)																		
1-Methylnaphthalene				NA				U	0.0083		U	0.0088	NA			NA		
2-Methylnaphthalene				NA				U	0.0083		U	0.0088	NA			NA		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA				U	0.0083		U	0.0088	NA			NA		
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA				U	0.0083		U	0.0088	NA			NA		

		Boring	Location (Depth)	MV	V-118	(15)	MW-1	18 (20	0)	MV	V-118	(25)	M	W-119	(1)	MV	V-119	(5)
			Depth:		15			20			25			1			5	`
			Date:	2	/4/201	3	2/4/	2013		2	2/4/20	13	- 2	2/4/201	13	2	/4/201	3
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)									1 2 2 /									
Percent Moisture				27.2		0.01	17.9		0.01	21	<u> </u>	0.01	22.3		0.01	23		0.01
Metals (mg/kg)										2				1				
Aluminum	1.13E+06	4.07E+04	1.10E+06	2930		127	3230		118	9540		119	13800		119	13300		109
Arsenic	1.77E+01	5.30E+01	2.62E-01	0.76	J	3.17	1.02	J	2.94	3.21		1.19	3.39		1.19	4.21		1.09
Barium	2.23E+05	4.35E+03	6.03E+03	8.93		3.17	6.44		2.94	32.6		1.19	89.9		1.19	108		1.09
Boron	2.27E+05	4.65E+04	4.80E+02		U	15.8		U	14.7		U	5.95	6.94		5.94	5.63		5.43
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.335	J	3.17	0.457	J	2.94	0.22	J	1.19	0.483	J	1.19	0.295	J	1.09
Calcium				245000		6330	249000		5880	99200		5950	77800		5940	103000		5430
Chromium	1.70E+06	4.65E+05	1.97E+09	3.62		3.17	3.22		2.94	9.08		1.19	13		1.19	11.1		1.09
Cobalt				0.487	٦	3.17	0.982	J	2.94	2.15		1.19	4.37		1.19	3.77		1.09
Copper	4.54E+04	1.24E+04	1.03E+03		J	3.17	0.614	J	2.94	4.53		1.19	12.1		1.19	5.81		1.09
Iron	7.95E+05	2.17E+05	1.29E+04	1620		317	1960		294	7200		119	8910		119	8220		109
Lead	8.00E+02	8.00E+02		2.99	J	3.17	3.71		2.94	4.81		1.19	61		1.19	6.75		1.09
Manganese	2.67E+04	4.40E+02	1.14E+03	36.3		3.17	58.4		2.94	95.7		1.19	131		1.19	204		1.09
Mercury	7.36E+01	1.36E+01	6.54E-01	0.0013	J	0.00463	0.000827	J	####	0.0028	J	0.00423	0.0207		0.00436	0.00731		0.00450
Molybdenum	5.68E+03	1.55E+03	7.40E+01		U	0.633		U	2.94	0.545	J	1.19	0.593	J	1.19	0.743	J	1.09
Nickel	2.25E+04	6.19E+03	9.53E+02	1.58	J	3.17	2.51	J	2.94	7.1		1.19	9.34		1.19	8.08		1.09
Potassium				561		63.3	603		294	1740		119	3310		119	2680		109
Selenium	5.68E+03	1.55E+03	1.93E+01	1.49	J	3.17	1.38	J	2.94	0.724	J	1.19	1.18	J	1.19	0.895	J	1.09
Silver	5.68E+03	1.55E+03	3.13E+01		U	0.633		U	2.94		C	1.19		U	1.19		U	1.09
Sodium				90.4		63.3	73.1	J	294	226		119	149		119	131		109
Uranium	3.41E+03	9.29E+02	9.86E+02		C	0.633		U	2.94		C	1.19		U	1.19		U	1.09
Zinc	3.41E+05	9.29E+04	1.36E+04	6.21		3.17	6.61		2.94	22.8		1.19	56.8		1.19	27.1		1.09
Anions (mg/kg)																		
Chloride				52		6.08	66.2		5.49	NA			NA			29.2		6.06
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	8.59		1.22	7.71		1.1	NA			NA			12.3		1.21
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.22		U	1.1	NA			NA				U	1.21
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.22		U	1.1	NA			NA				U	1.21
Sulfate				777		6.08	681		5.49	NA			NA			1680		60.6
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.51		U	2.29	NA			NA				J	2.36
Radium (pci/g)																		
Radium-226					U,G	0.36			0.52	0.74			1.41	G	0.45	1.14	G	0.46
Radium-228					U,G	0.57		U,G	0.89	1.04	G, TI	0.63		U,G	0.9		U,G	0.67

		Boring l	Location (Depth)	MV	V-118	(15)	MW-1	18 (20))	MV	V-118	(25)	W	W-119	(1)	MV	V-119 ((5)
			Depth:		15			20			25			1			5	
			Date:		2/4/201	3	2/4	/2013		2	2/4/20	13	2	2/4/201	13	2	/4/2013	3
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/kg)																		
Gasoline Range Organics				NA			NA				٦	0.063		U	0.064	NA		
Diesel Range Organics	1.00E+03			NA			NA				٥	2.1		U	2.2	NA		
Motor Oil Range Organics	1.00E+03			NA			NA				ح	4.3	1.1	٦	1.1	NA		
VOCs (mg/kg)																		
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA			NA				J	0.0063		U	0.0064	NA		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA			NA				U	0.0063		U	0.0064	NA		
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA			NA				J	0.0063		С	0.0064	NA		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA			NA				U	0.0063		C	0.0064	NA		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA			NA				٦	0.0063		C	0.0064	NA		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA			NA				כ	0.0063		C	0.0064	NA		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA			NA				J	0.0063		C	0.0064	NA		
Benzene	8.47E+01	1.38E+02	3.45E-02	NA			NA				٦	0.0063		C	0.0064	NA		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA			NA				J	0.0063		U	0.0064	NA		
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA			NA				כ	0.0063		U	0.0064	NA		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			NA				כ	0.0083		U	0.013	NA		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA			NA				٦	0.0063		U	0.0064	NA		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA			NA				כ	0.0063		J	0.0064	NA		
Toluene	5.77E+04	1.34E+04	2.53E+01	NA			NA				٦	0.0063		U	0.0064	NA		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA			NA				٦	0.019		U	0.019	NA		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA			NA				J	0.0063		٦	0.0064	NA		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA			NA				כ	0.0025		٦	0.0026	NA		
PAHs (mg/kg)																		
1-Methylnaphthalene				NA			NA				U	0.0083		U	0.0085	NA		
2-Methylnaphthalene				NA			NA				U	0.0083		U	0.0085	NA		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA			NA			0.0026	J	0.0026		U	0.0085	NA		
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA			NA				U	0.0083		J	0.0085	NA		

		Boring l	Location (Depth)	M	W-119 (1	0)	MV	V-119 ((15)	MW	/-119 ((20)	M	W-119 (2	25)	RO	-SB-1	(1)
			Depth:		10			15			20			25			1	
			Date:		<u>2/4/2013</u>		2	/4/201	3	2	<u>/4/201</u>	3		2/4/2013	3	1/	31/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)																		
Percent Moisture				24.8		0.01	26		0.01	20.7	<u> </u>	0.01	19.3		0.01	17.7		0.01
Metals (mg/kg)																		
Aluminum	1.13E+06	4.07E+04	1.10E+06	9390		126	5700		134	10300		120	11600		123	10800		117
Arsenic	1.77E+01	5.30E+01	2.62E-01	6.34		1.26	2.98	J	3.34	2.8		0.599	2.38		1.23	4.07		0.583
Barium	2.23E+05	4.35E+03	6.03E+03	50.7		1.26	47.3		3.34	208		0.599	18.2		1.23	149		0.583
Boron	2.27E+05	4.65E+04	4.80E+02	6.02	J	6.3	11.9	J	16.7	4.44		3	6.19		6.13	6.67		2.92
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.167	J	1.26		U	3.34	0.188	7	0.599	0.218	J	1.23	0.266	J	0.583
Calcium				89200		6300	246000		6680	65300		5990	124000		6130	105000		5830
Chromium	1.70E+06	4.65E+05	1.97E+09	9.37		1.26	4.79		3.34	8.86		0.599	9.42		1.23	10.6		0.583
Cobalt				3.84		1.26	2.05	J	3.34	2.77		0.599	4.83		1.23	4.17		0.583
Copper	4.54E+04	1.24E+04	1.03E+03	4.42		1.26	2.39	J	3.34	3.91		0.599	4.7		1.23	8.25		0.583
Iron	7.95E+05	2.17E+05	1.29E+04	7850		126	4080		334	6080		59.9	8790		123	8020		58.3
Lead	8.00E+02	8.00E+02		6.14		1.26	2.84	J	3.34	4.36		0.599	5.31		1.23	10.6		0.583
Manganese	2.67E+04	4.40E+02	1.14E+03	252		1.26	523		3.34	88.8		0.599	184		1.23	236		58.3
Mercury	7.36E+01	1.36E+01	6.54E-01	0.00912		0.00469	0.00611		0.00462	0.00501		0.00439	0.00225	J	0.00416	0.00979		0.00425
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.858	J	1.26	2.16	J	3.34	0.302	J	0.599		U	1.23	0.495	J	0.583
Nickel	2.25E+04	6.19E+03	9.53E+02	9.28		1.26	8.56		3.34	6.69		0.599	8.83		1.23	8.27		0.583
Potassium				2500		126	1280		334	1650		59.9	2210		123	2690		58.3
Selenium	5.68E+03	1.55E+03	1.93E+01	0.644	J	1.26	1.32	J	3.34	0.62		0.599	0.663	J	1.23	0.655		0.583
Silver	5.68E+03	1.55E+03	3.13E+01		U	1.26		U	3.34		U	0.599		U	1.23		U	0.583
Sodium				134		126		U	334	130		59.9	140		123	132		58.3
Uranium	3.41E+03	9.29E+02	9.86E+02		U	1.26		U	3.34		U	0.599		U	1.23		U	0.583
Zinc	3.41E+05	9.29E+04	1.36E+04	21.7		1.26	11.8		3.34	19.7		0.599	23.2		1.23	31.7		0.583
Anions (mg/kg)																		
Chloride				22.6		6.07	18.9		6.39	33.4		5.46	34.4		5.66	6.56		6.06
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	5.94		1.21	5.87		1.28	4.97		1.09	3.28		1.13	16.4		1.21
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.21		U	1.28		U	1.09		U	1.13		U	1.21
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.21		U	1.28		U	1.09		U	1.13		U	1.21
Sulfate				1080		6.07	1310		6.39	849		5.46	495		5.66	204		6.06
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.58		U	2.58		U	2.4		U	0.57		U	2.36
Radium (pci/g)																		
Radium-226				1.44	G	0.55	0.56	LT,G		1.07	G	0.48	0.66	LT,G,TI	0.64	1.32	G	0.46
Radium-228				0.8	LT,G,TI	0.68		U,G	0.97	0.9	LT,G	0.65		U,G	0.72		U,G	

		Boring l	Location (Depth)	M	W-119 (1	0)	MV	V-119 (15)	MW	/-119 (20)	М	W-119 (2	25)	RC)-SB-1	(1)
			Depth:		10			15			20			25			1	
			Date:		2/4/2013		2	/4/2013	3	2	/4/201	3		2/4/2013		1.	/31/201	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/kg)																		
Gasoline Range Organics				NA			NA			NA				U	0.062		U	0.061
Diesel Range Organics	1.00E+03			NA			NA			NA				U	2.1		U	2.1
Motor Oil Range Organics	1.00E+03			NA			NA			NA				U	4.2		U	4.1
VOCs (mg/kg)																		
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA			NA			NA				U	0.0062		U	0.0061
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA			NA			NA				U	0.0062		U	0.0061
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA			NA			NA				U	0.0062		U	0.0061
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA			NA			NA				U	0.0062		U	0.0061
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA			NA			NA				U	0.0062		U	0.0061
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA			NA			NA				U	0.0062		U	0.0061
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA			NA			NA				U	0.0062		U	0.0061
Benzene	8.47E+01	1.38E+02	3.45E-02	NA			NA			NA				J	0.0062		U	0.0061
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA			NA			NA				J	0.0062		U	0.0061
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA			NA			NA				כ	0.0062		U	0.0061
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			NA			NA				J	0.012	0.007	J	0.0070
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA			NA			NA				כ	0.0062		U	0.0061
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA			NA			NA				U	0.0062		U	0.0061
Toluene	5.77E+04	1.34E+04	2.53E+01	NA			NA			NA				U	0.0062		U	0.0061
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA			NA			NA				U	0.019		U	0.018
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA			NA			NA				U	0.0062		U	0.0061
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA			NA			NA				ט	0.0025		U	0.0024
PAHs (mg/kg)																		
1-Methylnaphthalene				NA			NA			NA				J	0.0082	0.0074	J	0.0074
2-Methylnaphthalene				NA			NA			NA				J	0.0082	0.008	J	0.0080
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA			NA			NA				U	0.0082		U	0.008
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA			NA			NA				J	0.0082		U	0.008

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

		Boring l	Location (Depth)	R	O-SB-1 (5	5)	RC	D-SB-1 (*	10)	RO-	SB-1	(15)	RO	O-SB-1 (20)	RC)-SB-1	(25)
			Depth:		5			10			15			20			25	
			Date:		1/31/2013			/31/2013	3	2	/1/201	3		2/1/2013	3		2/1/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL_	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Moisture (%)																		
Percent Moisture				22.7		0.01	31		0.01	23.5		0.01	20.3		0.01	20.9		0.01
Metals (mg/kg)																		
Aluminum	1.13E+06	4.07E+04	1.10E+06	7110		122	4110		127	8520		110	6090		121	18600		124
Arsenic	1.77E+01	5.30E+01	2.62E-01	3.42		0.612	2.03		0.635	1.68		0.549	2.91		0.606	3.12		0.621
Barium	2.23E+05	4.35E+03	6.03E+03	180		0.612	186		0.635	95.7		0.549	268		60.6	16.5		0.621
Boron	2.27E+05	4.65E+04	4.80E+02	4.3		3.06	4.47	J	6.35	5.8		5.49	3.56		3.03	3.76		3.1
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.085	J	0.612	0.103	J	0.635	0.262	7	0.549	0.245	J	0.606		U	0.621
Calcium				87900		6120	184000		6350	204000		5490	252000		6060	11500		62.1
Chromium	1.70E+06	4.65E+05	1.97E+09	6.49		0.612	5.94		0.635	6.96		0.549	6.61		0.606	9.2		0.621
Cobalt				2.59		0.612	1.28		0.635	3.65		0.549	1.2		0.606	6.52		0.621
Copper	4.54E+04	1.24E+04	1.03E+03	2.64		0.612	2.52		0.635	3.94		0.549	2.38		0.606	6.56		0.621
Iron	7.95E+05	2.17E+05	1.29E+04	4780		61.2	2390		63.5	5050		54.9	3230		60.6	9750		62.1
Lead	8.00E+02	8.00E+02		3.75		0.612	2.02		0.635	7.03		0.549	4.04		0.606	12		0.621
Manganese	2.67E+04	4.40E+02	1.14E+03	55.2		0.612	32.3		0.635	76.1		0.549	35.3		0.606	193		0.621
Mercury	7.36E+01	1.36E+01	6.54E-01	0.00395	J	0.00438	0.00167	J	0.00489	0.00335	J	0.00451	0.00102	J	0.00425	0.0274		0.00426
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.205	J	0.612		U	0.635	0.165	J	0.549		U	0.606	0.42	J	0.621
Nickel	2.25E+04	6.19E+03	9.53E+02	4.83		0.612	2.4		0.635	5.53		0.549	3.95		0.606	10.4		0.621
Potassium				1430		61.2	808		63.5	1740		54.9	1250		60.6	3560		62.1
Selenium	5.68E+03	1.55E+03	1.93E+01	0.542	J	0.612	0.276	J	0.635	0.943		0.549	0.62		0.606	0.414	J	0.621
Silver	5.68E+03	1.55E+03	3.13E+01		U	0.612		U	0.635		U	0.549		U	0.606		Ü	0.621
Sodium				183		61.2	125		63.5	123		54.9	101		60.6	105	-	62.1
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.612		U	0.635		U	0.549		U	0.606		U	0.621
Zinc	3.41E+05	9.29E+04	1.36E+04	14.4		0.612	9.11		0.635	20		0.549	9.84		0.606	30.7	 	0.621
Anions (mg/kg)																33.,		0.021
Chloride				247		6.44	180		7.15	80.6		6.52	71.5		6.18	108		6.27
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	12.5		1.29	21.5		1.43	15.3		1.3	9.85		1.24	14.6		1.25
Nitrate-N	1.82E+06	4.96E+05	3.35E+02	0.515	J	1.29		U	1.43	0.94	J	1.3	0.84	J	1.24		U	1.25
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.29		U	1.43		Ū	1.3		U	1.24		Ü	1.25
Sulfate				2350		32.2	1900	-	35.7	832		6.52	703		6.18	851	-	6.27
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.39		U	2.71		U	2.35	0.788	J	2.42	0.747	J	2.49
Radium (pci/g)																		
Radium-226				1.09	G	0.54	0.89	LT,G,TI	0.58	0.87	LT,G	0.38	0.58	LT,G,TI	0.51	1.07	G	0.45
Radium-228					M,G,NQ			U,G	0.93		U,G	0.82	0.99	NQ,G				0.64

		Boring	Location (Depth)	R	O-SB-1 (5	5)	RC)-SB-1 (1	0)	RO	-SB-1	15)	RO	D-SB-1 (2	20)	RO	-SB-1	(25)
			Depth:		5			10			15			20			25	
	·		Date:		1/31/2013		1 1	/31/2013	3	2	/1/201	3		2/1/2013		2	2/1/201	3
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Popult	0	В.	Doort	01	Di
	(mg/kg)	(ilig/kg)	(ilig/kg/	Result	Quai	KL	Result	Quai	KL	Result	Quai	- KL	Result	Qual	RL	Result	Quai	RL
TPH (mg/kg)	1			NA			NA			NA NA			NIA			T		
Gasoline Range Organics	4.005.00			NA NA			NA NA						NA			NA		
Diesel Range Organics	1.00E+03			NA NA			NA NA			NA NA			NA			NA		
Motor Oil Range Organics	1.00E+03			INA			NA			NA			NA			NA		
VOCs (mg/kg)				114														
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA			NA NA			NA			NA			NA		
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA			NA			NA			NA			NA	\sqcup	
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA			NA			NA			NA			NA		
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA			NA			NA			NA			NA		
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA			NA			NA			NA			NA		
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA			NA			NA			NA			NA		
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA			NA			NA			NA			NA		
Benzene	8.47E+01	1.38E+02	3.45E-02	NA			NA			NA			NA			NA		
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA			NA			NA			NA			NA		
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA			NA			NA			NA			NA		
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			NA			NA			NA			NA		
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA			NA			NA			NA			NA		
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA			NA			NA			NA			NA		
Toluene	5.77E+04	1.34E+04	2.53E+01	NA			NA			NA			NA			NA		
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA			NA			NA			NA			NA		
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA			NA			NA			NA			NA		
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA			NA			NA			NA			NA		
PAHs (mg/kg)																		
1-Methylnaphthalene				NA			NA			NA			NA			NA		
2-Methylnaphthalene				NA			NA			NA			NA			NA		
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA			NA			NA			NA			NA		
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA			NA			NA			NA			NA		

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

		Boring I	Location (Depth)	RO	-SB-1 (3	0)	RO	-SB-1	(35)
			Depth:		30			35	· · · · · ·
			Date:	2	2/1/2013		2	2/1/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL
Moisture (%)	r								
Percent Moisture				26.6	L	0.01	16		0.01
Metals (mg/kg)	1.405.00		1.105.00	7040		404	4000		440
Aluminum	1.13E+06	4.07E+04	1.10E+06	7810		134	4280		113
Arsenic	1.77E+01	5.30E+01	2.62E-01	2.01		0.669	1.82		0.564
Barium	2.23E+05	4.35E+03	6.03E+03	40.7		0.669	72.7		0.564
Boron	2.27E+05	4.65E+04	4.80E+02	3.67		3.35	2.01	J	2.82
Cadmium	8.97E+02	2.77E+02	2.75E+01	0.151	J	0.669	0.0817	J	0.564
Calcium				95500		6690	73200		5640
Chromium	1.70E+06	4.65E+05	1.97E+09	6.41		0.669	4.22		0.564
Cobalt				1.97		0.669	1.87		0.564
Copper	4.54E+04	1.24E+04	1.03E+03	2.72		0.669	1.7		0.564
Iron	7.95E+05	2.17E+05	1.29E+04	4870		66.9	3220		56.4
Lead	8.00E+02	8.00E+02		4.05		0.669	2.92		0.564
Manganese	2.67E+04	4.40E+02	1.14E+03	78.8		0.669	58.1		0.564
Mercury	7.36E+01	1.36E+01	6.54E-01	0.000638	J	0.00454		U	0.00409
Molybdenum	5.68E+03	1.55E+03	7.40E+01	0.22	7	0.669	0.198	J	0.564
Nickel	2.25E+04	6.19E+03	9.53E+02	4.51		0.669	3.34		0.564
Potassium				1450		66.9	932		56.4
Selenium	5.68E+03	1.55E+03	1.93E+01	0.539	J	0.669	0.332	J	0.564
Silver	5.68E+03	1.55E+03	3.13E+01		U	0.669		U	0.564
Sodium				100		66.9	53.7	J	56.4
Uranium	3.41E+03	9.29E+02	9.86E+02		U	0.669		U	0.564
Zinc	3.41E+05	9.29E+04	1.36E+04	14.9		0.669	8.89		0.564
Anions (mg/kg)									
Chloride				134		6.72	46.7		5.87
Fluoride (F-, Anion)	4.54E+04	1.24E+04	8.37E+00	5.24		1.34	5.8		1.17
Nitrate-N	1.82E+06	4.96E+05	3.35E+02		U	1.34		C	1.17
Nitrite	1.14E+05	3.10E+04	2.09E+01		U	1.34		U	1.17
Sulfate				763		6.72	614		5.87
Cyanide	6.81E+02	1.86E+02	4.41E+00		U	2.48	0.672	J	2.24
Radium (pci/g)									
Radium-226				0.56	LT,G,TI		0.72	LT	0.38
Radium-228					U,G	0.94		U	0.59

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

		Boring I	Location (Depth)	RO	-SB-1 (3	0)	RO	-SB-1	(35)
			Depth:		30			35	
			Date:	2	2/1/2013		2	2/1/20	13
Analyte	Industrial/ Occupational SSL (mg/kg)	Construction Worker SSL (mg/kg)	DAF 20 SSL (mg/kg)	Result	Qual	RL	Result	Qual	RL
TPH (mg/kg)									
Gasoline Range Organics				NA				U	0.059
Diesel Range Organics	1.00E+03			NA				U	2
Motor Oil Range Organics	1.00E+03			NA				U	4
VOCs (mg/kg)									
1,1,1-Trichloroethane	7.89E+04	1.48E+04	5.82E+01	NA				U	0.0059
1,1,2,2-Tetrachloroethane	4.35E+01	2.21E+02	4.26E-03	NA					0.0059
1,1,2-Trichloroethane	1.33E+01	4.72E+02	2.23E-03	NA				J	0.0059
1,1-Dichloroethane	3.59E+02	1.70E+03	1.20E-01	NA				J	0.0059
1,1-Dichloroethene	2.29E+03	4.32E+02	2.32E+00	NA				U	0.0059
1,2-Dibromoethane	3.22E+00	1.60E+01	3.08E-04	NA				U	0.0059
1,2-Dichloroethane	4.35E+01	5.87E+01	7.11E-03	NA				J	0.0059
Benzene	8.47E+01	1.38E+02	3.45E-02	NA				ט	0.0059
Carbon Tetrachloride	5.98E+01	2.26E+02	3.21E-02	NA				J	0.0059
Chloroform	3.27E+01	1.54E+02	9.18E-03	NA				J	0.0059
Dichloromethane	4.70E+03	1.12E+03	8.24E-01	NA			0.0056	J	0.0056
Ethylbenzene	3.78E+02	1.83E+03	2.60E-01	NA				U	0.0059
Tetrachloroethene	3.66E+01	2.12E+02	8.61E-03	NA				U	0.0059
Toluene	5.77E+04	1.34E+04	2.53E+01	NA				U	0.0059
Total Xylenes	3.98E+03	7.43E+02	3.13E+00	NA				U	0.018
Trichloroethene	4.13E+01	7.68E+00	2.11E-02	NA				U	0.0059
Vinyl Chloride	2.61E+01	1.49E+02	1.08E-03	NA				U	0.0024
PAHs (mg/kg)									
1-Methylnaphthalene				NA				C	0.0078
2-Methylnaphthalene				NA				U	0.0078
Benzo(a)Pyrene	2.34E+00	2.13E+01	5.20E-01	NA				U	0.0078
Naphthalene	2.41E+02	1.58E+02	7.13E-02	NA				C	0.0078

Notes:

Screening hierarchy is as follows:

Samples from 1 foot depth interval are screened against lower of Ind/Occ SSL or CW SSL.

Samples from >1 to 10 foot depth interval are screened against CW SSL.

Samples from >10 foot depth interval are screened against DAF 20 SSL.

TPH results are screened against the "unknown oil" SSL from Table 6-2, 2012 NMED Risk Assssement Guidance.

Bold, italic font with yellow highlighting indicates a result reported above the appropriate SSL.

RLs shown in italics font with gray highlighting exceed the appropriate SSL for that compound and depth.

Blank cells in the "Results" column indicate a non-detect value for that compound.

Abbreviations:

--- = no SSL available

DAF = dilution attenuation factor

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

J = estimated value. The result is less than the reporting limit but greater than the instrument method detection limit.

LCS = laboratory control sample

LT = the sample has a detection above the achieved minimum detectable concentration but below the requested.

mg/kg = milligrams per kilogram

M3 = the requested MDC was not met, but the reported activity is greater than the reported MDC

NA = not applicable

ND = indicates the compound was analyzed for but not detected

NQ = not quantified

PAH = polycyclic aromatic hydrocarbon

pci/g = average picocuries per gram

qual = qualifier

RL = reporting limit

SVOC = semivolatile organic compound

SSL = soil screening level

TI = the analyte is tentatively identified

TPH = total petroleum hydrocarbons

U = Indicates the compound was analyzed for but not detected

		Well:			<u> </u>			MW	-114					=		<u> </u>	MV	V-115		
		Date:		/3/2013	3	5/	15/201	3	9	/5/2013	3	11	/21/20:	l3	2	/3/2013			15/201	3
																, , <u>, , , , , , , , , , , , , , , , , </u>				
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/L)																				
Gasoline Range Organics				U	0.05		U	0.05		U	0.05		U	0.05		U	0.05		U	0.05
Diesel Range Organics	2.00E-01	NMED TPH		U	0.052		U	0.052		U	0.052		U	0.053		U	0.051		U	0.051
Oil Range Organics	2.00E-01	NMED TPH		U	0.1		U	0.1		U	0.1		U	0.11		U	0.1		U	0.1
VOCs (mg/L)																				
1,1,1-Trichloroethane	6.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U_	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2-Trichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethane	2.50E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001		υ	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Benzene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Carbon Tetrachloride		EPA MCL		U	0.001		U	0.001		U	0.001		Ų	0.001		U	0.001		U	0.001
Chloroform	8.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001	<u> </u>	U	0.001
Dichloromethane	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Ethylbenzene	7.00E-01	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Tetrachloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Toluene	7. <u>50E-01</u>	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Total Xylenes	6.20E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Trichloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Vinyl Chloride	1.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
SVOCs (mg/L)			<u> </u>																	
1-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
2-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Naphthalene		NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Benzo(a)Pyrene	2.00E-04	EPA MCL		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Dissolved Metals (mg/L)																				
Aluminum		NMED GW Irrigation (20.6.2.3103.C)	0.0265		0.01		J	0.01	0.00848	J	0.01	0.00813	J	0.01	0.00888	J	0.01	0.00816	J	0.01
Arsenic	1.00E-02		0.00561		0.005	0.00437	J	0.005	0.00502		0.005	0.00539		0.005	0.00499	J	0.005	0.00478		0.01
Barium		NMED GW Human Health (20.6.2.3103.A)	0.0204		0.005			0.005	0.017		0.005	0.0112		0.005	0.0309		0.005	0.0107		0.005
Boron		NMED GW Irrigation (20.6.2.3103.C)	0.139		0.1	0.101		0.1	0.132		0.05	0.816		0.1	0.865		0.5	0.605		0.1
Cadmium	5.00E-03	EPA MCL		U	0.002		U	0.002	4	U	0.002		U	0.002		U	0.002		U	0.002
Calcium			600		5	576		5	672		5	558		25	518		5	511		5
Chromium		NMED GW Human Health (20.6.2.3103.A)		U	0.005		U	0.005		U	0.005	0.00119	J	0.005	0.0000	U	0.005		U	0.01
Cobalt		NMED GW Irrigation (20.6.2.3103.C)	0.00738		0.005	0.00451	J	0.005	0.00718		0.005		U	0.005	0.0029	J	0.005		U	0.01
Copper				U	0.005		U	0.005	0.00197	J	0.005	0.467	U	0.005	0.00704		0.005		U	0.01
Iron				U	0.2		U	0.2		U	0.2	0.167	J	0.2		U	0.2		U	0.4
Lead		EPA MCL		U	0.005		U	0.005		U	0.005	0.005	U	0.005	0.055	U	0.005	0.0067	U	0.005
Manganese		NMED GW Domestic (20.6.2.3103.B)	1.51	L	0.005	0.844		0.005	1.42	<u> </u>	0.005	0.035		0.005	0.255		0.005	0.0267		0.01
Mercury		NMED GW Human Health (20.6.2.3103.A)	0.0100	U	0.0002	2.00070	U	0.0002	0.0446	U	0.0002	0.00045		0.005	0.00077	U	0.0002	0.0075	U	0.0002
Molybdenum			0.0103		0.005	0.00978		0.005	0.0116		0.005	0.00815		0.005	0.00877	-	0.005	0.0075		0.005
Nickel		NMED GW Irrigation (20.6.2.3103.C)	0.00651		0.005	0.0041	J	0.005	0.00558		0.005	0.00369	J	0.005	0.00483	J	0.005	0.70	U	0.01
Potassium		NAMES CONTINUES OF THE PROPERTY OF THE PROPERT	2.86	-	0.2	2.76		0.2	2.94	— —	0.2	0.678		0.2	1.78		0.2	0.78		0.2
Selenium		NMED GW Human Health (20.6.2.3103.A)	0.00222	J.	0.005	0.00636		0.005	0.00245	-	0.005	0.00451		0.005	0.0081	11	0.005	0.00654		0.01
Silver	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	146	U	0.005	122	U	0.005	120	U	0.005	350	U	0.005	199	U	0.005	200	U	0.005
Sodium	2.005.02	NIMED COMMITTEE IN THE COMMITTEE COMMITTE COMMITTEE COMMITTEE COMMITTEE COMMITTEE COMMITTEE COMMITTEE COMM	146		0.2	123		0.2	138		0.2	250		10 0.005	0.0843		2	206		2
Uranium	3.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.0156	<u> </u>	0.005	0.0108		0.005	0.0138		0.005	0.0856			0.00973		0.005	0.0825	-, 	0.005
Zinc	1.00E+01	NMED GW Domestic (20.6.2.3103.B)	0.00343	L J	0.005		U	0.005		U	0.005	0.0806		0.005	0.00973		0.005	0.00821	J	0.01

		Well:						MW-	-114								MW-	115		
		Date:	2	/3/2013	3	5/	15/201	3	9	/5/2013	3	11,	/21/201	.3	2/	3/2013		5/	15/2013	}
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL_	Result	Qual	RL	Result	Qual	RL
Radium (pCi/L)																				
Radium-226			0.43	LT			U	0.36	0.37	LT	0.21		U	0.24		U	0.23		J	0.58
Radium-228			0.74	LT			U	0.55	0.62	LT	0.52	1.07		0.47		U	0.52		U	0.64
Radium-226 & Radium-228	5.00E+00	USEPA MCL	1.17			0		0.91	0.99		0.73	1.07		0.71	0		0.75	0		1.22
Anions (mg/L)																				
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	158		25	150		50	199		25	422		25	422		25	373		50
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	1.76		0.1	1.91		0.1	1.82		0.1	1.37		0.1	1.1		0.1	1.18		0.1
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)	1.43	Н	0.1		C	2	0.055	JH	0.03		U	1	0.821	Н	0.1		U	2
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	2200		25	1800		50	1950		25	3060		25	2790		25	2490		50
Cyanide	2.00E-01	EPA MCL		U	0.02	0.00432	J	0.02		U	0.02		U	0.02		J	0.02		U	0.02
Total Dissolved Solids (mg/L	_)																			
Total Dissolved Solids		NMED GW Domestic (20.6.2.3103.B)	3760		10	3990		10	3870		10	5390		10	4960		10	<i>5510</i>		10

Table 7 - Summary of Groundwater Sampling Analytical Results Fourth Quarter 2013 Final Report - RO Reject Discharge Fields

Navajo Refining Company, Artesia Refinery, New Mexico

		Well:				MW-115	(cont	inued)							M	W-116	 			
		Date:	5/15/20	13 (dup	licate)		4/2013		11,	/21/201	13	2/	3/2013	3		16/201		9/	4/2013	
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/L)																				
Gasoline Range Organics				U	0.05		U	0.05		U	0.05		U	0.05		U	0.05		U	0.05
Diesel Range Organics	2.00E-01	NMED TPH		U	0.052		U	0.052		U	0.051		U	0.051		U	0.052		U	0.052
Oil Range Organics	2.00E-01	NMED TPH		U	0.1		U	0.1		U	0.1		U	0.1		U	0.1		U	0.1
VOCs (mg/L)										. —										
1,1,1-Trichloroethane		NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2-Trichloroethane		EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethane	2.50E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Benzene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Carbon Tetrachloride	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Chloroform	8.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		Ų	0.001		U	0.001		U	0.001
Dichloromethane	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Ethylbenzene	7.00E-01	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Tetrachloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Toluene	7.50E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Total Xylenes	6.20E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Trichloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Vinyl Chloride	1.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
SVOCs (mg/L)																				
1-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
2-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Naphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Benzo(a)Pyrene	2.00E-04	EPA MCL		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Dissolved Metals (mg/L)																				
Aluminum	5.00E+00	NMED GW Irrigation (20.6.2.3103.C)	0.00865	J	0.01	0.00648	J	0.01	0.00714	J	0.01		UB	0.01	0.349		0.01	0.0126		0.01
Arsenic		EPA MCL	0.00427	J	0.005	0.00467	j	0.005	0.00616		0.005	0.00274	J	0.005	0.00502		0.005	0.00535		0.005
Barium		NMED GW Human Health (20.6.2.3103.A)	0.011		0.005	0.0106		0.005	0.011		0.005	0.0161		0.005	0.0111		0.005	0.00928		0.005
Boron	7.50E-01	NMED GW Irrigation (20.6.2.3103.C)	0.635		0.1	0.782		0.05	0.858		0.1	0.22		0.1	0.238		0.1	0.304		0.05
Cadmium		EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Calcium			495		5	622		5	606		25	624		10	578		5	588		5
Chromium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.005		U	0.005		U	0.005		U	0.005	0.00119	J	0.005		U	0.005
Cobalt	5.00E-02	NMED GW Irrigation (20.6.2.3103.C)		U	0.005		U	0.005		U	0.005		U	0.005		U	0.005		U	0.005
Copper		NMED GW Irrigation (20.6.2.3103.C)	0.00151	J	0.005		U	0.005		U	0.005		U	0.005	0.00176	J	0.005		U	0.005
Iron		NMED GW Irrigation (20.6.2.3103.C)		Ü	0.2		U	0.2		U	0.2		J	0.2	0.201		0.2		U	0.2
Lead		EPA MCL		Ü	0.005		U	0.005		U	0.005		U	0.005		J	0.01		U	0.005
Manganese	2.00E-01	NMED GW Domestic (20.6.2.3103.B)	0.023		0.005	0.0362		0.005	0.0249		0.005	0.0437		0.005	0.0342		0.005	0.00478	J	0.005
Mercury	2.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002				0.000131	J	0.0002	0.000046	J	0.0002	0.000061	J	0.0002
Molybdenum	1.00E+00	NMED GW Irrigation (20.6.2.3103.C)	0.00723		0.005	0.00663		0.005	0.00738		0.005	0.00348	J	0.005	0.00308	J	0.005	0.00304	J	0.005
Nickel	2.00E-01	NMED GW Irrigation (20.6.2.3103.C)	0.00225	J	0.005	0.00208	J	0.005	0.00206	J	0.005	0.0012	J	0.005	0.00204	J	0.005	0.00115	J	0.005
Potassium			0.766		0.2	0.782		0.2	0.709		0.2	1.06		0.2	1.38		0.2	1.21		0.2
Selenium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.00734	1	0.005	0.00568		0.005	0.00506		0.005	0.00203	J	0.005	0.00733		0.005	0.00493	J	0.005
Silver	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	T	U	0.005		U	0.005		U	0.005		U	0.005			0.005		U	0.005
Sodium		The state of the s	201	 	2	247		2	261		10	206		4	194		2	235		2
Uranium	3.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.0731		0.005	0.0936		0.005	0.0874		0.005	0.0331		0.005	0.0343		0.01	0.04		0.005
Zinc		NMED GW Domestic (20.6.2.3103.B)	T	U	0.005		U	0.005	0.0257		0.005		UB	0.005		U	0.005		U	0.005
			4				•						_							

		Well:				MW-115	(cont	inued)							M	W-116	*************************************			
		Date:	5/15/20	13 (dup	licate)	9/	4/2013		11,	21/201	.3	2,	/3/2013		5/	16/2013	3	9,	/4/2013	,
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Radium (pCi/L)																				
Radium-226	<u></u>			Y1,U			U	0.26		U	0.28		U	0.32		Ü	0.36		U	0.25
Radium-228				Y1,U	0.55		U	0.47	1.11		0.47		U	0.55		U	0.46		U	0.53
Radium-226 & Radium-228	5.00E+00	USEPA MCL	0		1.09	0		0.73	1.11		0.75	0		0.87	0		0.82	0		0.78
Anions (mg/L)		,																		
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	364		50	530		25	428		25	389		25	330		50	344		25
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	1.15		0.1	0.845		0.1	1.36		0.1	1.31	J	0.1	1.19		0.1	1.17		0.1
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)		U	_ 2	0.174	JH	0.03		U	1	1.37	J	0.1		U	2	0.418	Н	0.03
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	2420		50	2900		25	3090		25	2250		25	2080		50	2180		25
Cyanide	2.00E-01	EPA MCL		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02
Total Dissolved Solids (mg/L	-)																			
Total Dissolved Solids	1.00E+03	NMED GW Domestic (20.6.2.3103.B)	4990		10	6130		10	5370		10	3650		10	4480		10	4440		10

		Well:				MW-110	(con	tinued)								1W-11	7			
		Date:	9/4/201	3 (dup	licate)		/20/20:		11/20/20	013 (du	iplicate)	2	/3/201	3		/15/20:			9/4/201	3
					T		T .				1		, -,	Ť	- 3,	13,20.	Ī	<u> </u>	7 1/201	
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/L)																				
Gasoline Range Organics				U	0.05		U	0.05		U	0.05		U	0.05		U	0.05		U	0.05
Diesel Range Organics	2.00E-01	NMED TPH		U	0.052		U	0.054		U	0.053		U	0.052		U	0.052		U	0.051
Oil Range Organics	2.00E-01	NMED TPH		U	0.1		U	0.11		U	0.11		U	0.1		U	0.1		U	0.1
VOCs (mg/L)																				
1,1,1-Trichloroethane	6.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2-Trichloroethane		EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethane		NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001	****	U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		Ų	0.001		U	0.001		U	0.001		U	0.001
Benzene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Carbon Tetrachloride	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Chloroform	8.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Dichloromethane	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Ethylbenzene	7.00E-01	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Tetrachloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Toluene	7.50E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		Ų	0.001		U	0.001		U	0.001
Total Xylenes	6.20E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Trichloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Vinyl Chloride	1.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
SVOCs (mg/L)																				
1-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
2-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Naphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Benzo(a)Pyrene	2.00E-04	EPA MCL		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Dissolved Metals (mg/L)																				
Aluminum	5.00E+00		0.0118		0.01	0.00814	J	0.01	0.0073	J	0.01	0.0289		0.01	0.0184		0.01	0.0169		0.01
Arsenic	1.00E-02		0.00467	J	0.005	0.00525		0.005	0.00526			0.00498	J		0.00367	J	0.01	0.00559		0.005
Barium	1.00E+00	NMED GW Human Health (20.6.2.3103.A)	0.00946		0.005	0.00989		0.005	0.011		0.005	0.0235		0.005	0.0113		0.005	0.0108		0.005
Boron	7.50E-01	NMED GW Irrigation (20.6.2.3103.C)	0.281	_	0.05	0.312		0.05	0.307		0.05	0.207		0.1	0.175		0.1	0.202		0.05
Cadmium	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Calcium			631		5	606		25	616		25	_568		5	524		5	550		5
Chromium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.005		U	0.005		U	0.005		U	0.005		U	0.01		U	0.005
Cobalt	5.00E-02	NMED GW Irrigation (20.6.2.3103.C)		U	0.005		U	0.005		U	0.005	0.00256	J	0.005		U	0.01		U	0.005
Copper	1.00E+00	NMED GW Irrigation (20.6.2.3103.C)		U	0.005		U	0.005		U	0.005	0.0141		0.005		U	0.01		U	0.005
Iron	1.00E+00	NMED GW Irrigation (20.6.2.3103.C)		U	0.2		U	0.2	0.132	J	0.2		U	0.2		U	0.4		U	0.2
Lead	1.50E-02			U	0.005		U	0.005		U	0.005		U	0.005		U	0.005		U	0.005
Manganese	2.00E-01	NMED GW Domestic (20.6.2.3103.B)	0.00366	J	0.005	0.0092		0.005	0.00576		0.005	0.108			0.00978	J		0.00502		0.005
Mercury	2.00E-03	NMED GW Human Health (20.6.2.3103.A)	0.00006	J	0.0002								U	0.0002		U	0.0002		U	0.0002
Molybdenum	1.00E+00	NMED GW Irrigation (20.6.2.3103.C)	0.003	J	0.005	0.0035	J	0.005	0.00336	J	0.005	0.0112		0.005	0.00664		0.005	0.014	I	0.005
Nickel	2.00E-01	NMED GW Irrigation (20.6.2.3103.C)	0.00112	J	0.005	0.00245	J	0.005	0.00144	J	0.005	0.00413	J	0.005		U	0.01	0.00189	J	0.005
Potassium			1.22		0.2	1.3		0.2	1.37		0.2	6.92		0.2	4.37		0.2	8.92		0.2
Selenium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.00558		0.005	0.00611		0.005	0.00582		0.005	0.00427	J	0.005	0.00585	J	0.01	0.00316	J	0.005
Silver	5.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.005		U	0.005		U	0.005		U	0.005		U	0.005		U	0.005
Sodium			230		2	235		10	235		10	176		0.2	160		0.2	118		0.2
Uranium	3.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.0388		0.005	0.0391		0.005	0.0387		0.005	0.0263		0.005	0.0247		0.005	0.0224		0.005
Zinc	1.00E+01	NMED GW Domestic (20.6.2.3103.B)		U	0.005	0.0311		0.005	0.0218		0.005	0.0123		0.005		U	0.01	0.00266	J	0.005

		Well:				MW-116	(cont	inued)							M	W-117	7			
		Date:	9/4/201	3 (dup	licate)	11/	20/201	3	11/20/20	13 (du	olicate)	2	/3/2013		5/	15/201	3	9	/4/2013	3
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Radium (pCi/L)																				
Radium-226			0.28	LT	0.26	0.1	LT	0.09		U	0.23	0.54	LT			U	0.45	0.2	LT	0.08
Radium-228	-			U	0.54	1.73		0.46	1.23		0.47	0.89	LT			U	0.53	0.74	LT	0.62
Radium-226 & Radium-228	5.00E+00	USEPA MCL	0.28		0.8	1.83		0.55	1.23		0.7	1.43			0		0.98	0.94		0.7
Anions (mg/L)																				
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	339		25	331		25	331		25	154		25	137		50	71		0.5
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	1.11		0.1	1.61		0.1	1.51		0.1	2.73		0.1	2.29		0.1	2.8		0.1
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)	0.45	Н	0.03	0.457	J	1	0.487)	1		HU	0.1		U	2		U	0.03
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	2140		25	2470		25	2470		25	2310		25	2010		50	2020		25
Cyanide	2.00E-01	EPA MCL		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02
Total Dissolved Solids (mg/L	-)																			
Total Dissolved Solids	1.00E+03	NMED GW Domestic (20.6.2.3103.B)	4470		10	4570		10	4210		10	3910		10	4260		10	3970		10

		Well:	MW-11	7 (con	tinued)						MW	-118				.—	
		Date:		/20/20:		2/	5/2013		5/	15/201			/4/2013	~	11	/20/201	3
				1			5/2020			10,201	Ť		1	<u></u>		20/201	
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/L)																	
Gasoline Range Organics				U	0.05	0.0436	J	0.05		U	0.05		U	0.05		U	0.05
Diesel Range Organics		NMED TPH		U	0.051		U	0.052		U	0.051		U	0.052		U	0.052
Oil Range Organics	2.00E-01	NMED TPH		U	0.1		U	0.1		U	0.1		U	0.1		U	0.1
VOCs (mg/L)																	
1,1,1-Trichloroethane		NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2-Trichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethane	2.50E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Benzene	5.00E-03	EPA MCL		U	0.001	0.0042		0.001		U	0.001		U	0.001		U	0.001
Carbon Tetrachloride	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Chloroform	8.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Dichloromethane	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Ethylbenzene	7.00E-01	EPA MCL		U	0.001	0.0024		0.001		J	0.001		U	0.001		U	0.001
Tetrachloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Toluene	7.50E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001	0.0033		0.001		U	0.001		U	0.001		U	0.001
Total Xylenes	6.20E-01	NMED GW Human Health (20.6.2.3103.A)		U	0.001	0.0047		0.001		U	0.001		U	0.001		U	0.001
Trichloroethene		EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Vinyl Chloride	1.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
SVOCs (mg/L)							•				•				"		
1-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
2-Methylnaphthalene		NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		Ü	0.0002
Naphthalene		NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		Ü	0.0002
Benzo(a)Pyrene		EPA MCL		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Dissolved Metals (mg/L)	2,002 0.			-					-								5.555
Aluminum	5.00F±00	NMED GW Irrigation (20.6.2.3103.C)	0.0298		0.01		UB	0.0146	0.00796]	0.01	0.00992]	0.01	0.0103		0.01
Arsenic	1.00E-02		0.00347	1	0.005	0.011	1	0.005	0.0146		0.005	0.0156		0.005	0.0125		0.005
Barium		NMED GW Human Health (20.6.2.3103.A)	0.0108			0.0145			0.00919			0.0099			0.00964		0.005
Boron		NMED GW Irrigation (20.6.2.3103.C)	0.204	<u> </u>	0.05	0.226		0.05	0.23		0.1	0.307		0.05	0.288		0.05
Cadmium		EPA MCL	0.201	U	0.002	0.220	U	0.002	0.25	U	0.002	0.507	U	0.002	0.200	U	0.002
Calcium		LIMITOL	556	<u> </u>	5	563	<u> </u>	10	530		5	543	<u> </u>	5	532	Ů	5
Chromium		NMED GW Human Health (20.6.2.3103.A)		U	0.005	- 555	U	0.005	- 550	U	0.005	- 5.5	U	0.005	0.00105	7	0.005
Cobalt		NMED GW Irrigation (20.6.2.3103.C)		Ü	0.005		Ü	0.005		U	0.005		Ü	0.005	0.00100	Ü	0.005
Copper		NMED GW Irrigation (20.6.2.3103.C)	0.00345	1	0.005	0.00156	1	0.005	0.00156	1	0.005		Ŭ	0.005	0.00338	1	0.005
Iron			0.11	1	0.2	0.00100	Ū	0.2	0.00150	Ū	0.2		Ü	0.2	0.179	1	0.2
Lead	1.50E-02		0.00125	1	0.005		Ü	0.005	-	U	0.005		Ü	0.005	0.00107	1	0.005
		NMED GW Domestic (20.6.2.3103.B)	0.00982	-	0.005	0.0232		0.005		U	0.005		l ii	0.005	0.00526		0.005
Manganese		NMED GW Human Health (20.6.2.3103.A)	0.00302	U	0.0002	0.000042	1	0.0002		U	0.0002		ü	0.0002	0.00320	U	0.0002
Mercury Molybdenum		NMED GW Trigation (20.6.2.3103.C)	0.0114	- J	0.005	0.0195		0.005	0.0179		0.005	0.0162	┝┷┤	0.005	0.0141	Ť	0.005
Nickel	2.00E-01	NMED GW Irrigation (20.6.2.3103.C)	0.00305	1	0.005	0.0133	1	0.005	0.0179	1	0.005	0.0102	1	0.005	0.00214	1	0.005
	2.001-01	THI ILD GW INIGGUOTI (20.0.2.3103.C)	7.54		0.003	7.95	 _ _ _ _ _ _ _ _ 	0.003	7.2		0.003	7.69		0.003	6.92	- ' 	0.003
Potassium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.0038	1	0.005	0.00861		0.005	0.0127		0.005	0.0129		0.005	0.00327	7	0.005
Selenium		NMED GW Human Health (20.6.2.3103.A)	0.0036	Ü	0.005	0.00001	U	0.005	0.0127	U	0.005	0.0123	U	0.005	0.00327	U	0.005
Silver	5.002-02	NAMED GW HUMAN FEARUN (20.0.2.3103.A)	115		0.003	218	-	4	229		2	215	<u> </u>	2	163	-	0.003
Sodium	2.005.02	NMED GW Human Health (20.6.2.3103.A)			0.005	0.037		0.005	0.033		0.005	0.0395		0.005	0.0311		0.005
Uranium			0.0182	 		0.03/	11		0.033	11		0.0393	U				
Zinc	1.00E+01	NMED GW Domestic (20.6.2.3103.B)	0.0343		0.005		U	0.005		U	0.005		U	0.005	0.0407		0.005

		Well:	MW-11	7 (con	tinued)						MW-	-118				<u> </u>	
		Date:	11	/20/201	13	2,	5/2013		5/	15/2013	3	9,	/4/2013		11,	/20/201	3
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
Radium (pCi/L)																	
Radium-226			0.15	LT	0.1	0.38	Y1,LT		0.22	LT	0.2		U	0.21	0.16	LT	0.09
Radium-228			1.25		0.76	0.87	Y1,LT			U	0.48	0.64	LT	0.6	1.23		0.83
Radium-226 & Radium-228	5.00E+00	USEPA MCL	1.4		0.86	1.25			0.22		0.68	0.64		0.81	1.39		0.92
Anions (mg/L)																	
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	92.4		0.5	296		25	287		50	132		25	90.1		0.5
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	3.95		0.1	5.16		0.1	<i>5.39</i>		0.1	4.48	_	0.1	6.78		0.1
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)		U	1	2.39		0.1	2.09		2	0.325	Н	0.03		U	1
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	2190		50	2450		25	2250		50	2310		25	2470		50
Cyanide	2.00E-01	EPA MCL		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02
Total Dissolved Solids (mg/L	-)																
Total Dissolved Solids	1.00E+03	NMED GW Domestic (20.6.2.3103.B)	4150		10	4610		10	5090		10	4550		10	4640		10

		Well:						MW-	119				===				RO	Discharge		
		Date:	2,	5/2013		5/	15/201	3	9	/4/2013	3	11/	/20/20)13	2	/3/2013			5/16/201	3
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL
TPH (mg/L)										r						·				
Gasoline Range Organics			0.0371	J_	0.05		U	0.05		U	0.05		U_	0.05		U	0.05		U	0.05
Diesel Range Organics		NMED TPH		U	0.051	 	U	0.052		U	0.052		U	0.053		U	0.052		U	0.053
Oil Range Organics	2.00E-01	NMED TPH		U	0.1		U	0.1		Ų	0.1		U	0.11	0.17		0.1		U	0.11
VOCs (mg/L)																				
1,1,1-Trichloroethane		NMED GW Human Health (20.6.2.3103.A)		U	0.001		<u>U</u>	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		<u>U</u>	0.001		U	0.001		U	0.001
1,1,2-Trichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,1-Dichloroethane	2.50E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001	_	U	0.001		U	0.001
1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001		U	0.001		U	0.001		U_	0.001		U	0.001		U	0.001
1,2-Dichloroethane		EPA MCL		U	0.001		U	0.001		U	0.001		U_	0.001		U	0.001		U	0.001
Benzene		EPA MCL	0.0036	<u> </u>	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Carbon Tetrachloride		EPA MCL		U	0.001		U	0.001		U	0.001		<u>U</u>	0.001		U	0.001		U	0.001
Chloroform	8.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Dichloromethane	5.00E-03	EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Ethylbenzene	7.00E-01	EPA MCL	0.0021		0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Tetrachloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Toluene	7.50E-01	NMED GW Human Health (20.6.2.3103.A)	0.0027		0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Total Xylenes	6.20E-01	NMED GW Human Health (20.6.2.3103.A)	0.0037		0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Trichloroethene	5.00E-03	EPA MCL		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
Vinyl Chloride	1.00E-03	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001
SVOCs (mg/L)																				
1-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
2-Methylnaphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Naphthalene	3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Benzo(a)Pyrene	2.00E-04	EPA MCL		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002		U	0.0002
Dissolved Metals (mg/L)																				
Aluminum	5.00E+00	NMED GW Irrigation (20.6.2.3103.C)		UB	0.01	0.0296		0.01	0.0113		0.01	0.0149		0.01	0.00668	J	0.01	0.00529	J	0.01
Arsenic	1.00E-02		0.00294	J	0.005	0.00537		0.005	0.00595		0.005	0.00438	J	0.005	0.00494	J	0.005	0.0025	J l	0.01
Barium		NMED GW Human Health (20.6.2.3103.A)	0.00981		0.005	0.00625		0.005	0.00864		0.005	0.00973		0.005	0.0628		0.005	0.0464		0.005
Boron		NMED GW Irrigation (20.6.2.3103.C)	0.0987		0.05	0.13		0.1	0.183		0.05	0.219		0.05	0.143		0.1	0.104		0.1
Cadmium		EPA MCL		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002		U	0.002
Calcium			494		10	491		5	635		5	551		5	625		25	397		5
Chromium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.005		U	0.005		U	0.005	0.00116	J	0.005		Ū	0.005		U	0.01
Cobalt		NMED GW Irrigation (20.6.2.3103.C)	0.000871	<u> </u>	0.005		U	0.005		U	0.005		U	0.005		Ü	0.005		Ü	0.01
Copper		NMED GW Irrigation (20.6.2.3103.C)	0.00309	1 1	0.005	0.00137	J	0.005		Ü	0.005	0.00311	J J	0.005	0.00177	j	0.005		Ü	0.01
Iron		NMED GW Irrigation (20.6.2.3103.C)		Τυ	0.2		Ū	0.2		Ū	0.2	0.185	J	0.2		U	0.2		Ū	0.4
Lead	1.50E-02			Ü	0.005		Ü	0.005		Ū	0.005		Ū	0.005		U	0.005		Ü	0.01
Manganese	2.00E-01	NMED GW Domestic (20.6.2.3103.B)	0.0424	1 –	0.005		U	0.005		Ū	0.005	0.00459	J	0.005		U	0.005		Ŭ	0.01
Mercury		NMED GW Human Health (20.6.2.3103.A)	0.0.2.	l u	0.0002		Ü	0.0002		Ü	0.0002					U	0.0002		ŭ	0.0002
Molybdenum		NMED GW Irrigation (20.6.2.3103.C)	0.0083	Ť	0.005	0.00745		0.005	0.00846		0.005	0.00861		0.005	0.0125		0.005	0.00622		0.005
Nickel		NMED GW Irrigation (20.6.2.3103.C)	0.00174	1	0.005	0.00163]	0.005	0.0014	1	0.005	0.00222	j	0.005	0.00264	J l	0.005		U	0.01
Potassium	2.00L-01	THE CHI IMIGUION (20.0.2.0100.C)	0.87	<u> </u>	0.2	0.794		0.2	0.993		0.2	1.1		0.2	4.41		0.2	2.91		0.2
Selenium	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.00246	1	0.005	0.00506		0.005	0.0066		0.005	0.00144	j	0.005	0.013		0.005	0.0075	j l	0.01
Silver	5.00E-02	NMED GW Human Health (20.6.2.3103.A)	0.00270	U	0.005	0.0000	U	0.005	0.0000	U	0.005	5.50211	Ū	0.005		U	0.005	0.0070	Ü	0.005
Sodium	J.00E-02	THE CAN TRUITION THEATTH (20.0.2.3103.A)	127	1 –	4	120		0.003	133		0.003	98.8	_ <u>~</u> _	0.2	65.4		0.2	40.4		0.003
	3 00E-03	NMED GW Human Health (20.6.2.3103.A)	0.0244		0.005	0.0222		0.005	0.0275		0.005	0.0213		0.005	0.00601		0.005		U	0.01
Uranium		NMED GW Human Health (20.6.2.3103.A)	0.0277	U	0.005	0.0222	U	0.005	0.02/3	Ū	0.005	0.0213		0.005			0.005	0.00516	- i +	0.01
Zinc	1.00E+01	ואויובט שאי טטווופטנול (20.0.2.3103.6)		1 0	1 0.003			0.003			0.005	0.0271		0.000	0.0102		0.005	0.00210		0.01

Table 7 - Summary of Groundwater Sampling Analytical Results

Fourth Quarter 2013 Final Report - RO Reject Discharge Fields Navajo Refining Company, Artesia Refinery, New Mexico

Well:					MW-119											RO Discharge						
		Date:	2/	5/2013		5/	15/201			/4/2013	3	11	/20/201	13	2	/3/201			/16/201	3		
Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL	Result	Qual	RL		
Radium (pCi/L)																						
Radium-226				С	0.25		Y1,U	0.31	0.17	LT	0.08		U	0.19	NS			0.49	LT	0.24		
Radium-228				U	0.52		Y1,U	0.47		U	0.64	1.08		0.66	NS				U	0.52		
Radium-226 & Radium-228	5.00E+00	USEPA MCL	0		0.77	0		0.78	0.17		0.72	1.08		0.85	NS			0.49		0.76		
Anions (mg/L)																						
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	116		25	118		50	244		25	185		25	67.5		0.5	38.2		0.5		
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	2.36		0.1	2.43		0.1	2.28		0.1	3.17		0.1	3.32		0.1	2.15		0.1		
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)	2.35		0.1	1.91	J	2	0.228	Н	0.03		U	1	3.22	Н	0.1	2.11		2		
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	2090		25	1970		50	1940		25	2210		25	1690		25	1080		50		
Cyanide	2.00E-01	EPA MCL		U	0.02		U	0.02		U	0.02		U	0.02		U	0.02	0.00487	J	0.02		
Total Dissolved Solids (mg/L)																						
Total Dissolved Solids		NMED GW Domestic (20.6.2.3103.B)	3670		10	4030		10	4030		10	4130		10	3150		10	2410		10		

Table 7 - Summary of Groundwater Sampling Analytical Results Fourth Quarter 2013 Final Report - RO Reject Discharge Fields

Navajo Refining Company, Artesia Refinery, New Mexico

TPH (mg/L) Gasoline Range Organics			•	·			g Compai		
Analyte CGWSL CGWSL Source Result Qual RL Result Qual RT RESULT Qual Qual RT RESULT Qual Qual RT RESULT Qual Qual RT RESULT Qual Qual RT Qual RT Qual RT Qual Qual RT Qual Qual RT Qual Qual RT Qual Qual									
TPH (mg/L) Gasoline Range Organics			Date:	9	/5/2013	3	11	/20/20:	13
Gasoline Range Organics	Analyte	CGWSL	CGWSL Source	Result	Qual	RL	Result	Qual	RL
Diesel Range Organics 2.00E-01 NMED TPH U 0.052 U 0.05 Oil Range Organics 2.00E-01 NMED TPH U 0.1 U 0.1 U 0.0 VOCs (mg/L) VI 0.01 U 0.01 U 0.0 1,1,1-Trichloroethane 6.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 1,1-Dichloroethane 2.50E-03 USEPA MCL U 0.001 U 0.0 1,2-Dibromoethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,2-Dichloroethane 5.0	TPH (mg/L)						_		
Oil Range Organics 2.00E-01 NMED TPH U 0.1 U 0.1 VOCs (mg/L) 1,1,1-Trichloroethane 6.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.02 1,1,2,2-Tetrachloroethane 1.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,1-Dichloroethane 7.00E-03 USEPA MCL U 0.001 U 0.0 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 Benzene 5.00E-03 EPA MCL U 0.001 U 0.0 Carbon Tetrachloride 5.	Gasoline Range Organics				U	0.05		C	0.05
VOCs (mg/L) 1,1,1-Trichloroethane 6.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1,2,2-Tetrachloroethane 1.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.01 1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1-Dichloroethane 7.00E-03 USEPA MCL U 0.001 U 0.001 1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.01 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.01 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.01 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.0 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Ethylbenze	Diesel Range Organics	2.00E-01	NMED TPH		C	0.052		U	0.053
1,1,1-Trichloroethane 6.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1,2,2-Tetrachloroethane 1.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1-Dichloroethane 7.00E-03 USEPA MCL U 0.001 U 0.001 1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.001 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 Chloroform 8.00E-03 EPA MCL U 0.001 U 0.001 U 0.001 Total Xyle	Oil Range Organics	2.00E-01	NMED TPH		С	0.1		U	0.11
1,1,2,2-Tetrachloroethane 1.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 U 0.0 1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 U 0.0 1,1-Dichloroethane 7.00E-03 USEPA MCL U 0.001 U 0.001 U 0.0 1,2-Dibrioroethane 5.00E-03 EPA MCL U 0.001 U 0.001 U 0.0 Benzene 5.00E-03 EPA MCL U 0.001 U 0.001 U 0.0 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.001 U 0.0 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 U 0.0 Ethylbenzene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Vinyl Ch	VOCs (mg/L)								
1,1,2-Trichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1-Dichloroethene 7.00E-03 USEPA MCL U 0.001 U 0.001 1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 Benzene 5.00E-03 EPA MCL U 0.001 U 0.00 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.00 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.00 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.00 Total Xylenes 5.00E-03 EPA MCL U 0.001 U 0.00 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.00 Trichloroethene 5.00E-03 EPA MCL U 0.00 U 0.00	1,1,1-Trichloroethane	6.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
1,1-Dichloroethane 2.50E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 1,1-Dichloroethene 7.00E-03 USEPA MCL U 0.001 U 0.001 1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 Benzene 5.00E-03 EPA MCL U 0.001 U 0.001 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.001 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.002 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.002 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.001 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Healt	1,1,2,2-Tetrachloroethane	1.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
1,1-Dichloroethene 7.00E-03 USEPA MCL U 0.001 U 0.001 1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.001 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.001 Benzene 5.00E-03 EPA MCL U 0.001 U 0.00 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.00 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.00 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.00 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.00 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.00 U 0.00 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A)	1,1,2-Trichloroethane	5.00E-03	EPA MCL		U	0.001		U	0.001
1,2-Dibromoethane 5.00E-05 EPA MCL U 0.001 U 0.01 1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.00 Benzene 5.00E-03 EPA MCL U 0.001 U 0.00 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.00 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U <td>1,1-Dichloroethane</td> <td>2.50E-02</td> <td>NMED GW Human Health (20.6.2.3103.A)</td> <td></td> <td>U</td> <td>0.001</td> <td></td> <td>U</td> <td>0.001</td>	1,1-Dichloroethane	2.50E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
1,2-Dichloroethane 5.00E-03 EPA MCL U 0.001 U 0.0 Benzene 5.00E-03 EPA MCL U 0.001 U 0.0 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.0 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnapht	1,1-Dichloroethene	7.00E-03	USEPA MCL		U	0.001		U	0.001
Benzene 5.00E-03 EPA MCL U 0.001 U 0.0 Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.0 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0	1,2-Dibromoethane	5.00E-05	EPA MCL		U	0.001		U	0.001
Carbon Tetrachloride 5.00E-03 EPA MCL U 0.001 U 0.00 Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naph	1,2-Dichloroethane	5.00E-03	EPA MCL		U	0.001		C	0.001
Chloroform 8.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U	Benzene	5.00E-03	EPA MCL		U	0.001		U	0.001
Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 <	Carbon Tetrachloride	5.00E-03	EPA MCL		U	0.001		U	0.001
Dichloromethane 5.00E-03 EPA MCL U 0.002 U 0.0 Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.0 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 <	Chloroform		NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
Ethylbenzene 7.00E-01 EPA MCL U 0.001 U 0.00 Tetrachloroethene 5.00E-03 EPA MCL U 0.001 U 0.00 Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.0 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.0 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0	Dichloromethane		EPA MCL		U	0.002		U	0.002
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Toluene 7.50E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.001 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002		5.00E-03	EPA MCL		U	0.001		U	0.001
Total Xylenes 6.20E-01 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.001 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002	Toluene		NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
Trichloroethene 5.00E-03 EPA MCL U 0.001 U 0.001 Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.001 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.002 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.00 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0002					U	0.001		U	0.001
Vinyl Chloride 1.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.001 U 0.00 SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0					U	0.001		U	0.001
SVOCs (mg/L) 1-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0			NMED GW Human Health (20.6.2.3103.A)		U	0.001		U	0.001
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2-Methylnaphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0 Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0		3.00E-02	NMED GW Human Health (20.6.2.3103.A)		U	0.0002		U	0.0002
Naphthalene 3.00E-02 NMED GW Human Health (20.6.2.3103.A) U 0.0002 U 0.0					U			U	0.0002
					Ü		VII.	U	0.0002
Benzo(a)Pyrene 2.00E-04 EPA MCL U 0.0002 U 0.0					U			U	0.0002
Dissolved Metals (mg/L)				. ***					
		5.00E+00	NMED GW Irrigation (20.6.2.3103.C)	0.00809	J	0.01	0.0567		0.01
								J	0.005
									0.005
									0.05
					U			U	0.002
				410			459		5
		5.00E-02	NMED GW Human Health (20.6.2.3103.A)		J	0.005		U	0.005
								U	0.005
							0.00218	J	0.005
									0.2
									0.005
							0.0111		0.005
Mercury 2.00E-03 NMED GW Human Health (20.6.2.3103.A) U 0.0002									
				0.00604			0.00815		0.005
					J			j	0.005
									0.2
		5.00E-02	NMED GW Human Health (20.6.2.3103.A)					j	0.005
					U				0.005
			1200000	45.7			83.9		0.2
		3,00E-02	NMED GW Human Health (20.6.2.3103.A)	.3	U			U	0.005
				0.00672			0.00909		0.005

Table 7 - Summary of Groundwater Sampling Analytical Results

Fourth Quarter 2013 Final Report - RO Reject Discharge Fields

Navajo Refining Company, Artesia Refinery, New Mexico

		Well:		RO D	ischarge	e (continu	ıed)	
		Date:	9	/5/2013		11	/20/201	.3
Analyte	CGWSL	CGWSL Source	Result	Qual	RL_	Result	Qual	RL
Radium (pCi/L)								
Radium-226			0.46	LT	0.23	0.78	LT	0.1
Radium-228				U	0.57	1.08		0.66
Radium-226 & Radium-228	5.00E+00	USEPA MCL	0.46		0.8	1.86		0.76
Anions (mg/L)								
Chloride	2.50E+02	NMED GW Domestic (20.6.2.3103.B)	61.1		0.5	134		25
Fluoride (F-, Anion)	1.60E+00	NMED GW Human Health (20.6.2.3103.A)	2.26		0.1	2.67		0.1
Nitrate/Nitrite	1.00E+00	NMED GW Human Health (20.6.2.3103.A)	1.56	Н	0.03	1.06		1
Sulfate	6.00E+02	NMED GW Domestic (20.6.2.3103.B)	1030		25	1240		25
Cyanide	2.00E-01	EPA MCL		U	0.02		U	0.02
Total Dissolved Solids (mg/L	-)							
Total Dissolved Solids	1.00E+03	NMED GW Domestic (20.6.2.3103.B)	2290		10	2770		10

Notes:

CGWSL is the lowest of the following sources:

New Mexico Water Quality Standards found in NMAC 20.6.2.3103.

If no value in NMAC 20.6.2.3103 was available, then the EPA Federal MCL was used.

TPH CGWSL is the "unknown oil" groundwater value from Table 6-2, 2012 NMED RAG.

Bold, italic font with yellow highlighting indicates a result reported above the CGWSL.

RLs shown in italics font with gray highlighting exceed the CGWSL for that compound.

Blank cells indicate that the analyte was not detected at the RL shown, no qualifier exists, or that the compound was not analyzed for that sample (if no RL is shown).

Screening level for radium is for combined Radium-226 and Radium-228.

Total PAHs are defined in NMAC 20.6.2.3103 as naphthalene plus mono-methylnaphthalenes. Although no detected values were present, if concentrations had been reported for 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene, the values would have been added to obtain the Total PAHs concentration.

Abbreviations

-- = No CGWSL is available

CGWSL = Critical Groundwater Screening Level

H = analyzed outside of holding time

J = estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

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 applicable

NMAC = New Mexico Administrative Code

NMED RAG = 2012 New Mexico Environment Department Risk Assessment Guidance

NS = Not Sampled

PAHs = polycyclic aromatic hydrocarbons

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

U = indicates the compound was analyzed for but not detected

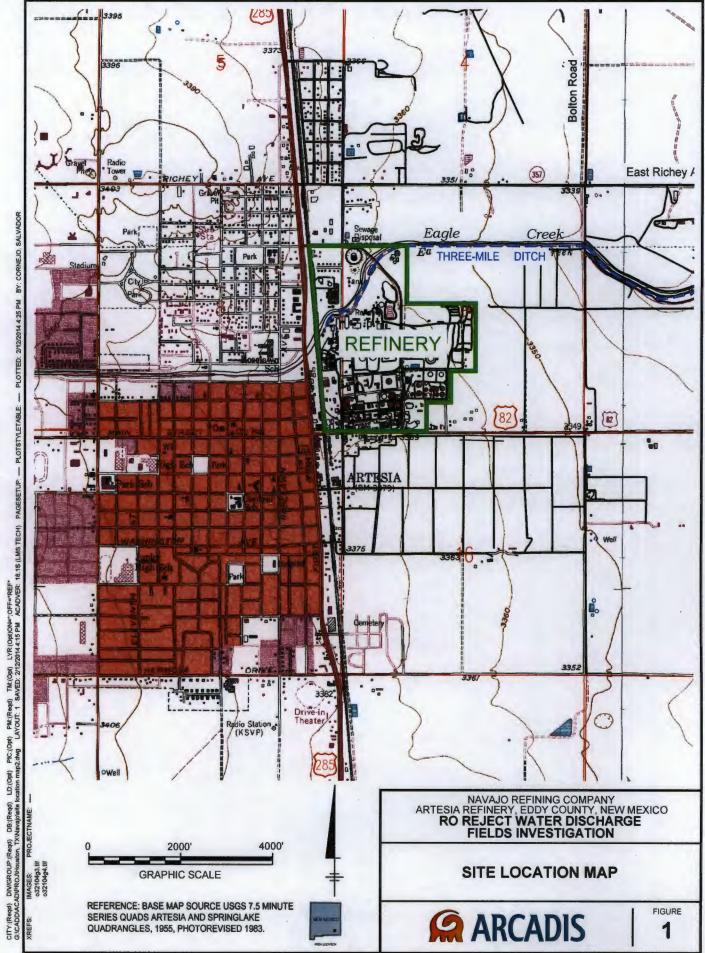
USEPA = United States Environmental Protection Agency

Y1 = Chemical yield is in control at 100-110%.

Quantitative yield is assumed.

ARCADIS

Figures





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

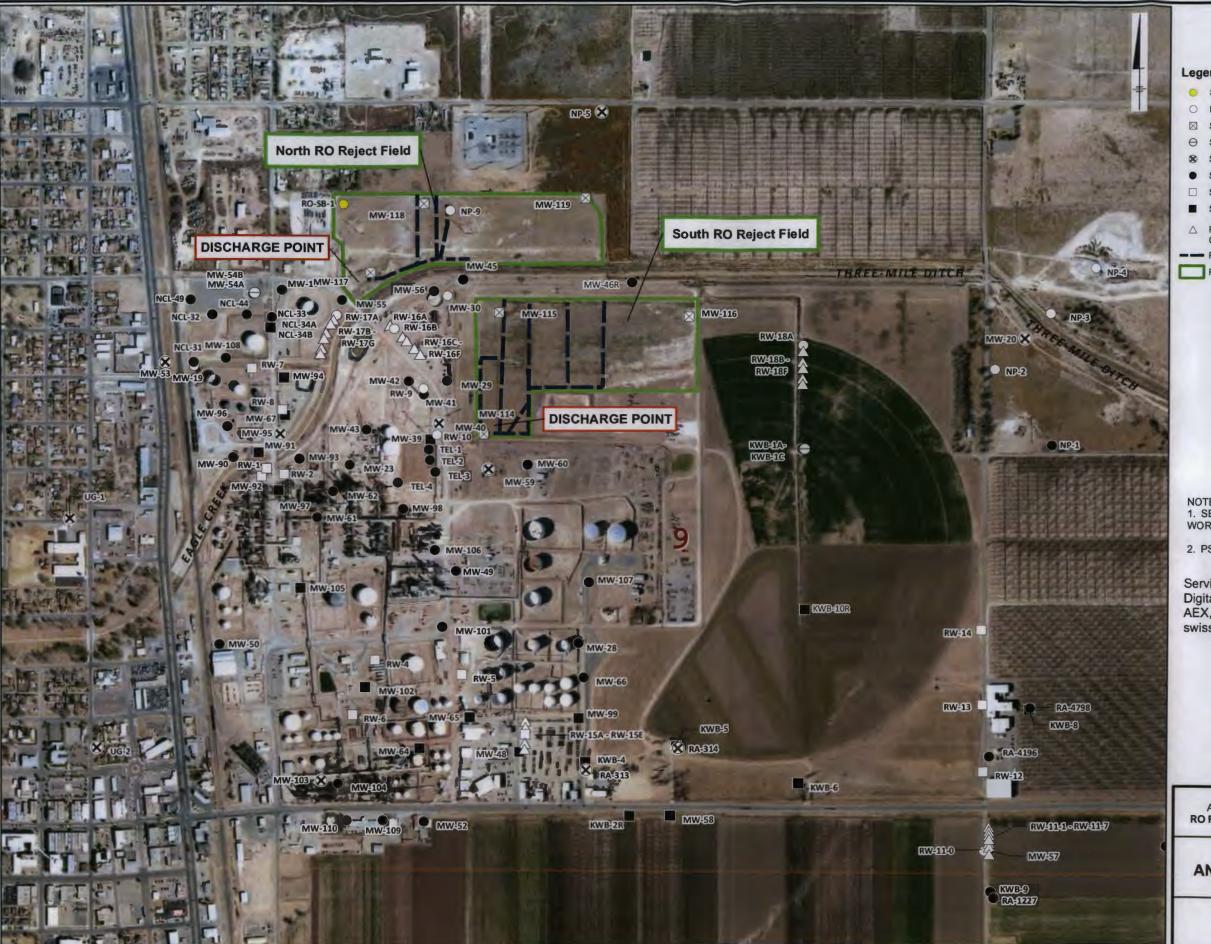
NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT

SITE FEATURES



FIGURE

2



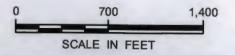
Legend

- 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

1. SEE FACILITY WIDE GROUNDWATER MONITORING WORK PLAN FOR ANALYTICAL SUITE

2. PSH = PHASE SEPARATED HYDROCARBONS

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

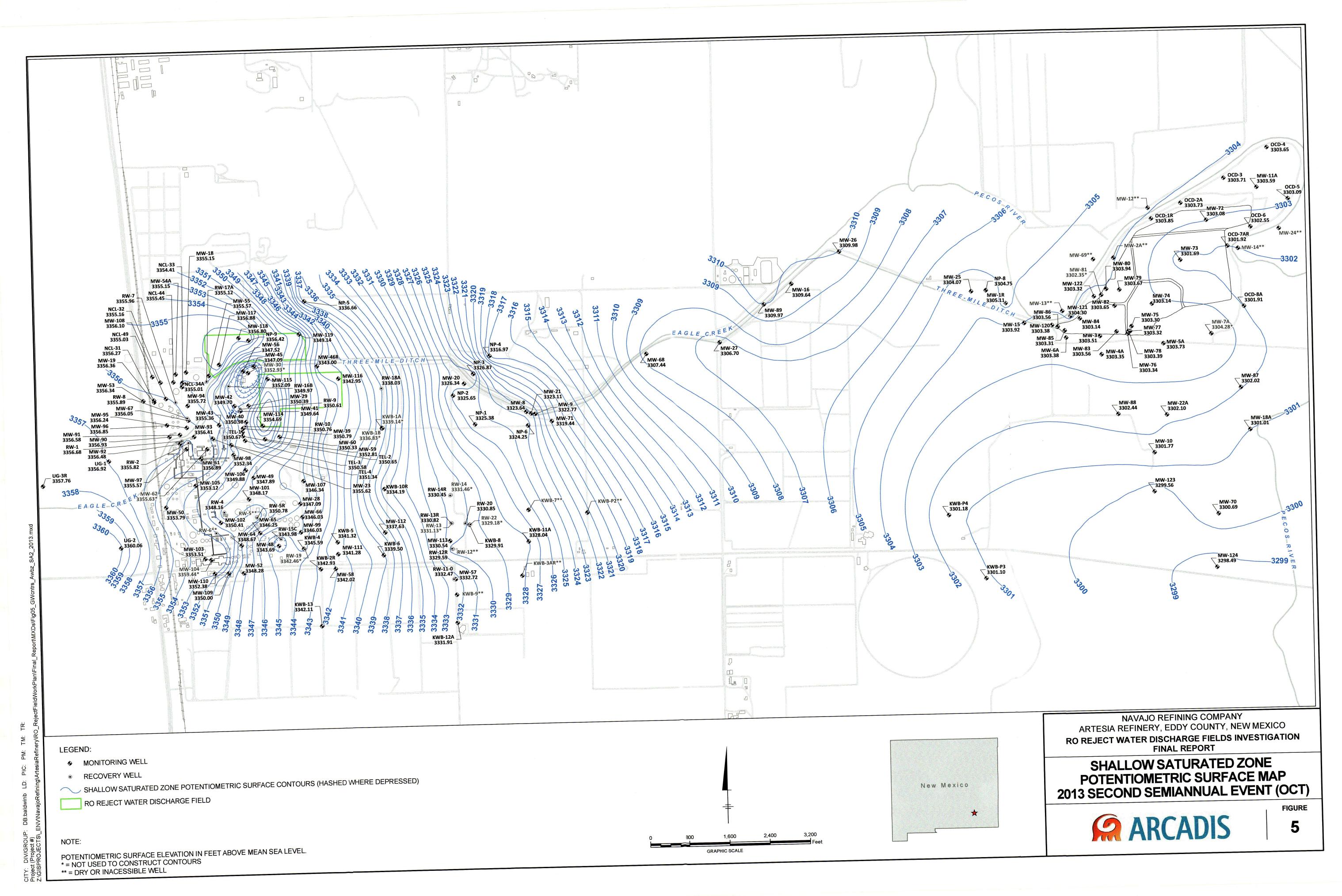


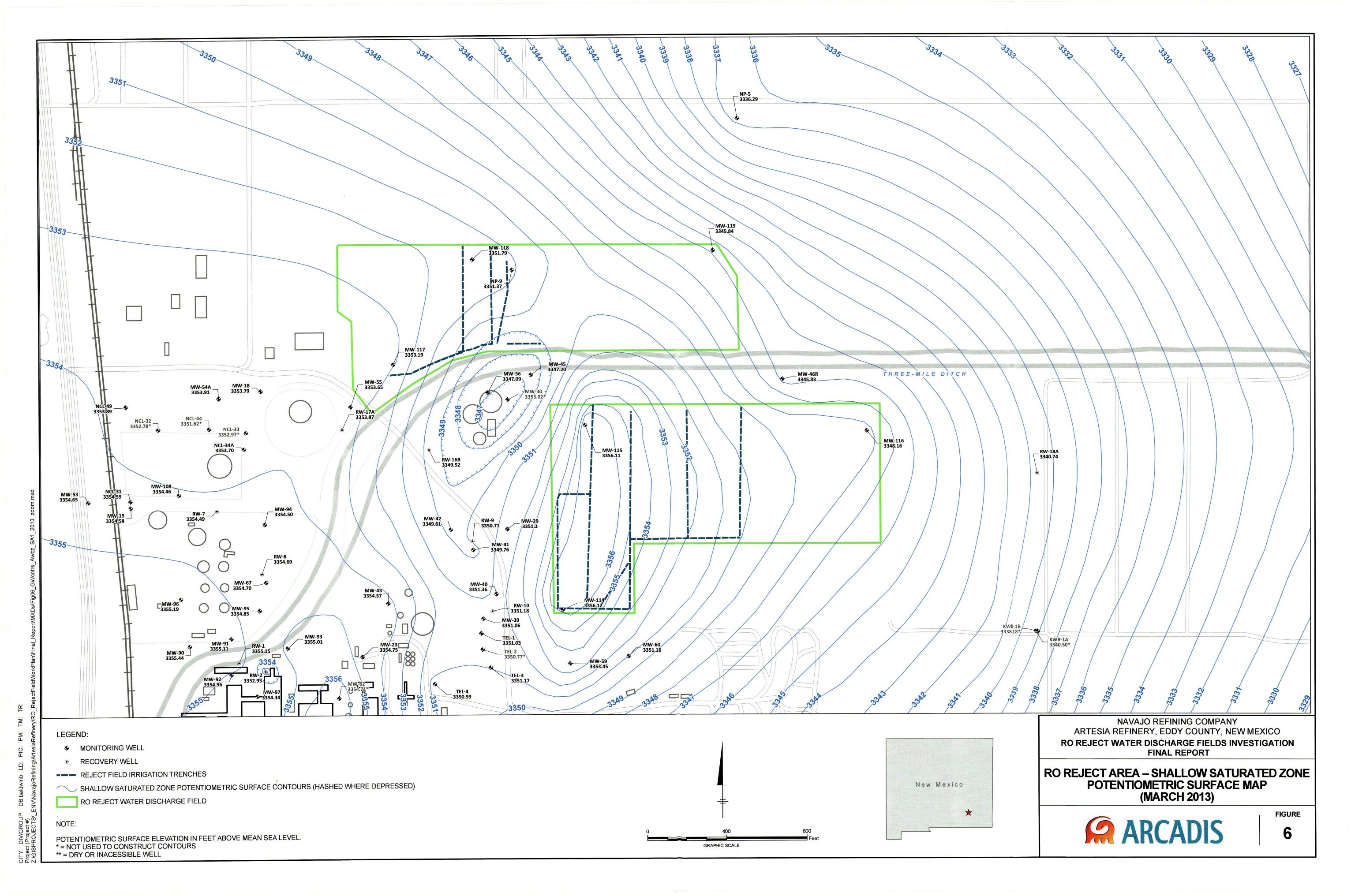
NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO
RO REJECT WATER DISCHARGE FIELDS INVESTIGATION
FINAL REPORT

SOIL BORING AND MONITORING WELL LOCATIONS



FIGURE





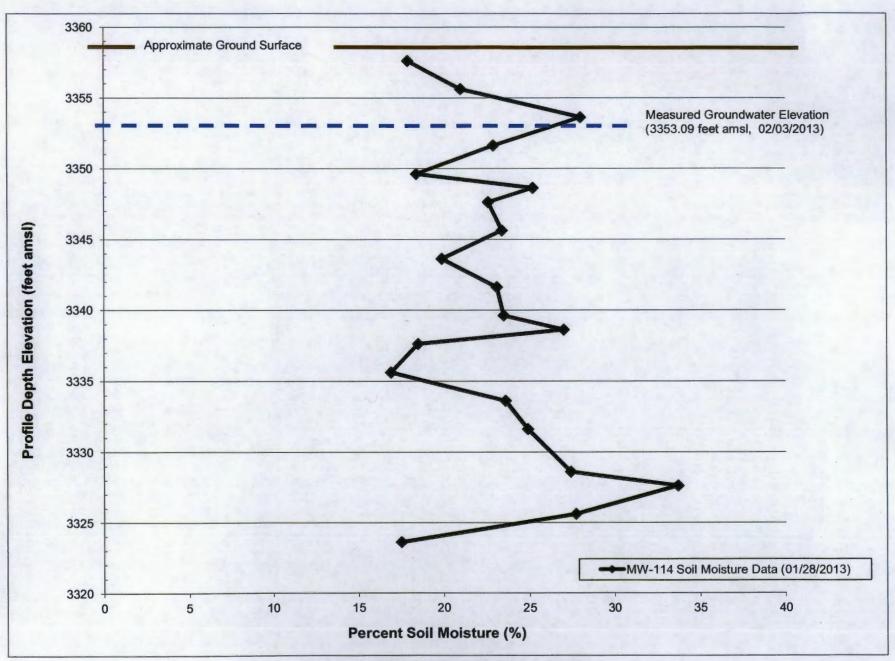


Figure 8 - MW-114 Soil Moisture Profile

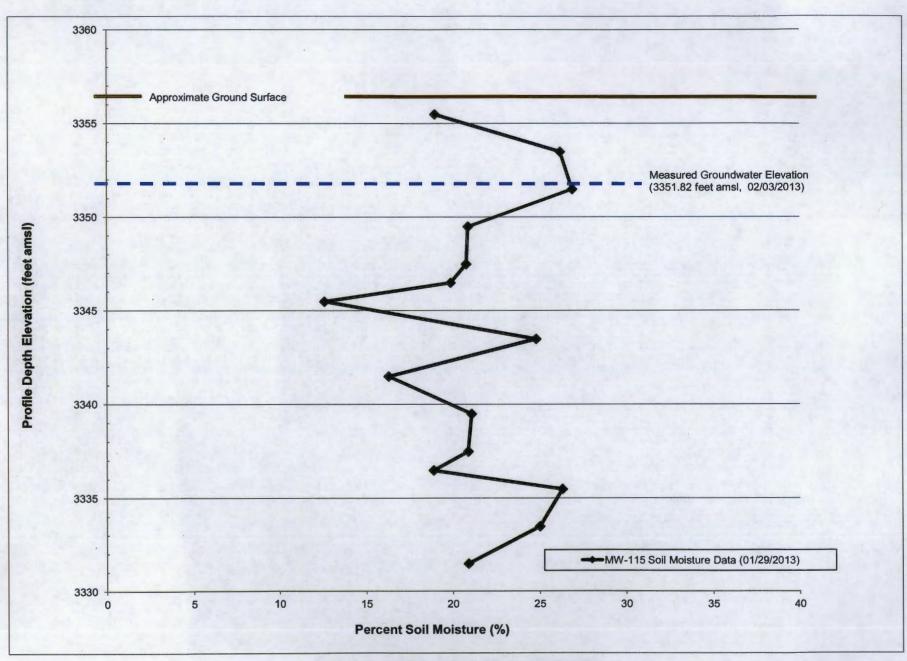


Figure 9 - MW-115 Soil Moisture Profile

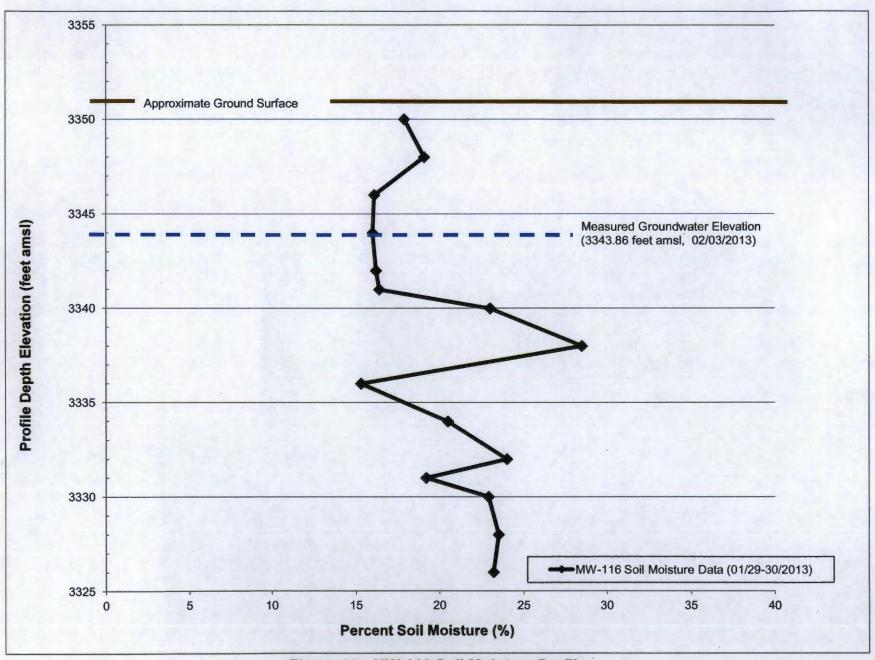


Figure 10 - MW-116 Soil Moisture Profile

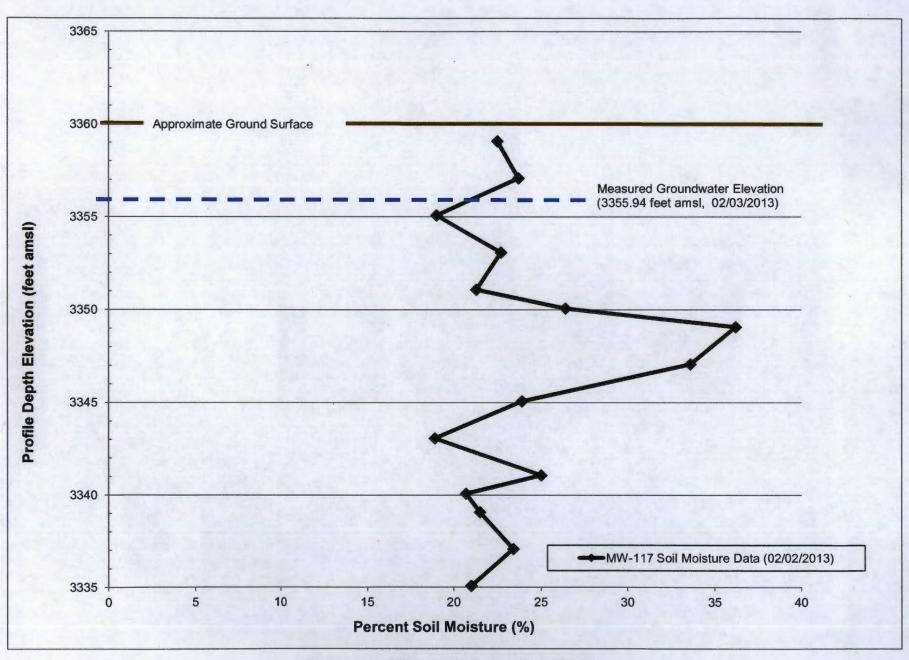


Figure 11 - MW-117 Soil Moisture Profile

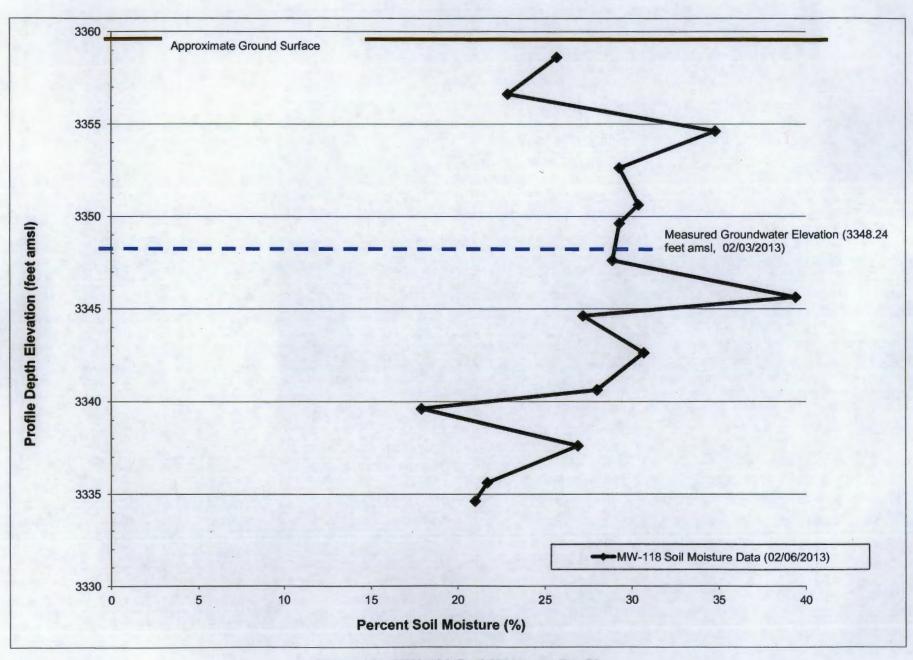


Figure 12 - MW-118 Soil Moisture Profile

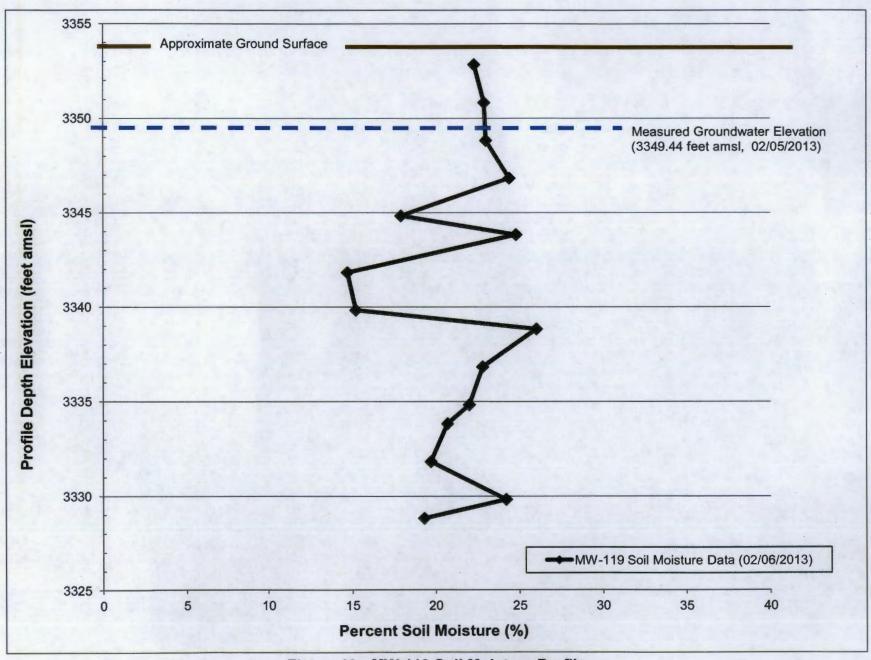


Figure 13 - MW-119 Soil Moisture Profile

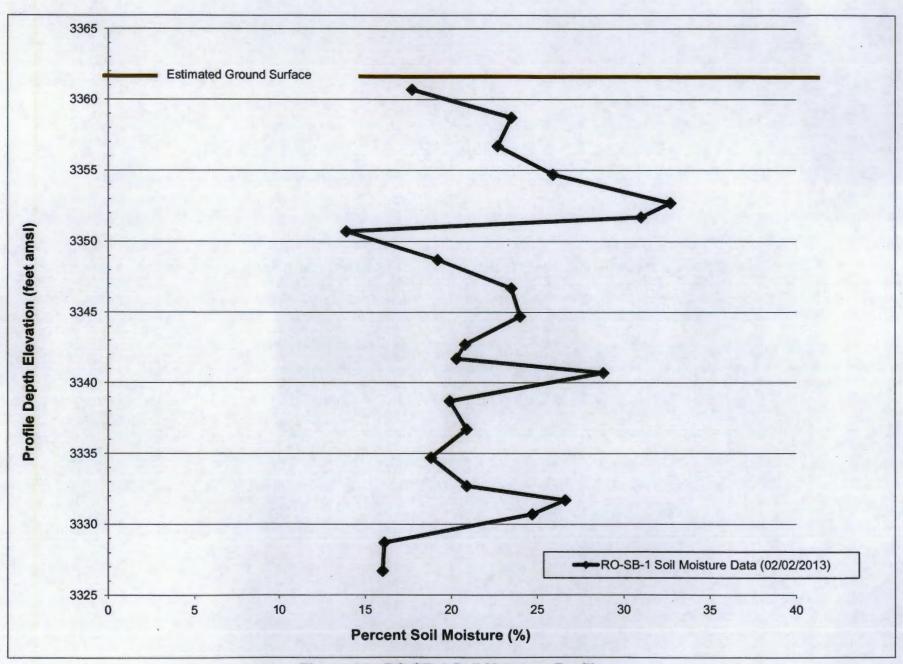


Figure 14 - RO-SB-1 Soil Moisture Profile

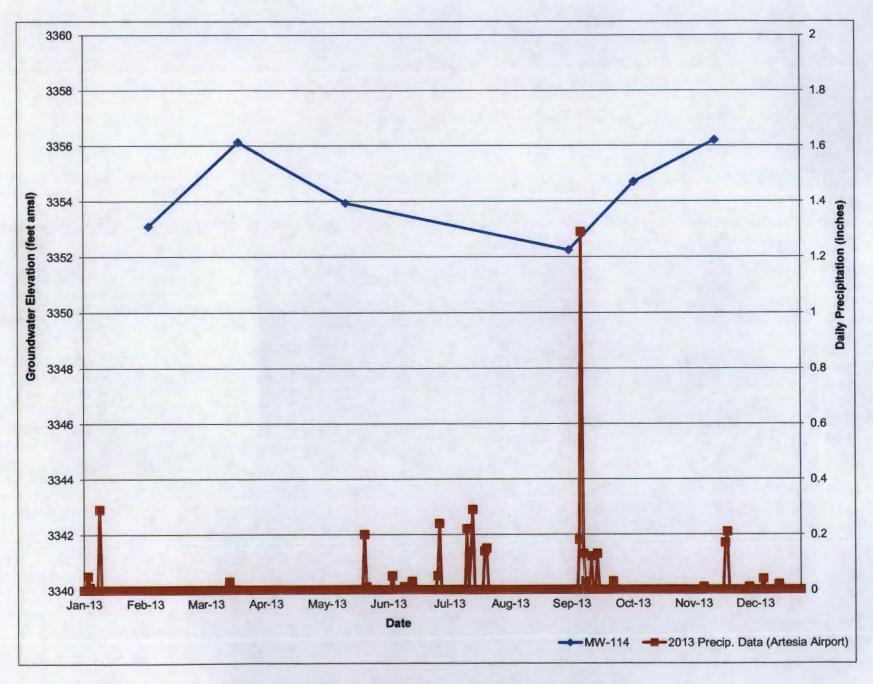


Figure 15 - MW-114 Hydrograph with 2013 Precipitation

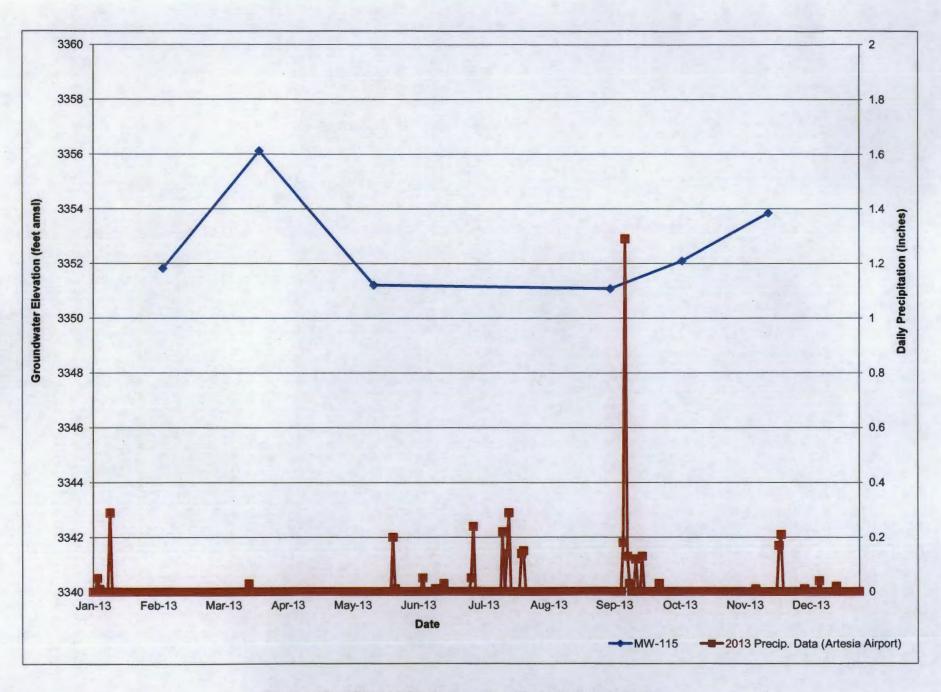


Figure 16 - MW-115 Hydrograph with 2013 Precipitation

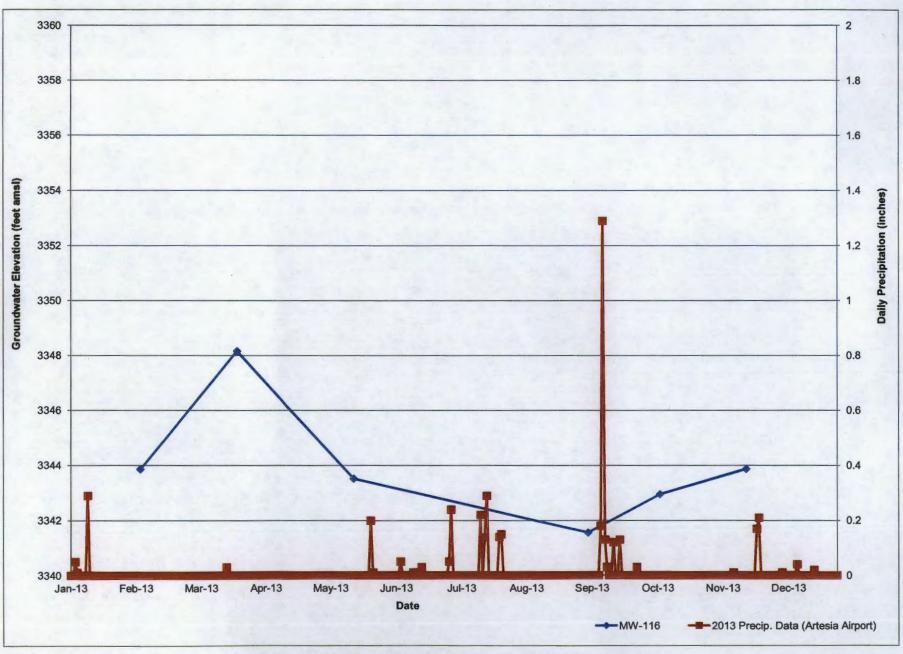


Figure 17 - MW-116 Hydrograph with 2013 Precipitation

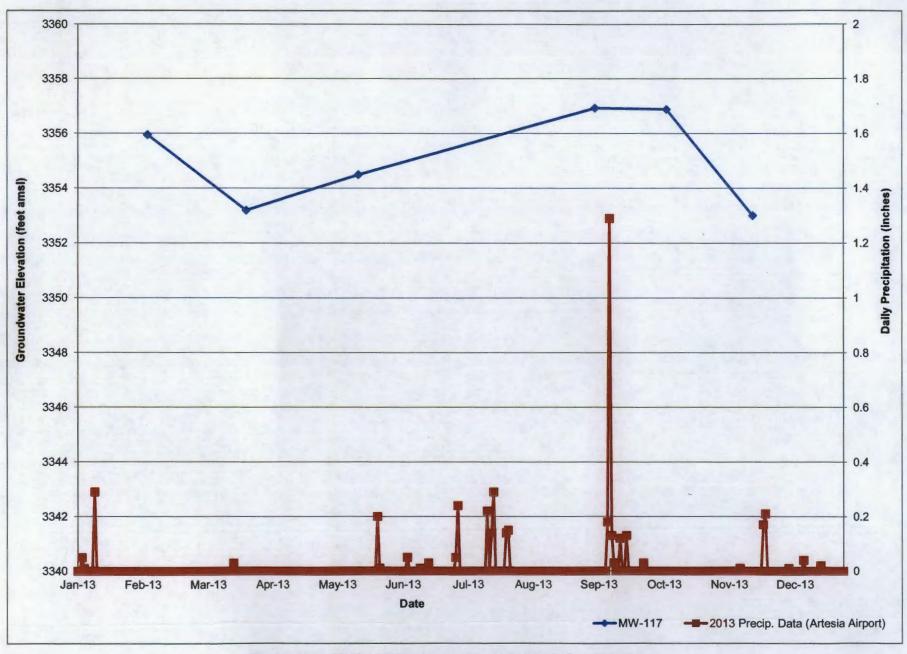


Figure 18 - MW-117 Hydrograph with 2013 Precipitation

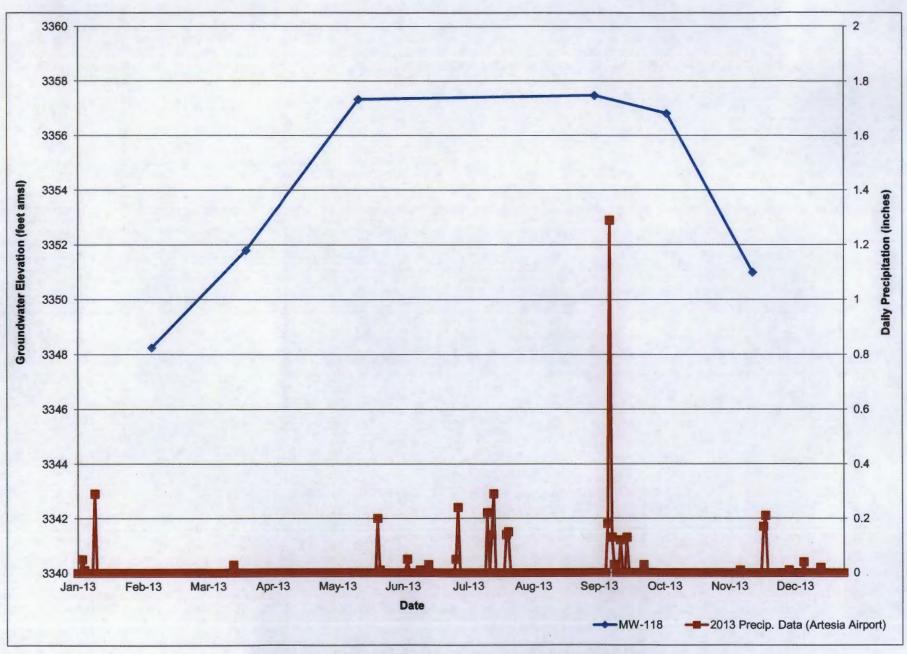


Figure 19 - MW-118 Hydrograph with 2013 Precipitation

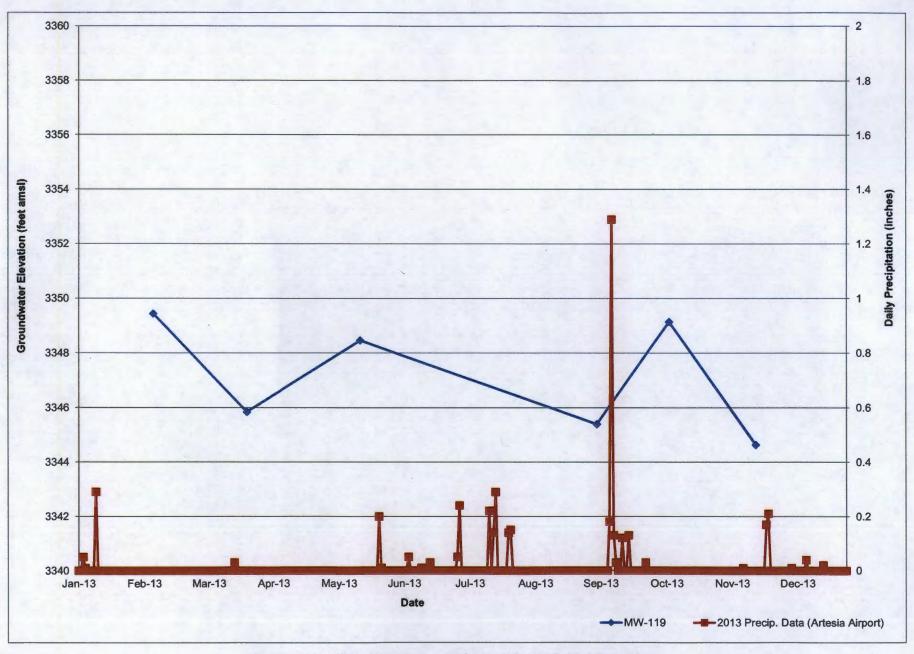


Figure 20 - MW-119 Hydrograph with 2013 Precipitation

ARCADIS

The following appendices are included on the attached CD:

- A Soil Boring and Well Completion Logs
- B Soil Analytical Data Reports
- C Groundwater Sampling Logs
 - C.1 1st Quarter 2013
 - C.2 2nd Quarter 2013
 - C.3 3rd Quarter 2013
 - C.4 4th Quarter 2013
- D Groundwater Analytical Data Reports
 - D.1 1st Quarter 2013
 - D.2 2nd Quarter 2013
 - D.3 3rd Quarter 2013
 - D.4 4th Quarter 2013



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

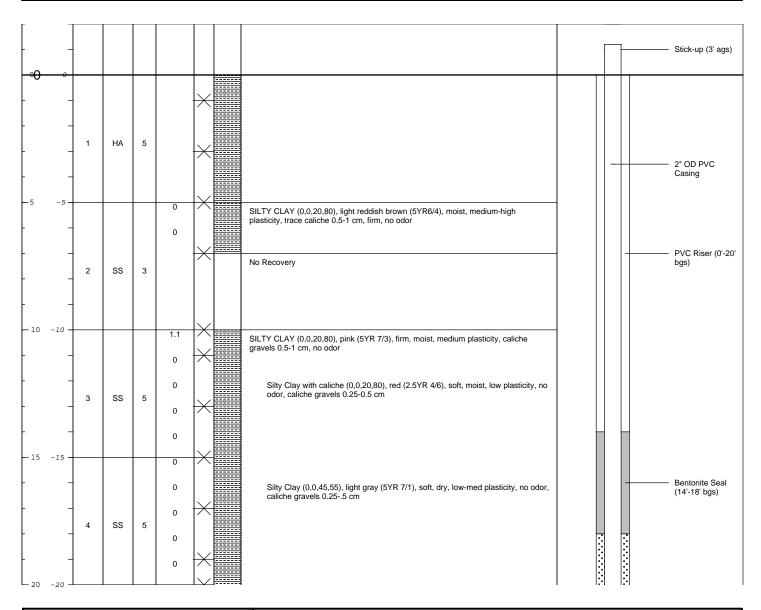
Well/Boring ID: MW-114

Client: Navajo Refining Company

Location: Navajo Refinery

Artesia, New Mexico

	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

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

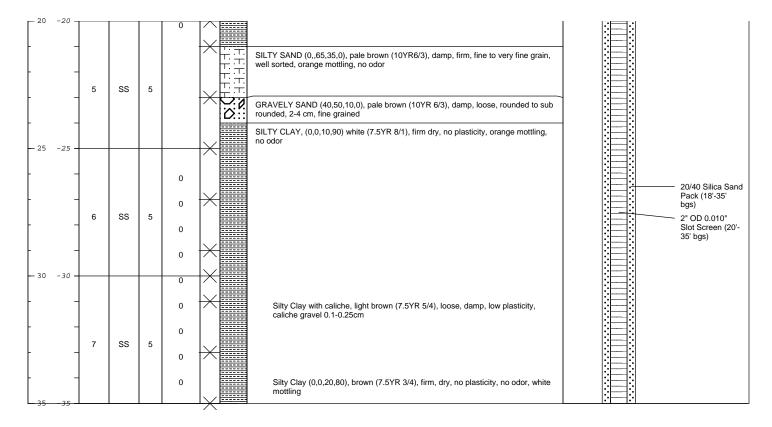
Well/Boring ID: MW-114

Client: Navajo Refining Company

Location: Navajo Refinery

Artesia, New Mexico

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

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

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



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)

Project: TX001027 Data File:MW-115.dat Template:Rotosonic Analytical.ldfx Date: 1/30/2014 Crea Page: 1 of 1

Created/Edited by: ESB

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

DEРТН	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
-	-								Stick-up (3" ags)
0	-					×		SILTY CLAY (0,0,20,80), dark reddish brown (2.5YR2/3), loose, dry, low plasticity, no odor, trace organics	
-	-	1	HA	5		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 -							Silty Clay (0,0,40,60), pink (7.5YR8/1), soft, moist, low-medium plasticity, no odor	PVC Riser (0'-10' bgs) Bentonite Seal
- 10	-10 -	2	НА	3.5	0.4	× × ×	0000	No Recovery GRAVELLY CLAY (35, 0, 10, 55), pink (7.5YR8/4), moist, loose, no plasticity, caliche gravels 0.5-6 cm, no odor	(4'-8' bgs)
-	- - -	3	SS	5	0.4	× ×	00000	Clayey Gravels (65,0,0,35), black (10YR2/1), wet, loose, poorly sorted, angular to subangular, no odor	
— 15 -	-15 - -				0.8	×		SILTY CLAY (0,0,10,90), light reddish brown (5YR6/4), stiff, dry, low-medium plasticity, pink mottling 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)
_ 20	-20 -	4	SS	5		×		Silty Clay (0,0,10,90), light reddish brown (5YR6/4), stiff, dry, low plasticity, pink	2" OD 0.010" Slot Screen (10'- 25' bgs)
- - -	- - -	5	SS	5	0.2	×		mottling, no odor Silty Clay (0,0,40,60), light reddish brown (5YR6/3), soft, damp, low-medium plasticity, no odor	
- 25	-25				0.3			Silty Clay (0,0,20,80), pinkish gray (7.5YR7/2), dry, firm, med-high plasticity, no odor, brown mottling	
						/\			



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

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

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



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)

Project: TX001027 Data File:MW-117.dat Template:Rotosonic Analytical.ldfx
Date: 1/30/2014 Created/Edited by:ESB

Page: 1 of 1

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

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

Project: TX001027 Data File:MW-118.dat Template:Rotosonic Analytical.ldfx
Date: 1/30/2014 Created/Edited by:ESB

Page: 1 of 1

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

DЕРТН	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
-00	_								Stick-up (3" ags)
-	-5	1	НА	5		×		SILTY CLAY (0,0,30,70), pink (7.5YR 5/4), wet, no plasticity, no odor	2* OD PVC Casing PVC Riser (0'-10'
-		2	НА	5		^ ×		Silty Clay (0,0,80,20), pink (7.5YR 7/4), loose, wet, no plasticity, no odor	Bentonite Seal (4'-8' bgs)
- - -	- - - -15	3	SS	5	0 0 0 0	X		Silty Clay (0,0,15,85), light reddish brown (5YR6/4), firm, moist, med-high plasticity, no odor Silty Clay (0,0,40,60), reddish brown (5YR 4/4), loose, dry, no plasticity, no odor	
-	-	4	SS	5	0 0 0 0	× ×		Silty Clay (0,0,20,80), dark reddish brown (5YR3/4), firm, moist, medium plasticity, no odor Silty Clay (0,0,35,65), reddish brown (5YR4/4), firm, moist, low plasticity, no odor	20/40 Silica Sand Pack (8'-25' bgs) 2" OD 0.010" Slot Screen (10'- 25' bgs)
- 20 - - - -	-20 - - - - - -	5	SS	5	0 0 0 0	XXX		Silty Clay (0,0,20,80), dark reddish brown (5YR4/4), stiff, low plasticity, moist, no odor Silty Clay (0,0,40,60), light reddish brown (5YR6/4), moist, loose, medium plasticity, no odor CLAY (0,0,0,100), light reddish brown (5YR 6/4), dry, very stiff, low plasticity, no odor, white mottling	



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)

Project: TX001027 Data File:MW-119.dat Template:Rotosonic Analytical.ldfx
Date: 1/30/2014 Crea

Page: 1 of 1

Created/Edited by: ESB

Rig Type: CME 85

Northing: Easting: Casing Elevation:

Borehole Depth: 35' bgs Surface Elevation:

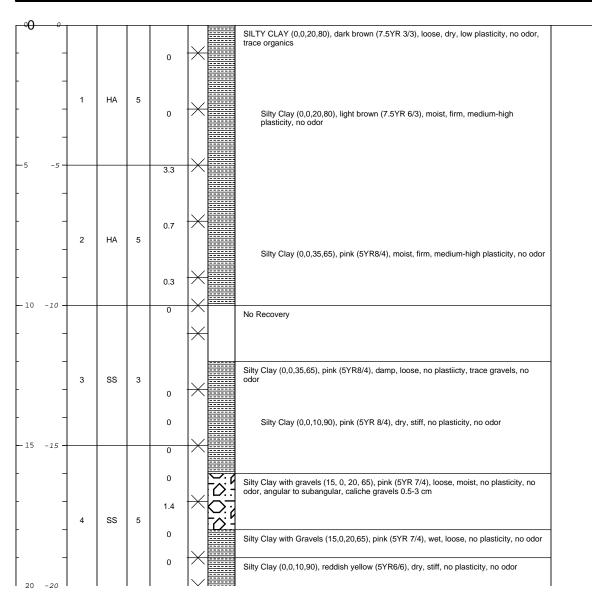
Descriptions By: Ben McKenna

Well/Boring ID: RO-SB-1

Client: Navajo Refining Company

Location: Navajo Refinery

Artesia, New Mexico





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

Rig Type: CME 85

Northing: Easting: Casing Elevation:

Borehole Depth: 35' bgs **Surface Elevation:**

Descriptions By: Ben McKenna

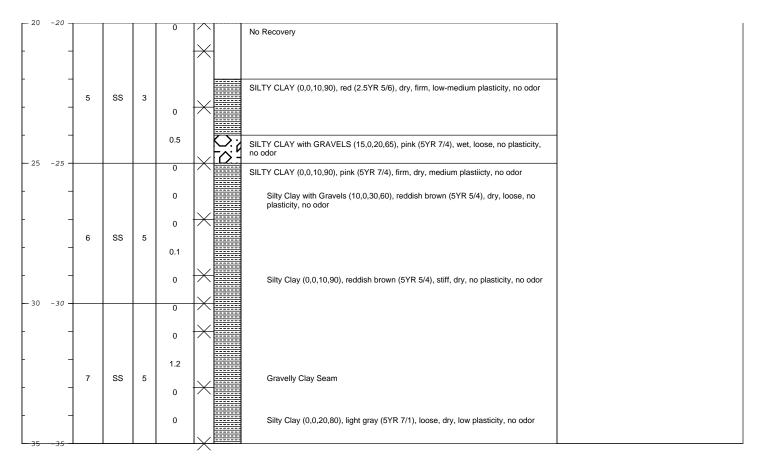
Well/Boring ID: RO-SB-1

Client: Navajo Refining Company

Location: Navajo Refinery

Artesia, New Mexico

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



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,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1301997

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	<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	

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

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.

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	hod: SW8015M		Prep: SW35	41 / 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 - SW801	5C	Met	hod: SW8015				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		Met	hod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	18.2		0.36	4.39	μg/Kg-dry	1	2/5/2013 16:05
METALS		Met	hod: SW6020		Prep: SW30	50A / 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		Met	hod: SW8270		Prep: SW35	41 / 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

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual MDI	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	72.3		37-125	%REC	1	2/7/2013 17:49
Surr: 4-Terphenyl-d14	92.5		32-125	%REC	1	2/7/2013 17:49
Surr: Nitrobenzene-d5	79.6		37-125	%REC	1	2/7/2013 17:49
Surr: Phenol-d6	76.1		40-125	%REC	1	2/7/2013 17:49
VOLATILES - SW8260C		Method: SW82	60			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	0.6	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	0.6	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	3.0	6.2	μg/Kg-dry	1	2/1/2013 11:23
1,2-Dichloroethane	U	0.7	4 6.2	μg/Kg-dry	1	2/1/2013 11:23
Benzene	U	0.7	4 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	3.0	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
Surr: 1,2-Dichloroethane-d4	93.0		70-128	%REC	1	2/1/2013 11:23
Surr: 4-Bromofluorobenzene	101		73-126	%REC	1	2/1/2013 11:23
Surr: Dibromofluoromethane	105		71-128	%REC	1	2/1/2013 11:23
Surr: Toluene-d8	101		73-127	%REC	1	2/1/2013 11:23
ANIONS - EPA 300.0 (1993)		Method: E300		Prep: E300	/ 2/5/13	Analyst: JKP
Chloride	58.8	2	.5 6.14	mg/Kg-dry	1	2/5/2013 21:07
Fluoride	5.20	0.3	7 1.23	mg/Kg-dry	1	2/5/2013 21:07
Nitrogen, Nitrate (As N)	U	0.3	1.23	mg/Kg-dry	1	2/5/2013 21:07
Nitrogen, Nitrite (As N)	U	0.3	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
Surr: Selenate (surr)	87.1		85-115	%REC	1	2/5/2013 21:07
CYANIDE		Method: SW90	14	Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U	0.6	9 2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Method: SW35	50			Analyst: KAH
Percent Moisture	19.0	0.01	0.0100	wt%	1	2/4/2013 14:30

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 26.2
 0.010
 0.0100
 wt%
 1
 2/4/2013 14:30

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

Date: 13-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	Prep: SW74	71A / 2/5/13	Analyst: OFO	
Mercury	5.69		0.40	4.90	μg/Kg-dry	1	2/5/2013 16:17
METALS		Method: SW6020				50A / 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: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.81	2.71	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	26.9		0.010	0.0100	wt%	1	2/4/2013 14:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1301997-04 **Sample ID:** MW -115 (7)

Collection Date: 1/29/2013 03:02 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Date: 13-Feb-13

Work Order: 1301997

Method: SW3550 **MOISTURE** Analyst: KAH 2/4/2013 14:30 **Percent Moisture** 20.9 0.010 0.0100 wt%

Client: Navajo Refining Company

Project: RO Discharge Sampling

MW- 115 (9) **Sample ID: Collection Date:** 1/29/2013 03:02 PM

Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Date: 13-Feb-13

Lab ID: 1301997-05

Work Order: 1301997

Method: SW3550 **MOISTURE** Analyst: KAH 2/4/2013 14:30 **Percent Moisture** 20.8 0.010 0.0100 wt%

Client: Navajo Refining Company

RO Discharge Sampling **Project:**

MW- 115 (10) **Sample ID: Collection Date:** 1/29/2013 04:10 PM Work Order: 1301997

Lab ID: 1301997-06

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A		Prep: SW74	Analyst: OFO	
Mercury	14.6		0.34	4.22	μg/Kg-dry	1	2/5/2013 16:19
METALS		Meth	od: SW6020		Prep: SW30	50A / 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		Meth	od: SW3550				Analyst: KAH
Percent Moisture	19.9		0.010	0.0100	wt%	1	2/4/2013 14:30

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 12.6
 0.010
 0.0100
 wt%
 1
 2/4/2013 14:30

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1301997

 Sample ID:
 MW -115 (13)
 Lab ID: 1301997-08

 Sample ID:
 MW -115 (13)
 Lab ID: 13019

 Collection Date:
 1/29/2013 04:12 PM
 Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.8
 0.010
 0.0100
 wt%
 1
 2/4/2013 14:30

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471A	,	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.34	4.15	μg/Kg-dry	1	2/5/2013 16:21
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.69	2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	16.3		0.010	0.0100	wt%	1	2/4/2013 14:30

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1301997

 Sample ID: MW -115 (17)
 Lab ID: 1301997-10

Collection Date: 1/29/2013 03:22 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 21.1
 0.010
 0.0100
 wt%
 1
 2/4/2013 14:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1301997-11 **Sample ID:** MW -115 (19) Matrix: SOIL

Collection Date: 1/29/2013 03:22 PM

Report **Dilution Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Date: 13-Feb-13

Work Order: 1301997

Method: SW3550 **MOISTURE** Analyst: KAH 2/4/2013 14:30 **Percent Moisture** 20.9 0.010 0.0100 wt%

Client: Navajo Refining Company

RO Discharge Sampling **Project:**

MW -115 (20) **Sample ID: Collection Date:** 1/29/2013 04:00 PM Work Order: 1301997

Lab ID: 1301997-12

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	L.	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.35	4.35	μg/Kg-dry	1	2/5/2013 16:23
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.69	2.30	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	18.9		0.010	0.0100	wt%	1	2/4/2013 14:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1301997-13 **Sample ID:** MW -115 (21)

Collection Date: 1/29/2013 03:30 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Date: 13-Feb-13

Work Order: 1301997

MOISTURE Method: SW3550 Analyst: KAH 2/4/2013 14:30 **Percent Moisture** 26.3 0.010 0.0100 wt%

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 25.0
 0.010
 0.0100
 wt%
 1
 2/4/2013 14:30

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Meth	nod: SW8015M		Prep: SW35	41 / 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 - SW	/8015C	Meth	nod: SW8015				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		Meth	nod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.36	4.49	μg/Kg-dry	1	2/5/2013 16:25
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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		Meth	nod: SW8270		Prep: SW35	41 / 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

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-115 (25)

Sample ID: MW-115 (25) **Collection Date:** 1/29/2013 03:45 PM

Work Order: 1301997

Lab ID: 1301997-15

Date: 13-Feb-13

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	Analyst: JKP
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: SW90	10C / 2/5/13	Analyst: EDG
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

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: Trip Blank 011813-29

 Sample ID:
 Trip Blank 011813-29
 Lab ID: 1301997-16

 Collection Date:
 1/29/2013
 Matrix: WATER

Analyses	Result	Qual MD	Report L Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8	260			Analyst: AKP
1,1,1-Trichloroethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,1,2,2-Tetrachloroethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,1,2-Trichloroethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,1-Dichloroethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,1-Dichloroethene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,2-Dibromoethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
1,2-Dichloroethane	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Benzene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Carbon tetrachloride	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Chloroform	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Ethylbenzene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Methylene chloride	U	0.000	0.0020	mg/L	1	2/4/2013 16:55
Tetrachloroethene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Toluene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Trichloroethene	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Vinyl chloride	U	0.000	0.0010	mg/L	1	2/4/2013 16:55
Xylenes, Total	U	0.000	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.

Date: 13-Feb-13

Work Order: 1301997

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Date: 13-Feb-13

QC BATCH REPORT

Batch ID: 67579	Instrument ID FID-7		Metho	d: SW801	5M					
MBLK Sample ID: I	FBLKS1-130205-67579				Units: m	g/Kg	Analys	sis Date: 2/	6/2013 11	:56 AM
Client ID:	Run	ID: FID-7_ 1	30206A		SeqNo: 3	04153	Prep Date: 2/5/	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
ΓΡΗ (Oil Range)	U	3.4								
TPH (Diesel Range)	U	1.7								
Surr: 2-Fluorobiphenyl	2.092	0.10	3.33		0 62.	8 60-135	0	١		
_CS Sample ID: I	FLCSS1-130205-67579				Units: m	g/Kg	Analys	sis Date: 2/	6/2013 12	:19 PN
Client ID:	Run	ID: FID-7_ 1	30206A		SeqNo: 3'	04154	Prep Date: 2/5/	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
TPH (Oil Range)	27.05	3.4	33.33		0 81.2	2 70-130	0	1		
			22.22		0 10	70-130	0	1		
TPH (Diesel Range)	35.72	1.7	33.33			, , , , ,	0			
TPH (Diesel Range) Surr: 2-Fluorobiphenyl	35.72 2.536	1.7 0.10	3.33		0 76.2		-			
Surr: 2-Fluorobiphenyl						? 60-135	0		6/2013 01	:06 PN
Surr: 2-Fluorobiphenyl MS Sample ID: '	2.536 1302018-01BMS		3.33		0 76.2	? 60-135 g/ K g	0	sis Date: 2/	6/2013 01 DF: 1	:06 PN
Surr: 2-Fluorobiphenyl MS Sample ID: * Client ID:	2.536 1302018-01BMS	0.10	3.33		0 76.2 Units: m	g/Kg 04156	0 Analys	sis Date: 2/		
Surr: 2-Fluorobiphenyl MS Sample ID: Client ID: Analyte	2.536 1302018-01BMS	0.10	3.33 30206A	SPK Ref	Units: m SeqNo: 3°	g/Kg 104156 Control	Analys Prep Date: 2/5/ RPD Ref	sis Date: 2/ / 2013 %RPD	DF: 1 RPD	Qua
Surr: 2-Fluorobiphenyl MS Sample ID: * Client ID: Analyte TPH (Oil Range)	2.536 1302018-01BMS Run Result	0.10 ID: FID-7_ 1	3.33 30206A SPK Val	SPK Ref Value	0 76.2 Units: m SeqNo: 3	g/Kg 104156 Control Limit 70-130	Analys Prep Date: 2/5/ RPD Ref Value	sis Date: 2/ / 2013 %RPD	DF: 1 RPD	Qua
Surr: 2-Fluorobiphenyl MS Sample ID: * Client ID: Analyte FPH (Oil Range)	2.536 1302018-01BMS Run Result 229.1	0.10 ID: FID-7_1 PQL 3.4	3.33 30206A SPK Val 33.23	SPK Ref Value 219. 75.4	0 76.2 Units: m SeqNo: 3	g/Kg 04156 Control Limit 70-130	Analys Prep Date: 2/5/ RPD Ref Value	sis Date: 2/ /2013 %RPD	DF: 1 RPD	Qual
Surr: 2-Fluorobiphenyl MS Sample ID: * Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl	2.536 1302018-01BMS Run Result 229.1 80.52	0.10 ID: FID-7_1 PQL 3.4 1.7	3.33 30206A SPK Val 33.23 33.23	SPK Ref Value 219. 75.4	Units: m SeqNo: 3° %RE 8 28.	g/Kg 04156 Control Limit 70-130 3 70-130 3 60-135	Analys Prep Date: 2/5/ RPD Ref Value 0 0	sis Date: 2/ /2013 %RPD	DF: 1 RPD Limit	Qual SEC SE
Surr: 2-Fluorobiphenyl MS Sample ID: * Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl	2.536 1302018-01BMS Result 229.1 80.52 2.284	0.10 ID: FID-7_1 PQL 3.4 1.7	3.33 30206A SPK Val 33.23 33.23 3.32	SPK Ref Value 219. 75.4	Units: m SeqNo: 3' %RE 8 28.: 5 15.: 0 68.6	g/Kg 04156 Control Limit 70-130 3 70-130 3 60-135	Analys Prep Date: 2/5/ RPD Ref Value 0 0	sis Date: 2/ /2013 %RPD sis Date: 2/	DF: 1 RPD Limit	Qua SEC SE
Surr: 2-Fluorobiphenyl MS Sample ID: 4 Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: 4	2.536 1302018-01BMS Result 229.1 80.52 2.284	0.10 ID: FID-7_1 PQL 3.4 1.7 0.10	3.33 30206A SPK Val 33.23 33.23 3.32	SPK Ref Value 219. 75.4	Units: m SeqNo: 3* %RE 8 28.: 5 15.: 0 68.6	g/Kg 04156 Control Limit 70-130 3 70-130 3 60-135	Analys Prep Date: 2/5/ RPD Ref Value 0 0 Analys	sis Date: 2/ /2013 %RPD sis Date: 2/	DF: 1 RPD Limit 6/2013 01 DF: 1 RPD	Qua SEC SE
Surr: 2-Fluorobiphenyl MS Sample ID: 4 Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: 4 Client ID:	2.536 1302018-01BMS Result 229.1 80.52 2.284	0.10 ID: FID-7_1 PQL 3.4 1.7 0.10	3.33 30206A SPK Val 33.23 33.23 3.32	SPK Ref Value 219. 75.4	Units: m SeqNo: 3* %RE 8 28.: 5 15.: 0 68.6	g/Kg 04156 Control Limit 70-130 3 70-130 3 60-135 g/Kg 04157 Control	Analys Prep Date: 2/5/ RPD Ref Value 0 0 Analys Prep Date: 2/5/	sis Date: 2/ /2013 %RPD sis Date: 2/	DF: 1 RPD Limit 6/2013 01 DF: 1	Qua SEC SE
Surr: 2-Fluorobiphenyl MS Sample ID: 4 Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: 4	2.536 Run Result 229.1 80.52 2.284 Run Run Result Run Run Run	0.10 ID: FID-7_1 PQL 3.4 1.7 0.10 ID: FID-7_1	3.33 30206A SPK Val 33.23 33.23 3.32	SPK Ref Value 219. 75.4 SPK Ref	Units: m SeqNo: 3' %RE 8 28.: 5 15.: 0 68.: Units: m SeqNo: 3'	g/Kg 04156 Control Limit 70-130 3 70-130 3 60-135 g/Kg 04157 Control Limit	Analys Prep Date: 2/5/ RPD Ref Value 0 0 Analys Prep Date: 2/5/ RPD Ref	sis Date: 2/ /2013 %RPD sis Date: 2/ /2013 %RPD	DF: 1 RPD Limit 6/2013 01 DF: 1 RPD	Qua SEC SE :29 PM
Surr: 2-Fluorobiphenyl MS Sample ID: 4 Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: 4 Client ID: Analyte	2.536 1302018-01BMS Result 229.1 80.52 2.284 1302018-01BMSD Run Result	0.10 ID: FID-7_1 PQL 3.4 1.7 0.10 ID: FID-7_1	3.33 30206A SPK Val 33.23 33.23 3.32 30206A SPK Val	SPK Ref Value 219. 75.4 SPK Ref Value	Units: m SeqNo: 3. %RE 8 28. 5 15. 0 68. Units: m SeqNo: 3. %RE	g/Kg 04156 Control Limit 70-130 3 70-135 g/Kg 04157 Control Limit 7 70-130	Analys Prep Date: 2/5/ RPD Ref Value 0 0 Analys Prep Date: 2/5/ RPD Ref Value	sis Date: 2/ /2013 %RPD sis Date: 2/ /2013 %RPD	DF: 1 RPD Limit 6/2013 01 DF: 1 RPD Limit	Qua SEC SE :29 PM

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142225 Instrume	nt ID FID-9		Metho	d: SW801	5						
MBLK Sample ID: GBLKS-13	0205-R142225				ι	Jnits: mg/	Kg	Analysi	is Date: 2/	5/2013 01	:02 PN
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3619	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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-13	0205-R142225				ι	Jnits: mg /	Kg	Analysi	is Date: 2/	5/2013 12	:25 PN
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3613	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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-1	30205-R142225				ι	Jnits: mg/	Kg	Analysi	is Date: 2/	5/2013 12	:44 PN
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310	3616	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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: 1302018-0	4ZMS				ι	Jnits: mg/	Kg	Analysi	is Date: 2/	5/2013 04	:11 PN
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3628	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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: 1302018-0	4ZMSD				Ų	Jnits: mg /	Kg	Analysi	is Date: 2/	5/2013 04	:30 PN
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310	3632	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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 analyz			301997-01B								

Client: Navajo Refining Company

Work Order: 1301997

Sodium

Note:

Project: RO Discharge Sampling

			Wictiou	SW602	.0					
MBLK	Sample ID: MBLKS1-020113-67523				Units: mg/	Kg	Analy	sis Date: 2	/5/2013 03	3:05 PN
Client ID:	Run	ID: ICPMS	5_130205A		SeqNo: 310 2	2200	Prep Date: 2/4	I/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	Analy	sis Date: 2	/6/2013 12	2:35 PN
Client ID:	Run	ID: ICPMS	5_130206A		SeqNo: 310	3603	Prep Date: 2/4	1/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Boron	U	2.5			,20			-		

U

50

Client: Navajo Refining Company

Work Order: 1301997

Boron

Note:

Sodium

Project: RO Discharge Sampling

Batch ID: 675	23 Instrument ID ICPMS05		Method:	SW602	0						
LCS	Sample ID: MLCSS1-020113-67523				Ĺ	Jnits: mg/ l	Kg	Analysis D	ate: 2 /	5/2013 03	:08 PM
Client ID:	Run	ID: ICPMS	05_130205A		Se	qNo: 310 2	2201	Prep Date: 2/4/201	3	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				Ĺ	Jnits: mg /l	Kg	Analysis D	ate: 2 /	6/2013 12	:38 PN
Client ID:	Run	ID: ICPMS	05_130206A		Se	qNo: 310 3	3604	Prep Date: 2/4/201	3	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value %	RPD	RPD Limit	Qual

47.92

981.7

2.5

50

50

1000

0

95.8

98.2

80-120

80-120

0

Client: Navajo Refining Company

Work Order: 1301997

Potassium

Sodium

Project: RO Discharge Sampling

Batch ID: 675	23 Instrument ID ICP	MS05		Method:	SW6020					
MS	Sample ID: 13011005-01DMS					Units: mg/	Kg	Analysis Date:	2/5/2013 0	3:22 PM
Client ID:		Run ID:	: ICPMS0	5_130205A	S	eqNo: 310 2	2207	Prep Date: 2/4/2013	DF: 1	
Analyte	R	tesult	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %RPI	RPD Limit	Qual
Aluminum	1	3710	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		0
Cadmium	8	3.001	0.42	8.429	0.4065	90.1	75-125	0		
Calcium	5	7470	42	842.9	57640	-19.7	75-125	0		SEO
Chromium	2	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	1	1500	42	842.9	10120	164	75-125	0		so
Lead	2	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	3.315	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	}	3.085	0.42	8.429	0.05106	95.3	75-125	0		
Uranium	8	3.095	0.42	8.429	0.408	91.2	75-125	0		
Zinc	4	16.05	0.42	8.429	37.34	103	75-125	0		0
MS	Sample ID: 13011005-01DMS					Units: mg /	Kg	Analysis Date:	2/6/2013 1	2:50 PM
Client ID:		Run ID:	CPMS	5_130206A	S	eqNo: 310 :	3618	Prep Date: 2/4/2013	DF: 2	
Analyte	R	tesult	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %RPI	RPD Limit	Qual
Boron	;	39.78	4.2	42.14	60.18	-48.4	75-125	0		S

842.9

842.9

3553

168.4

84

4808

914.3

SO

0

75-125

75-125

149

88.5

Client: Navajo Refining Company

Work Order: 1301997

Sodium

Note:

Project: RO Discharge Sampling

Batch ID: 675	23 Instrument ID ICPMS05		Method	SW6020						
MSD	Sample ID: 13011005-01DMSD			l	Jnits: mg/	Kg	Analysi	s Date: 2 /	5/2013 03	:25 PM
Client ID:	Rur	n ID: ICPMS	05_130205A	Se	eqNo: 310	2208	Prep Date: 2/4/2	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	0
MSD	Sample ID: 13011005-01DMSD			ι	Jnits: mg /	Kg	Analysi	s Date: 2 /	6/2013 12	:52 PM
Client ID:	Rur	n ID: ICPMS	05_130206A	Se	eqNo: 310	3621	Prep Date: 2/4/2	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

855.4

80

795.6

168.4

86.4

75-125

914.3

6.65

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID I	CPMS05		Method:	SW602	20						
DUP	Sample ID: 13011005-01DDU	JP				U	nits: mg/l	Kg	Analysi	s Date: 2 /	5/2013 03	:20 PM
Client ID:		Run ID	: ICPMS(5_130205A		Se	qNo: 3102	2206	Prep Date: 2/4/2	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	
_ead		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	
Jranium		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: 13011005-01DDU	JP				U	nits: mg/ l	Кg	Analysi	s Date: 2 /	6/2013 12	:47 PN
Client ID:		Run ID	: ICPMS(5_130206A		Se	qNo: 310 3	8614	Prep Date: 2/4/2	2013	DF: 2	
				;	SPK Ref			Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value		%REC	Limit	Value	%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: 13011005-01DD	JP				U	nits: mg/l	Kg	Analysi	s Date: 2/	6/2013 03	:01 PM
Client ID:		Run ID	: ICPMS(5_130206A			qNo: 310 3		Prep Date: 2/4/2	2013	DF: 10 0)
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	
	g samples were analyzed in		13	01997-01D 01997-09D		019	97-03D 97-12D	13	01997-06D 01997-15D			

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: 67	7585	Instrument ID HG02		Metho	d: SW747	1 A					
MBLK	Sample ID: G	BLKS1-020513-67585				Units:	μg/Kg	Analy	sis Date: 2	2/5/2013 04	:01 PN
Client ID:		Run II	: HG02 _	130205A		SeqNo:	3102354	Prep Date: 2/5	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%R	Contr EC Limi		%RPD	RPD Limit	Qua
Mercury		U	3.3								
LCS	Sample ID: G	LCSS1-020513-67585				Units:	μg/Kg	Analysis Date: 2/5/2013 04:03			:03 PN
Client ID:		Run I	: HG02 _	130205A		SeqNo:	3102355	Prep Date: 2/5	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%R	Contr EC Lim		%RPD	RPD Limit	Qua
Mercury		332.7	3.3	333.3		0 99	9.8 85-1	15 ()		
MS	Sample ID: 1	301997-01DMS				Units:	μg/Kg	Analy	sis Date: 2	2/5/2013 04	:09 PN
Client ID: M	W -115 (1)	Run I	: HG02 _	130205A		SeqNo:	3102358	Prep Date: 2/5	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%R	Contr EC Limi		%RPD	RPD Limit	Qua
Mercury		376.9	3.5	354.9	14.7	76 1	02 85-1	15)		
MSD	Sample ID: 1	301997-01DMSD				Units:	μg/Kg	Analy	2/5/2013 04	:11 PN	
Client ID: M	W -115 (1)	Run II	: HG02 _	130205A		SeqNo:	3102359	Prep Date: 2/5	Prep Date: 2/5/2013		
Analyte		Result	PQL	SPK Val	SPK Ref Value	%R	Contr EC Limi		%RPD	RPD Limit	Qua
Mercury		375.1	3.5	354.5	14.7	7 6 1	02 85-1	15 376.9	9 0.484	4 20	
DUP	Sample ID: 1	301997-01DDUP				Units:	μg/Kg	Analy	sis Date: 2	2/5/2013 04	:07 PN
Client ID: M	W -115 (1)	Run II	: HG02 _	130205A		SeqNo:	3102357	Prep Date: 2/5	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%R	Contr EC Limi		%RPD	RPD Limit	Qua
Mercury		15.21	3.6	0		0	0	14.70	3.04	4 20	
The following	ng samples we	ere analyzed in this batch:		301997-01D 301997-09D		01997-03 01997-12		1301997-06D 1301997-15D			

Client: Navajo Refining Company

Work Order: 1301997

Surr: 2-Fluorobiphenyl

Surr: 2-Fluorophenol

Surr: 4-Terphenyl-d14

Surr: Nitrobenzene-d5

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 67656	Instrument ID SV-6		Metho	d: SW827	0						
MBLK Sample ID: S	BLKS2-130207-67656				L	Jnits: µg/l	(g	Analys	sis Date: 2	/7/2013 04	:24 PM
Client ID:	Ru	n ID: SV-6_1	30207A		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-Tribromophen	nol 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	C)		
Surr: 2-Fluorophenol	126.1	6.6	166.7		0	75.7	37-125	C)		
Surr: 4-Terphenyl-d14	166.2	6.6	166.7		0	99.7	32-125	C)		
Surr: Nitrobenzene-d5	134.1	6.6	166.7		0	80.4	37-125	C)		
Surr: Phenol-d6	130.7	6.6	166.7		0	78.4	40-125	C)		
LCS Sample ID: S	LCSS2-130207-67656				L	Jnits: µg/l	(g	Analys	sis Date: 2	/7/2013 04	l:45 PM
Client ID:	Ru	n ID: SV-6_1	30207A		Se	qNo: 310	6636	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	C)		
2-Methylnaphthalene	133.3	6.6	166.7		0	80	50-120	C)		
Benzo(a)pyrene	148.1	6.6	166.7		0	88.8	50-130	C)		
Naphthalene	128.1	6.6	166.7		0	76.9	50-125	C)		
Surr: 2,4,6-Tribromophen	nol 125.4	6.6	166.7		0	75.2	36-126	C)		

0

0

0

0

77

73.3

95.8

75.9

73.5

43-125

37-125

32-125

37-125

40-125

0

0

0

0

0

128.4

122.2

159.7

126.5

122.6

6.6

6.6

6.6

6.6

6.6

166.7

166.7

166.7

166.7

166.7

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: 67656	Instrument ID SV-6		Method	d: SW8270						
MS Sample ID: 1	302140-04DMS			l	Jnits: µg/k	(g	Analysis Date: 2/7/2013 07:35 PM			
Client ID:	Rı	un ID: SV-6_1	30207A	Se	eqNo: 310 0	6643	Prep Date: 2/7/2	2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qua
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-Tribromopher	nol 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: 1	302140-04DMSD			l	Jnits: µg/k	(g	Analysi	s Date: 2/	7/2013 07	:56 PI
Client ID:	Rı	un ID: SV-6_1	30207A	Se	qNo: 310	6644	Prep Date: 2/7/2013		DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qua
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-Tribromopher	nol 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	
	150 5	6.6	166.4	0	90.4	32-125	124.5	18.9	30	
Surr: 4-Terphenyl-d14	150.5									
Surr: 4-Terphenyl-d14 Surr: Nitrobenzene-d5	124.3	6.6	166.4	0	74.7	37-125	105.2	16.7	30	

The following samples were analyzed in this batch:

Note:

1301997-01D 1301997-15D

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5		Metho	d: SW82 6	60					
MBLK Sample ID: V	/BLKS1-020113-R141995				Units: µg/l	Kg	Analy	/sis Date: 2	/1/2013 0	9:52 AM
Client ID:	Run IE): VOA5_	130201A		SeqNo: 309	8471	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	e-d4 42.8	0	50		0 85.6	70-128	1	0		
Surr: 4-Bromofluorobenz	rene 46.86	0	50		0 93.7	73-126		0		
Surr: Dibromofluorometh	nane 48.11	0	50		0 96.2	71-128	1	0		
Surr: Toluene-d8	44.78	0	50		0 89.6	73-127	•	0		

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5		Metho	: SW826	0						
LCS Sample ID: V	VLCSS1-020113-R141995				L	Jnits: µg/k	(g	Analysis Date: 2/1/2013 08:43 AM			
Client ID:	Run II	D: VOA5_	130201A		Se	qNo: 309 8	8470	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	e-d4 51.49	0	50		0	103	70-128		0		
Surr: 4-Bromofluorobenz	zene 47.86	0	50		0	95.7	73-126		0		
Surr: Dibromofluorometh	nane 51.61	0	50		0	103	71-128		0		
Surr: Toluene-d8	43.85	0	50		0	87.7	73-127		0		

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5		Method	SW826	0						
MS Sample ID: 1	301997-01AMS				U	Jnits: µg/k	(g	Analy	/sis Date: :	2/1/2013 1	1:46 AM
Client ID: MW -115 (1)	Ru	ın 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-Bromofluorobenz	rene 49	0	50		0	98	73-126		0		
Surr: Dibromofluorometh	ane 49.78	0	50		0	99.6	71-128		0		
Surr: Toluene-d8	51.55	0	50		0	103	73-127		0		

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5	Method:	SW8260
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MSD Sample ID: 1301997-01	1AMSD				Units: µg/l	(g	Analysis Date: 2/1/2013 12:09 PM			
Client ID: MW -115 (1)	Run II	D: VOA5_	130201A	SeqNo: 3098547 F			Prep Date: DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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:

Note:

1301997-01A 1301997-15A

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142113	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	/BLKW-130204-R142113				Units: µg/l		Analy	sis Date: 2	/4/2013 1	1:16 AM
Client ID:	Run II	D: VOA4_	130204A		SeqNo: 310	0918	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	e-d4 43.85	1.0	50		0 87.7	71-125		0		
Surr: 4-Bromofluorobenz	zene 49.08	1.0	50		0 98.2	70-125		0		
Surr: Dibromofluorometh	nane 48.08	1.0	50		0 96.2	74-125	i	0		
Surr: Toluene-d8	48.41	1.0	50		0 96.8	78-123		0		

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142113 Instrument ID VOA4	Method:	SW8260
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LCS Sample ID: VLCSW-13	30204-R142113				Units: µg/I	_	Analysis Date: 2/4/2013 10:03 AM			
Client ID:	Run II	130204A	S	eqNo: 310	0916	Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	54.47	1.0	50	0	109	80-120	()		
1,1,2,2-Tetrachloroethane	46.02	1.0	50	0	92	74-123	()		
1,1,2-Trichloroethane	48.93	1.0	50	0	97.9	80-120	()		
1,1-Dichloroethane	46.62	1.0	50	0	93.2	80-120	()		
1,1-Dichloroethene	53.04	1.0	50	0	106	80-120	()		
1,2-Dibromoethane	53.39	1.0	50	0	107	80-120	()		
1,2-Dichloroethane	49.07	1.0	50	0	98.1	79-120	()		
Benzene	48.6	1.0	50	0	97.2	80-120	()		
Carbon tetrachloride	58.54	1.0	50	0	117	79-120	()		
Chloroform	46.57	1.0	50	0	93.1	80-120	()		
Ethylbenzene	48.8	1.0	50	0	97.6	80-120	()		
Methylene chloride	47.71	2.0	50	0	95.4	75-125	()		
Tetrachloroethene	53.4	1.0	50	0	107	80-120	()		
Toluene	48.37	1.0	50	0	96.7	80-121	()		
Trichloroethene	53.7	1.0	50	0	107	80-120	()		
Vinyl chloride	48.96	1.0	50	0	97.9	75-125	()		
Xylenes, Total	142.5	1.0	150	0	95	80-124	()		
Surr: 1,2-Dichloroethane-d4	44.17	1.0	50	0	88.3	71-125	()		
Surr: 4-Bromofluorobenzene	52.31	1.0	50	0	105	70-125	()		
Surr: Dibromofluoromethane	49.72	1.0	50	0	99.4	74-125	()		
Surr: Toluene-d8	48.59	1.0	50	0	97.2	78-123	()		

Navajo Refining Company Client:

Work Order: 1301997

RO Discharge Sampling Project:

Batch ID: R142113	Instrument ID VOA4	Method:	SW8260
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LCSD Sample ID: VLCSDW-1	30204-R142113			1	Units: µg/I	_	Analys	is Date: 2/	4/2013 10):27 AN
Client ID:	Run II	D: VOA4_	130204A	Se	eqNo: 310	0917	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142113	Instrument ID VOA4		Method	SW8260	0						
MS Sample ID:	1302069-01AMS				U	nits: μg/L	-	Analys	sis Date: 2	2/4/2013 0	1:41 PM
Client ID:	Ru	in 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	()		
1,1,2,2-Tetrachloroethane	45.23	1.0	50		0	90.5	74-123	()		
1,1,2-Trichloroethane	50.26	1.0	50		0	101	80-120	()		
1,1-Dichloroethane	48.56	1.0	50		0	97.1	80-120	()		
1,1-Dichloroethene	57.49	1.0	50		0	115	80-120	()		
1,2-Dibromoethane	53.79	1.0	50		0	108	80-120	()		
1,2-Dichloroethane	50.8	1.0	50		0	102	79-120	()		
Benzene	51.17	1.0	50		0	102	80-120	()		
Carbon tetrachloride	61.34	1.0	50		0	123	79-120	()		S
Chloroform	49.2	1.0	50		0	98.4	80-120	()		
Ethylbenzene	50.6	1.0	50		0	101	80-120	()		
Methylene chloride	49.13	2.0	50		0	98.3	75-125	()		
Tetrachloroethene	55.78	1.0	50		0	112	80-120	()		
Toluene	49.91	1.0	50		0	99.8	80-121	()		
Trichloroethene	57.43	1.0	50		0	115	80-120	()		
Vinyl chloride	53.66	1.0	50		0	107	75-125	()		
Xylenes, Total	148.5	1.0	150		0	99	80-124	()		
Surr: 1,2-Dichloroethane	e-d4 44.59	1.0	50		0	89.2	71-125	()		
Surr: 4-Bromofluorobenz	zene 50.99	1.0	50		0	102	70-125	()		
Surr: Dibromofluorometh	nane 49.65	1.0	50		0	99.3	74-125	()		
Surr: Toluene-d8	48.21	1.0	50		0	96.4	78-123	()		

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142113	Instrument ID VOA4	Method: SW8260
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MSD Sample ID: 1302069-01	1AMSD			I	Units: µg/l	-	Analysi	is Date: 2 /	4/2013 02	2:06 PN
Client ID:	Run II	D: VOA4_	130204A	Se	eqNo: 310	0925	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:

Note:

1301997-16A

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: 67	7583 Instrument ID UV-2450		Method	: SW901	4	(Dissolv	e)			
MBLK	Sample ID: WBLKS1-020513-67583				Units: mg/	Kg	Analysis	Date: 2	/5/2013 04	:30 PM
Client ID:	Run II	: UV-245	0_130205C		SeqNo: 310	3414	Prep Date: 2/5/2	013	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 II): UV-245	0_130205C		SeqNo: 310	3415	Prep Date: 2/5/2	013	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 II): UV-245	0_130205C		SeqNo: 310	3437	Prep Date: 2/5/2	013	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: M	IW- 115 (15) Run II): UV-245	0_130205C		SeqNo: 310	3436	Prep Date: 2/5/2	013	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	0.096	11 101	75-125	0			
The followi	ing samples were analyzed in this batch:		301997-01D 301997-09D		01997-03D 01997-12D		801997-06D 801997-15D			

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: 67633	Instrument ID ICS2100		Method	: E300			(Dissolve)			
MBLK Sample ID:	WBLKS1-67633				Uı	nits: mg/	Kg	Analys	is Date: 2	/5/2013 07	7:11 PN
Client ID:	Run II	D: ICS210	0_130205C		Sec	No: 310 :	3858	Prep Date: 2/5/	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				Uı	nits: mg/	Kg	Analys	is Date: 2	/5/2013 07	7:25 PN
Client ID:	Run II	D: ICS210	0_130205C		Sec	No: 310	3859	Prep Date: 2/5/	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				Uı	nits: mg/	Kg	Analys	is Date: 2	/6/2013 01	:29 AN
Client ID:	Run II	D: ICS210	0_130205C		Sec	No: 310	3884	Prep Date: 2/5/	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Chloride	126.4	5.0	98.97	16	.2	111	75-125	0			
Fluoride	20.19	0.99	19.79	2.63		88.7	75-125	0			
Nitrogen, Nitrate (As N)	20.76	0.99	19.79	2.00	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		107	75-125	0			
Sunaie											

Client: Navajo Refining Company

Work Order: 1301997

Sulfate

Note:

Surr: Selenate (surr)

Project: RO Discharge Sampling

Project:	RO	Discharge Sampling									
Batch ID: 670	633	Instrument ID ICS2100		Method	: E300		(Dissolve	e)			
MSD	Sample ID:	1302026-21DMSD				Units: mg/	Kg	Analysi	s Date: 2/	6/2013 01	:43 AM
Client ID:		Run	ID: ICS210	0_130205C		SeqNo: 310	3885	Prep Date: 2/5/2	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	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, Nitr	rate (As N)	20.57	0.99	19.73	(104	75-125	20.76	0.942	20	
Nitrogen, Nitr	rite (As N)	20.98	0.99	19.73	(106	75-125	21.36	1.77	20	

The following samples were analyzed in this batch:

315.2

42

4.9

0.99

98.65

49.33

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

103

85.1

75-125

80-120

319.3

42.66

1.29

1.58

20

20

213.5

0

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1301997

Project: RO Discharge Sampling

Batch ID: R142151	Instrument ID Balance	ce1	Metho	d: SW35	50		(Dissolve	e)			
DUP Sample	e ID: 1301997-15DDUP				U	nits: wt %	,)	Analys	s Date: 2 /	4/2013 02	:30 PM
Client ID: MW-115 (2	5)	Run ID: BAL	ANCE1_1302)4C	Sec	No: 310	1859	Prep Date:		DF: 1	
Analyte	Resu	ult PC	L SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	21.3	35 0.01	0 0		0	0	0-0	20.91	2.09	20	
The following samp	les were analyzed in this b	eatch:	1301997-01E 1301997-04A 1301997-07A 1301997-10A	10	30199 30199	97-02A 97-05A 97-08A 97-11A	13 13	01997-03D 01997-06D 01997-09D 01997-12D			

1301997-14A

1301997-15D

1301997-13A

Note:

QC BATCH REPORT

ALS Environmental Date: 13-Feb-13

Client: Navajo Refining Company **QUALIFIERS,** Project: RO Discharge Sampling ACRONYMS, UNITS

WorkOrder: 1301997

wt%

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	<u>Description</u>
μg/Kg-da	ry Micrograms per Kilogram - Dry weight corrected
mg/Kg-d	ry Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time	Received:	31-Jan-13	<u>09:10</u>	
Work Order:	1301997			Received b	y:	RDH		
Checklist comp	pleted by Lahnnie B. Lillen eSignature	3	1-Jan-13 Date	Reviewed by:	Patricia eSignature	L. Lyne	h	01-Feb-13
Matrices: Carrier name:	soil/water FedEx Priority Overnight	'						'
Shipping conta	iner/cooler in good condition?		Yes 🗹	No 🗌	Not Pres	ent		
Custody seals	intact on shipping container/coole	er?	Yes 🗹	No 🗌	Not Pres	ent \square		
Custody seals	intact on sample bottles?		Yes \square	No 🗆	Not Pres	ent 🗹		
Chain of custoo	dy present?		Yes 🗹	No \square				
Chain of custoo	dy signed when relinquished and	received?	Yes 🗹	No \square				
Chain of custoo	dy agrees with sample labels?		Yes 🗸	No 🗌				
Samples in pro	per container/bottle?		Yes 🗹	No 🗆				
Sample contain	ners intact?		Yes 🗹	No 🗆				
Sufficient samp	ole volume for indicated test?		Yes 🗹	No 🗌				
All samples rec	ceived within holding time?		Yes 🗹	No 🗆				
Container/Tem	p Blank temperature in complian	ce?	Yes 🗹	No 🗆				
Temperature(s)/Thermometer(s):		1.2 C/uc		IR	<u>1</u>		
Cooler(s)/Kit(s)):		<u>5414</u>					
Date/Time sam	pple(s) sent to storage:		1/31/13 14	:50			_	
Water - VOA vi	als have zero headspace?		Yes 🗸	No 🗀	No VOA vials	submitted		
Water - pH acc	eptable upon receipt?		Yes 🗹	No 🗌	N/A			
pH adjusted? pH adjusted by	:		Yes _	No 🗸	N/A			
Login Notes:	Ra-226/228 & cyanide not o	on COC. Incorrect n	netals list on	COC.				
								- — — — — –
Client Contacte	ed:	Date Contacted:		Person	Contacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction	on:							
							000	Dana 4 of 4

47	
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4	



Chain of Custody Form

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



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ALS Project Manager:																12 11111 531					
Customer Information Project Information									Parameter/Method Request for Analysis												
Purchase Order			Project Name 20 Discharge / Samplin							A VOC (8260) NW GW List											
Work Order			Project Number 178873							B (
Company Name Nausio Retining Co			Bill To Company Mario Retining Co							C DRO (801514)											
Send Report To Robert Comb			Invoice Attn. Robert Combs							D ,	ORO (801514)										
Address 501 East Main			Address 501 East Main							E F	F THAT Metals (6020/7000) RCRAS										
City/State/Zip Artesia NM			City/State/Zip Actisis, NM								@ Dissolved Metals (602017000) RCRA &										
Phone			Phone 575 - 748 - 6733								H-TDS										
Fax			Fax 575-746-5421								Moisture										
e-Mail Address			e-Mail Address								J.										
No. Sample Description			Date		Time	Matrix	Pr	es.	# Bottles	A	В	С	ם	ĮΕ	F	G	Н		J	Hold	
1 MW150			1-79-	17	1425	51	-		5	X	×	X	又	Z)	X	7		X			
2 MW 15 (3)			\	7 7	1430	30.1	1		1		-		 ```	1		†=-		X	 		
3 MW 15 (5)					1435				5	项	4	×.	8	8	1	12		又		1	
4 MW 15 (7)					1502				1	,								X	1	1	
5 MW 15 (9)					1502				ĺ									X			
6 MW IR (10)					1610				5	1/21	狿	及	爱	8	\x	燕		X			
7 MUIS (ii)					1612)			<u> </u>		<u> </u>				×			
8 MW115 (13)			<u> </u>		1612						ļ		>) 		<u> </u>			X			
9 MW 115 (15)					1570			\	5	R	2	死	湿	展	X	袭		X			
10 MW115 (17)			1522								<u> </u>			<u> </u>				X			
Sampler(s): Please Pr	J)	Date:	Time:	•	ent Method:		STD 1		naround Days] 5 WK [□ 2 W	Other		4 Hour	Res	sults Du	e Date			
Relinquished by:		Received by:						es:			"			. 1			· ·				
Ecic Secondary Relinquished by:	Time: Received by Raboratory: 13 13 51							10 Day TAT, Dissolved Mytals Field Filter, 10 Package: (Check Box Below)													
							Coo, er Temp. Level II: Standard QC														
oggod by (Laboratory): Date:			Time: Checked by (Laboratory),					<u> </u>			7	Level III: Std QC + Raw Data									
											Le	vel IV:	SW84	6 CLP-	Like			**************************************			
Preservative Key: 1	eservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035												Ot	her: _	:						
lote: Any changes mu	st he made in writing	once samnles and	I COC Form b	rave be	en suhmitted to	Al S Envir	ony changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.												~		



Cincinnati, OH +1 513 733 5336

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

Fort Collins, CO

+1 970 490 1511

Chain of Custody Form

Page 2 of Z

coc ID: 72330

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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

Enviro	nmental						ALS		Manager:			1052		ALS	Work	Order	·#: ,	13:	1/8	797
	Customer Informatio	n			Projec	ct Inform	natio	n				Pa	rame	ter/Me	thod	Reque	st for	Analy	rsis	
Purchase Order			F	Project Na	ame RO	Discharge	e/San	npling		A	VO	C (826	O) NW	GW Lis	st					
Work Order		A STATE OF THE STA	Pro	oject Num	nber 128	823				В	GR	(801 O	5M)							
Company Name	Navajo Refining Con	npany	Bill	To Comp	oany Nav	ajo Refini	ing Co	этрапу		С	DR	O (801	5M)							77.00
Send Report To	Robert Combs			Invoice /	Attn Rob	ert Comb)s	TOTAL STATES		D	OR	(801	5M)							
Address	501 East Main	**************************************		Addr	hat of the edit of the	<u> [발표]</u>			E	LL	svoc	(8270)) NM GV	N List						
Addiess			5,000 to 5,000 to	700	C33					F	Tot	al Meta	als (60.	20/7000)) RCR/	48	·	~~~~		
City/State/Zip	Artesia, NM 88211		С	City/State/	/Zip Arte	esia, NM	8821	1		G	Dissolved Metals (6020/7000) RCRA 8									
Phone	(575) 748-6733			Ph	none (575					H	TDS									
Fax	(575) 746-5421		492556 30459		Fax (575	5) 746-54	-21				Мо	isture			. 8.		<u> </u>			7AVE TANKEN
e-Mail Address			1999	Mail Addr	99/60/35166					J	· · · · · · · · · · · · · · · · · · ·			IO/Sp G				·		
No.	Sample Description		Da	cent to villa Sin Pile	Time	Matrix	X 🖠	Pres.	# Bottles	Α	В	C	D	E	F	G	H	1	J	Hold
	160 115 (19)		1-29	9-13	1522	50	<u>,/ </u>		1		-	-	ļ	-	-			X		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	W 15 (20)		-		1600	L			5	2	7	3	8	39	X	MA		X		
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 A state of 	10115 (23)	•			1530				1			ļ						X		ļ
5	YW115 (25)			_	1545				5	人	X	X	×	×	Х	和		×	ļ	
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9			-								ļ		<u> </u>	-						
10						1				**************************************	<u> </u>									
Sampler(s) Please P	rint & Sign				nt Method		N. A.	red Turnard Std 10 \	ound Time: (NVK Days [вох) /К Days		WK Da	Leve-	24 Hoi	ur	esults C		te:	
Relinquished by: Eric Berge	i Geo	Date: 1/30/13	Time: 130	٥	Received by:				:	Notes:		10 Day	y TAT.	Dissolv	ed Meta	als Field	d Filters	ed		
Relinquished by:		Date:	Time:	,	Received by (La	bdratory)	131	112 (30	Coo	oler ID	Cool	ler Temp	ı. QC			k One Bo	ox Belo		0.082999999
Logged by (Laboratory)):	Date:	Time:		Checked by (La			400-		000000000000000000000000000000000000000			6975 69		Lev		CC/Rav			RRP CheckList RRP Level IV
Preservative Key:	1-HCI 2-HNO ₃	3-H₂SO₄ 4-Na	aOH 5	5-Na ₂ S ₂ O ₃		7-0	ther	8-4°C	9-5035	3000		10000	764-875 8	9300 1867		er / EDD	//846/CL			

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.



THU - 31 JAN A1 STANDARD OVERNIGHT

AB SGRA



GEN 637368 38JANIS ROWA SISOLINGS ACTAS

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Co



ALS Environmental

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

te: 1-30-2013 Time: 12.50
me: D. McKeinna
mpany: ARCAP40

Sear Broken/By:



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 Î F.

Sonie West

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

Sincerely,

Electronically approved by: Sonia West

Sonia West

Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302026

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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	

ALS Environmental

Date: 13-Feb-13

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.

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Metl	nod: SW8015M		Prep: SW35	41 / 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 - SW8015	С	Metl	nod: SW8015				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		Metl	nod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	19.9		0.35	4.31	μg/Kg-dry	1	2/5/2013 16:27
METALS		Metl	nod: SW6020		Prep: SW30	50A / 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		Metl	nod: SW8270		Prep: SW35	41 / 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

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	52.2			37-125	%REC	1	2/8/2013 12:51
Surr: 4-Terphenyl-d14	98.4			32-125	%REC	1	2/8/2013 12:51
Surr: Nitrobenzene-d5	76.0			37-125	%REC	1	2/8/2013 12:51
Surr: Phenol-d6	49.9			40-125	%REC	1	2/8/2013 12:51
VOLATILES - SW8260C		Meth	hod: 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
Surr: 1,2-Dichloroethane-d4	86.5			70-128	%REC	1	2/1/2013 14:49
Surr: 4-Bromofluorobenzene	91.0			73-126	%REC	1	2/1/2013 14:49
Surr: Dibromofluoromethane	97.0			71-128	%REC	1	2/1/2013 14:49
Surr: Toluene-d8	96.5			73-127	%REC	1	2/1/2013 14:49
ANIONS - EPA 300.0 (1993)		Meth	hod: E300		Prep: E300 /	2/5/13	Analyst: JKP
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
Surr: Selenate (surr)	86.2			85-115	%REC	1	2/5/2013 23:03
CYANIDE		Meth	hod: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.72	2.41	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	hod: SW3550				Analyst: KAH
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (3)
 Lab ID: 1302026-02

Collection Date: 1/28/2013 02:40 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 21.0
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (5)

Collection Date: 1/28/2013 02:45 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471	1	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.38	4.71	μg/Kg-dry	1	2/5/2013 16:29
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.80	2.66	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	28.0		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (7)
 Lab ID: 1302026-04

Collection Date: 1/28/2013 03:30 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.9
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1302026-05 **Sample ID:** MW-114 (9)

Collection Date: 1/28/2013 03:45 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

Date: 13-Feb-13

Work Order: 1302026

MOISTURE Method: SW3550 Analyst: KAH 2/5/2013 13:50 **Percent Moisture** 18.4 0.010 0.0100 wt%

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471	1	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	3.71	J	0.39	4.74	μg/Kg-dry	1	2/5/2013 16:31
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.74	2.46	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	25.2		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (11)
 Lab ID: 1302026-07

Collection Date: 1/28/2013 03:30 PM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.6
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (13)
 Lab ID: 1302026-08

Collection Date: 1/28/2013 03:50 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.4
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (15)

Collection Date: 1/28/2013 03:50 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-09

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471A	1	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	1.27	J	0.34	4.24	μg/Kg-dry	1	2/5/2013 16:33
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.69	2.29	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	19.9		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (17)
 Lab ID: 1302026-10

Collection Date: 1/28/2013 04:00 PM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.1
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (19)
 Lab ID: 1302026-11

Collection Date: 1/28/2013 04:05 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.5
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (20)

Collection Date: 1/28/2013 04:10 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-12

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.37	4.58	μg/Kg-dry	1	2/5/2013 16:35
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.75	2.50	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	27.0		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (21)
 Lab ID: 1302026-13

Collection Date: 1/28/2013 04:15 PM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 18.5
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (23)
 Lab ID: 1302026-14

Collection Date: 1/28/2013 04:15 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 16.9
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (25)

Collection Date: 1/28/2013 04:20 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-15

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	7.38		0.37	4.60	μg/Kg-dry	1	2/5/2013 16:41
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.75	2.49	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	23.6		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (27)
 Lab ID: 1302026-16

Collection Date: 1/28/2013 04:25 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.9
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (29)

Collection Date: 1/28/2013 04:27 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-17

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILES - SW8260C		Meth	od: 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

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114 (30)

Collection Date: 1/28/2013 04:00 PM

Date: 13-Feb-13

Work Order: 1302026

Lab ID: 1302026-18

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.39	4.79	μg/Kg-dry	1	2/5/2013 16:43
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.81	2.70	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	27.4		0.010	0.0100	wt%	1	2/5/2013 13:50

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302026

 Sample ID: MW-114 (31)
 Lab ID: 1302026-19

Collection Date: 1/28/2013 04:40 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 33.7
 0.010
 0.0100
 wt%
 1
 2/5/2013 13:50

Date: 13-Feb-13

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

Lab ID: 1302026-20 **Sample ID:** MW-114 (33) **Collection Date:** 1/28/2013 04:40 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

MOISTURE Method: SW3550 Analyst: KAH 2/5/2013 13:50 **Percent Moisture** 27.7 0.010 0.0100 wt%

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Meth	nod: SW8015M		Prep: SW35	41 / 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		Meth	nod: SW8015				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		Meth	nod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.33	4.12	μg/Kg-dry	1	2/5/2013 16:45
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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		Meth	nod: SW8270		Prep: SW35	41 / 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

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	57.2			37-125	%REC	1	2/7/2013 18:53
Surr: 4-Terphenyl-d14	101			32-125	%REC	1	2/7/2013 18:53
Surr: Nitrobenzene-d5	71.9			37-125	%REC	1	2/7/2013 18:53
Surr: Phenol-d6	67.5			40-125	%REC	1	2/7/2013 18:53
VOLATILES - SW8260C		Metl	hod: 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
Surr: 1,2-Dichloroethane-d4	97.5			70-128	%REC	1	2/1/2013 15:35
Surr: 4-Bromofluorobenzene	89.3			73-126	%REC	1	2/1/2013 15:35
Surr: Dibromofluoromethane	96.7			71-128	%REC	1	2/1/2013 15:35
Surr: Toluene-d8	95.2			73-127	%REC	1	2/1/2013 15:35
ANIONS - EPA 300.0 (1993)		Metl	hod: E300		Prep: E300	/ 2/5/13	Analyst: JKP
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
Surr: Selenate (surr)	88.0			85-115	%REC	1	2/6/2013 01:14
CYANIDE		Met	hod: SW9014		Prep: SW90	10C / 2/5/13	Analyst: EDG
Cyanide	U		0.65	2.18	mg/Kg-dry	1	2/5/2013 16:30
MOISTURE		Metl	hod: SW3550				Analyst: KAH
Percent Moisture	17.5		0.010	0.0100	wt%	1	2/5/2013 13:50

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

Date: 13-Feb-13

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

Date: 13-Feb-13

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

QC BATCH REPORT

	Instrument ID FID-7		Metho	d: SW8015 I	М					
MBLK Sample ID:	FBLKS1-130205-67579				Units: mg/	Kg	Analysi	s Date: 2/	6/2013 11	:56 AM
Client ID:	Run	ID: FID-7_1	30206A	5	SeqNo: 310 4	1153	Prep Date: 2/5/2	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								
Surr: 2-Fluorobiphenyl	2.092	0.10	3.33	0	62.8	60-135	0			
LCS Sample ID:	FLCSS1-130205-67579				Units: mg/	Kg	Analysi	is Date: 2 /	6/2013 12	:19 PM
Client ID:	Run	ID: FID-7_1	30206A	S	SeqNo: 310 4	1154	Prep Date: 2/5/2	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			
Surr: 2-Fluorobiphenyl	2.536	0.10	3.33	0	76.2	60-135	0			
MS Sample ID:	1302018-01BMS				Units: mg/	Kg	Analysi	is Date: 2 /	6/2013 01	:06 PM
Client ID:	Run	ID: FID-7_1	30206A	8	SeqNo: 310 4	1156	Prep Date: 2/5/2	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
, ,	00.50	17	22.22	75.45		70.400	0			SE
TPH (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			
TPH (Diesel Range) Surr: 2-Fluorobiphenyl	2.284	0.10	33.23	75.45 0		60-135	0			02
Surr: 2-Fluorobiphenyl						60-135	0	is Date: 2/	6/2013 01	-
Surr: 2-Fluorobiphenyl	2.284 1302018-01BMSD		3.32	0	68.8	60-135 Kg	0		6/2013 01 DF: 1	-
Surr: 2-Fluorobiphenyl MSD Sample ID:	2.284 1302018-01BMSD	0.10	3.32	0	68.8 Units: mg /	60-135 Kg	0 Analysi			-
Surr: 2-Fluorobiphenyl MSD Sample ID:	2.284 1302018-01BMSD	0.10	3.32	0	68.8 Units: mg /	60-135 Kg 1157	0 Analysi Prep Date: 2/5/ 2		DF: 1	-
Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID:	2.284 1302018-01BMSD Run	0.10	3.32 30206A	0 SPK Ref	68.8 Units: mg/ SeqNo: 3104 %REC	60-135 Kg 1157 Control	0 Analysi Prep Date: 2/5/ RPD Ref	2013	DF: 1 RPD	:29 PM
Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID: Analyte	2.284 1302018-01BMSD Run Result	0.10 ID: FID-7_1 PQL	3.32 30206A SPK Val	SPK Ref Value	68.8 Units: mg/ SeqNo: 3104 %REC -37.7	60-135 Kg 4157 Control Limit	Analysi Prep Date: 2/5/ RPD Ref Value	2013 %RPD	DF: 1 RPD Limit	:29 PM
Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID: Analyte TPH (Oil Range)	2.284 1302018-01BMSD Run Result 207.2	0.10 ID: FID-7_1 PQL 3.4	3.32 30206A SPK Val 33.24	SPK Ref Value	68.8 Units: mg/ SeqNo: 3104 %REC -37.7 3.32	60-135 Kg 1157 Control Limit 70-130	Analysi Prep Date: 2/5/ RPD Ref Value 229.1	2013 <u>%RPD</u> 10	DF: 1 RPD Limit 30 30	:29 PM Qual SEO

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: R142225 Instrumer	nt ID FID-9		Metho	d: SW801	5						
MBLK Sample ID: GBLKS-13	0205-R142225				U	Jnits: mg/	Kg	Analysi	is Date: 2 /	5/2013 01	:02 PM
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3619	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-130	0205-R142225				U	Jnits: mg/	Kg	Analysi	s Date: 2/	5/2013 12	:25 PM
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310	3613	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-1	30205-R142225				U	Jnits: mg /	Kg	Analysi	is Date: 2/	5/2013 12	:44 PM
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3616	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: 1302018-04	1ZMS				U	Jnits: mg/	Kg	Analysi	is Date: 2 /	5/2013 04	:11 PM
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3628	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: 1302018-04	1ZMSD				U	Jnits: mg/	Kg	Analysi	is Date: 2/	5/2013 04	:30 PM
Client ID:	Run	ID: FID-9_	130205A		Se	qNo: 310 :	3632	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	

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67523	Instrument ID ICPMS05		Method	: SW602	20					
MBLK Sam	nple ID: MBLKS1-020113-67523				Units: mg/l	Kg	Analy	sis Date: 2	/5/2013 03	3:05 PI
Client ID:	Run	ID: ICPMS)5_130205A		SeqNo: 3102	2200	Prep Date: 2/4	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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								
ron	U	50								
_ead	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 Sam	pple ID: MBLKS1-020113-67523				Units: mg/l	Kg	Analy	sis Date: 2	/6/2013 12	2:35 PI
Client ID:	Run	ID: ICPMS)5_130206A		SeqNo: 3103	3603	Prep Date: 2/4	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Boron	U	2.5								
Sodium	U	50								

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

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 Prep Date: 2/4/2013 Client ID: SeqNo: 3102201 DF: 1 Run ID: ICPMS05_130205A **RPD** SPK Ref Control RPD Ref Value Limit Value Limit Analyte Result **PQL** SPK Val %REC %RPD Qual 0 Aluminum 10.68 1.0 10 0 107 80-120 Arsenic 9.673 0.50 10 0 96.7 80-120 0 Barium 0 0 10.35 0.50 10 104 80-120 Cadmium 9.748 0.50 10 0 97.5 80-120 0 Calcium 992.3 50 1000 0 99.2 80-120 0 0 0 Chromium 9.832 0.50 10 98.3 80-120 0 Cobalt 9.927 0.50 10 0 99.3 80-120 Copper 0.50 10 0 101 0 10.12 80-120 Iron 974.8 50 1000 0 97.5 80-120 0 0 0 Lead 9.786 0.50 10 97.9 80-120 Manganese 9.681 0.50 10 0 96.8 80-120 0 Molybdenum 9.985 0.50 10 0 99.8 80-120 0 0 0 Nickel 9.83 0.50 10 98.3 80-120 Potassium 956.7 50 1000 0 95.7 80-120 0 0 0 Selenium 9.813 0.50 10 98.1 80-120 Silver 0 0 10.22 0.50 10 102 80-120 80-120 0 Uranium 9.429 0.50 10 0 94.3 0 Zinc 9.937 0.50 10 80-120 0 99.4 LCS Sample ID: MI CSS1-020113-67523 Units: ma/Ka Analysis Date: 2/6/2013 12:38 PM

LUS	Sample ID. MLC331-020113-	7523				'	Offics. Ing/i	Λy	Allalys	ois Date. Z	/6/2013 12.	30 PIVI
Client ID:		Run ID:	ICPMS)5_130206 <i>A</i>	١	Se	eqNo: 3103	3604	Prep Date: 2/4	/2013	DF: 1	
Analyte	I	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	C)		
Sodium		981.7	50	1000		0	98.2	80-120	C)		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67523 Instrument ID ICPMS05 Method: SW6020

MS S	Sample ID: 13011005-01DMS				Units: mg/	Kg	Analysis Date: 2	2/5/2013 03	:22 PM
Client ID:	J	Run ID: ICPMS	305_130205A	S	eqNo: 310	2207	Prep Date: 2/4/2013	DF: 1	
Analyte	Resu	lt PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %RPD	RPD Limit	Qual
Aluminum	1371	0.84	8.429	12570	13500	75-125	0		SEO
Arsenic	11.7	1 0.42	8.429	4.385	86.9	75-125	0		
Barium	138.	7 0.42	8.429	129.6	107	75-125	0		0
Cadmium	8.00	1 0.42	8.429	0.4065	90.1	75-125	0		
Calcium	5747	0 42	842.9	57640	-19.7	75-125	0		SEO
Chromium	22.6	7 0.42	8.429	14.02	103	75-125	0		
Cobalt	13.0	2 0.42	8.429	5.519	89	75-125	0		
Copper	18.	0.42	8.429	11.12	91.1	75-125	0		
Iron	1150	0 42	842.9	10120	164	75-125	0		SO
Lead	22.8	1 0.42	8.429	14.66	96.6	75-125	0		
Manganese	381.	3 0.42	8.429	383.5	-20	75-125	0		SEO
Molybdenum	6.31	5 0.42	8.429	0.5853	68	75-125	0		S
Nickel	19.0	9 0.42	8.429	11.62	88.6	75-125	0		
Selenium	7.9	5 0.42	8.429	0.9501	83	75-125	0		
Silver	8.08	5 0.42	8.429	0.05106	95.3	75-125	0		
Uranium	8.09	5 0.42	8.429	0.408	91.2	75-125	0		
Zinc	46.0	5 0.42	8.429	37.34	103	75-125	0		0

MS	Sample ID: 13011005-01DMS	3				Units: mg/	/Kg	Analys	sis Date:	2/6/2013 12:	.50 PM
Client ID:		Run	ID: ICPMS)5_130206A		SeqNo: 310	3618	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	60.1	18 -48.4	75-125	C)		S
Potassium		4808	84	842.9	355	53 149	75-125	C)		SO
Sodium		914.3	84	842.9	168	.4 88.5	75-125	C)		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67523 Instrument ID ICPMS05	Method: SW6020
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MSD	Sample ID: 13011005-01DMSD				Units: mg/	Kg	Analysi	s Date: 2/	5/2013 03	:25 PM
Client ID:	Run	D: ICPMS	05_130205A	S	eqNo: 310	2208	Prep Date: 2/4/2	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	0

MSD	Sample ID: 13011005-01DMS)				Units: mg/	Kg	Analysi	s Date: 2/	6/2013 12:	52 PM
Client ID:		Run ID:	ICPMS0	5_130206A		SeqNo: 310	3621	Prep Date: 2/4/2	2013	DF: 2	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron		37.07	4.0	39.78	60.1	8 -58.1	75-125	39.78	7.06	25	S
Potassium		4552	80	795.6	355	3 126	75-125	4808	5.48	25	SO
Sodium		855.4	80	795.6	168.	4 86.4	75-125	914.3	6.65	25	

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 675	23	Instrument ID ICPMS05		Method	SW602	20						
DUP	Sample ID:	13011005-01DDUP				L	Jnits: mg/	Kg	Analysi	s Date: 2/	5/2013 03	:20 PN
Client ID:		Run I	: ICPMS	05_130205A		Se	qNo: 310 2	2206	Prep Date: 2/4/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				l	Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 12	:47 PI
Client ID:		Run IE	: ICPMS	05_130206A		Se	qNo: 310 3	3614	Prep Date: 2/4/2	2013	DF: 2	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				L	Jnits: mg /	Kg	Analysi	s Date: 2/	6/2013 03	:01 PI
Client ID:		Run I	: ICPMS	05_130206A		Se	qNo: 310 :	3960	Prep Date: 2/4/2	2013	DF: 10	0
					SPK Ref			Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qua
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	g samples w	ere analyzed in this batch:		802026-01D 802026-09D			26-03D 26-12D	13	02026-06D			

Note:

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

	_										
MBLK	Sample ID:	MBLKS2-020413-67565				Units: mg/	_		sis Date: 2		3:58 AM
Client ID:		Ru	ın ID: ICP750	0_130205A		SeqNo: 310	2916	Prep Date: 2/4	1/2013	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	Analy	sis Date: 2	2/6/2013 0	9:47 PM
Client ID:		Ru	ın ID: ICP750	0_130206A		SeqNo: 310	4742	Prep Date: 2/4	1/2013	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	Analy	sis Date: 2	2/7/2013 0	3:25 PM
Client ID:		Ru	ın ID: ICP750	0_130207A		SeqNo: 310	5518	Prep Date: 2/4	1/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
				O. I. vai		,01 \LO			,o. (1 D		
Aluminum		0.3613	1.0								J
Boron		U	2.5								

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67	Instrument ID	ICP7500		Method	: SW602	20						
LCS	Sample ID: MLCSS2-020413	3-67565				ι	Jnits: mg/	Kg	Analys	sis Date: 2	/6/2013 04	:03 AM
Client ID:		Run	ID: ICP750	0_130205A		Se	qNo: 310 2	2917	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	C			
Barium		8.495	0.50	10		0	85	80-120	C			
Cadmium		9.81	0.50	10		0	98.1	80-120	C			
Calcium		875.2	50	1000		0	87.5	80-120	C			
Chromium		9.483	0.50	10		0	94.8	80-120	C			
Cobalt		9.283	0.50	10		0	92.8	80-120	C			
Copper		9.733	0.50	10		0	97.3	80-120	C			
Iron		927.1	50	1000		0	92.7	80-120	C			
Lead		9.443	0.50	10		0	94.4	80-120	C			
Manganese		9.191	0.50	10		0	91.9	80-120	C			
Nickel		9.636	0.50	10		0	96.4	80-120	C			
Potassium		940.6	50	1000		0	94.1	80-120	C			
Selenium		8.974	0.50	10		0	89.7	80-120	C			
Silver		9.882	0.50	10		0	98.8	80-120	C			
Zinc		9.286	0.50	10		0	92.9	80-120	C			
LCS	Sample ID: MLCSS2-020413	3-67565				Ĺ	Jnits: mg/	Kg	Analys	sis Date: 2	/6/2013 09):52 PM
Client ID:		Run	ID: ICP750	0_130206A		Se	qNo: 310	4743	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	C	1		
Sodium		995	50	1000		0	99.5	80-120	C			
Uranium		9.859	0.50	10		0	98.6	80-120	C			
LCS	Sample ID: MLCSS2-020413	3-67565				ι	Jnits: mg/	Kg	Analys	sis Date: 2	/7/2013 03	3:30 PM
Client ID:		Run	ID: ICP750	0_130207A		Se	qNo: 310	5519	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
						•						~341
Aluminum		11.13	1.0	10		0	111	80-120	C			
Boron		49.37	2.5	50		0	98.7	80-120	С			

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67565 Instrument ID ICP7500 Method: SW6020

MS Sample ID:	1302050-13CMS				Units: mg /	Kg	Analysis Date:	2/6/2013 0	6:33 AM
Client ID:	Run II	: ICP750	0_130205A	Se	eqNo: 310	3165	Prep Date: 2/4/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %RPI	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		0
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		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67565 Instrument ID ICP7500 Method: SW6020

MSD	Sample ID: 1302050-13CMSD				Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 06	38 AM
Client ID:	R	un ID: ICP750	0_130205A	Se	eqNo: 310	3166	Prep Date: 2/4/2	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	

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

		strument ID ICP7500		Metrio	l: SW602							
DUP	Sample ID: 130	2050-13CDUP				L	Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 06	:23 AI
Client ID:		Run II	D: ICP750	0_130205A		Se	qNo: 310 3	3163	Prep Date: 2/4/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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 25	K
Cadmium		0.1187	0.46	0		0	0	0-0	0.1425	3.09	25 25	J
Chromium		4.426	0.46	0		0	0	0-0	4.839	8.92	25	3
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: 130	2050-13CDUP				L	Jnits: mg /	Kg	Analysi	s Date: 2/	6/2013 10	:52 PN
Client ID:			D: ICP750	0_130206A			qNo: 310 4		Prep Date: 2/4/2	2013	DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
						_					0.5	Que
Calcium		46320	4,600	0		0	0	0-0	55960	18.9	25	
DUP	Sample ID: 130	2050-13CDUP					Jnits: mg/	Ū	Analysi	s Date: 2/	7/2013 12	:48 AN
Client ID:		Run II	D: ICP750	0_130206A		Se	qNo: 310 4	4778	Prep Date: 2/4/2	2013	DF: 10	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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: 130	2050 42CDUB					Jnits: mg /	V a	Analysi	s Date: 2/	7/2042 02	.EE DI
Client ID:	Sample ID. 130): ICB750	0 4202074			_	_			DF: 10	
Ciletit ID.		Kunn	J. ICP/30	0_130207A	CDV Dof	36	qNo: 310 !		Prep Date: 2/4/2	2013	RPD	U
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	Limit	Qua
Aluminum		6715	92	0		0	0	0-0	6978	3.83	25	

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

Note:

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 6	7585	Instrument ID HG02		Method	d: SW74 7	1A					
MBLK	Sample ID:	GBLKS1-020513-67585				Units: µg/l	K g	Analys	is Date: 2/	5/2013 04	:01 PM
Client ID:		Run ID:	HG02_	130205A		SeqNo: 310	2354	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/l	K g	Analys	is Date: 2/	5/2013 04	:03 PM
Client ID:		Run ID:	HG02_	130205A		SeqNo: 310	2355	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/l	K g	Analys	is Date: 2 /	5/2013 04	:09 PN
Client ID:		Run ID:	HG02_	130205A		SeqNo: 310	2358	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		376.9	3.5	354.9	14.7	76 102	85-115	0			
MSD	Sample ID:	: 1301997-01DMSD				Units: µg/l	K g	Analys	is Date: 2/	5/2013 04	:11 PN
Client ID:		Run ID:	HG02_	130205A		SeqNo: 310	2359	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	14.7	76 102	85-115	376.9	0.484	20	
DUP	Sample ID:	: 1301997-01DDUP				Units: µg/l	K g	Analys	is Date: 2/	5/2013 04	:07 PN
Client ID:		Run ID:	HG02_	130205A		SeqNo: 310	2357	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		15.21	3.6	0		0 0		14.76	3.04	20	
The followi	ing samples	were analyzed in this batch:	1:	302026-01D 302026-09D 302026-18D	13	02026-03D 02026-12D 02026-21D		02026-06D 02026-15D			

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67656 Instrume	ent ID SV-6		Metho	d: SW8270						
MBLK Sample ID: SBLKS2-1	30207-67656				Units: µg/l	Kg	Analysis	Date: 2	/7/2013 04	:24 PM
Client ID:	Run II	D: SV-6_1	30207A	5	SeqNo: 310	6635	Prep Date: 2/7/20	013	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: SLCSS2-1	30207-67656				Units: µg/l	Kg	Analysis	Date: 2	/7/2013 04	:45 PM
Client ID:	Run II	D: SV-6_1	30207A	5	SeqNo: 310	6636	Prep Date: 2/7/20	013	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			

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

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67656	Instrument ID SV-6	Method:	SW8270
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MS Sample ID: 13021	40-04DMS			l	Jnits: µg/l	(g	Analys	sis Date: 2	2/7/2013 07	':35 PM
Client ID:	Run II	D: SV-6_1	30207A	Se	eqNo: 310	6643	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:	,				Jnits: µg/l	(g	Analysi	s Date: 2 /	7/2013 07	:56 PM
Client ID:	Run II	D: SV-6_1	30207A	Se	eqNo: 310	6644	Prep Date: 2/7/2	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-Tribromophe	enol 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

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

MBLK Sample ID: VBLKS1-02	20113-R141995				Units: µg/l	K g	Analy	/sis Date: 2	/1/2013 0	9:52 AM
Client ID:	Run II	D: VOA5_	130201A		SeqNo: 309	8471	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		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

LCS Sample ID: VLCSS1-02	20113-R141995				Units: µg/I	∢ g	Analy	sis Date: 2	/1/2013 08	3:43 AM
Client ID:	Run II	D: VOA5_	130201A	S	eqNo: 309	8470	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	()		
1,1,2,2-Tetrachloroethane	53.32	5.0	50	0	107	75-123	()		
1,1,2-Trichloroethane	55.87	5.0	50	0	112	79-120	()		
1,1-Dichloroethane	52.6	5.0	50	0	105	75-124	()		
1,1-Dichloroethene	55.13	5.0	50	0	110	80-122	()		
1,2-Dibromoethane	57.09	5.0	50	0	114	79-120	()		
1,2-Dichloroethane	52.14	5.0	50	0	104	73-121	()		
Benzene	50.57	5.0	50	0	101	79-120	()		
Carbon tetrachloride	45.29	5.0	50	0	90.6	74-126	()		
Chloroform	55.04	5.0	50	0	110	78-120	()		
Ethylbenzene	54.99	5.0	50	0	110	80-122	()		
Methylene chloride	51.62	10	50	0	103	70-123	()		
Tetrachloroethene	47.09	5.0	50	0	94.2	80-121	()		
Toluene	49.54	5.0	50	0	99.1	79-120	()		
Trichloroethene	52.16	5.0	50	0	104	80-121	()		
Vinyl chloride	61.5	2.0	50	0	123	76-126	()		
Xylenes, Total	150.9	15	150	0	101	80-120	()		
Surr: 1,2-Dichloroethane-d4	51.49	0	50	0	103	70-128	()		
Surr: 4-Bromofluorobenzene	47.86	0	50	0	95.7	73-126	()		
Surr: Dibromofluoromethane	51.61	0	50	0	103	71-128	()		
Surr: Toluene-d8	43.85	0	50	0	87.7	73-127	()		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

MS Sample ID: 1301997-0	1AMS				Units: µg/l	Kg	Analys	sis Date: 2	2/1/2013 1 ⁻	1:46 AN
Client ID:	Run I	D: VOA5_	130201A	S	eqNo: 309	8546	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	()		
1,1,2,2-Tetrachloroethane	45.86	5.0	50	0	91.7	75-123	()		
1,1,2-Trichloroethane	56	5.0	50	0	112	79-120	()		
1,1-Dichloroethane	49.56	5.0	50	0	99.1	75-124	()		
1,1-Dichloroethene	54.01	5.0	50	0	108	80-122	()		
1,2-Dibromoethane	49.35	5.0	50	0	98.7	79-120	()		
1,2-Dichloroethane	51.25	5.0	50	0	103	73-121	()		
Benzene	52.11	5.0	50	0	104	79-120	()		
Carbon tetrachloride	46.06	5.0	50	0	92.1	74-126	()		
Chloroform	48.72	5.0	50	0	97.4	78-120	()		
Ethylbenzene	50.85	5.0	50	0	102	80-122	()		
Methylene chloride	48.37	10	50	0	96.7	70-123	()		
Tetrachloroethene	43.7	5.0	50	0	87.4	80-121	()		
Toluene	53.36	5.0	50	0	107	79-120	()		
Trichloroethene	51.31	5.0	50	0	103	80-121	()		
Vinyl chloride	55.22	2.0	50	0	110	76-126	()		
Xylenes, Total	146.8	15	150	0	97.9	80-120	()		
Surr: 1,2-Dichloroethane-d4	49.29	0	50	0	98.6	70-128	()		
Surr: 4-Bromofluorobenzene	49	0	50	0	98	73-126	()		
Surr: Dibromofluoromethane	49.78	0	50	0	99.6	71-128	()		
Surr: Toluene-d8	51.55	0	50	0	103	73-127	()		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: R141995 Instrument ID VOA5 Method: SW8260

MSD Sample ID: 1301997-0	1AMSD				Units: µg/l	K g	Analysi	s Date: 2/	1/2013 12	2:09 PM
Client ID:	Run I	D: VOA5_	130201A	S	eqNo: 309	8547	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

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

MBLK Sample ID: VBLKW-13	30204-R142113				Units: μ	g/L	Anal	ysis Date: 2	2/4/2013 1	1:16 AM
Client ID:	Run I	D: VOA4_	130204A		SeqNo: 3	100918	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%RE	Control C 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	ī	0		
Surr: 4-Bromofluorobenzene	49.08	1.0	50		0 98.2	2 70-125	i	0		
Surr: Dibromofluoromethane	48.08	1.0	50		0 96.2	2 74-125	i	0		
Surr: Toluene-d8	48.41	1.0	50		0 96.8	3 78-123	}	0		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

LCS Sample ID: VLCSW-13	0204-R142113				Units: µg/L	-	Analy	sis Date: 2	/4/2013 1	0:03 AM
Client ID:	Run II	D: VOA4_	130204A	S	eqNo: 310	0916	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	()		
1,1,2,2-Tetrachloroethane	46.02	1.0	50	0	92	74-123	()		
1,1,2-Trichloroethane	48.93	1.0	50	0	97.9	80-120	()		
1,1-Dichloroethane	46.62	1.0	50	0	93.2	80-120	()		
1,1-Dichloroethene	53.04	1.0	50	0	106	80-120	()		
1,2-Dibromoethane	53.39	1.0	50	0	107	80-120	()		
1,2-Dichloroethane	49.07	1.0	50	0	98.1	79-120	()		
Benzene	48.6	1.0	50	0	97.2	80-120	()		
Carbon tetrachloride	58.54	1.0	50	0	117	79-120	()		
Chloroform	46.57	1.0	50	0	93.1	80-120	()		
Ethylbenzene	48.8	1.0	50	0	97.6	80-120	()		
Methylene chloride	47.71	2.0	50	0	95.4	75-125	()		
Tetrachloroethene	53.4	1.0	50	0	107	80-120	()		
Toluene	48.37	1.0	50	0	96.7	80-121	()		
Trichloroethene	53.7	1.0	50	0	107	80-120	()		
Vinyl chloride	48.96	1.0	50	0	97.9	75-125	()		
Xylenes, Total	142.5	1.0	150	0	95	80-124	()		
Surr: 1,2-Dichloroethane-d4	44.17	1.0	50	0	88.3	71-125	()		
Surr: 4-Bromofluorobenzene	52.31	1.0	50	0	105	70-125	()		
Surr: Dibromofluoromethane	49.72	1.0	50	0	99.4	74-125	()		
Surr: Toluene-d8	48.59	1.0	50	0	97.2	78-123	()		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

LCSD Sample ID: VLCSDW-1	30204-R142113				Units: µg/L	-	Analysi	s Date: 2/	4/2013 10):27 AM
Client ID:	Run II): VOA4_	130204A	S	eqNo: 310	0917	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	

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

MS Sample ID: 1302069-0	1AMS				Units: µg/I	-	Analys	sis Date: 2	/4/2013 01	1:41 PM
Client ID:	Run I	D: VOA4_	130204A	S	eqNo: 310	0924	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	()		
1,1,2,2-Tetrachloroethane	45.23	1.0	50	0	90.5	74-123	()		
1,1,2-Trichloroethane	50.26	1.0	50	0	101	80-120	()		
1,1-Dichloroethane	48.56	1.0	50	0	97.1	80-120	()		
1,1-Dichloroethene	57.49	1.0	50	0	115	80-120	()		
1,2-Dibromoethane	53.79	1.0	50	0	108	80-120	()		
1,2-Dichloroethane	50.8	1.0	50	0	102	79-120	()		
Benzene	51.17	1.0	50	0	102	80-120	()		
Carbon tetrachloride	61.34	1.0	50	0	123	79-120	()		S
Chloroform	49.2	1.0	50	0	98.4	80-120	()		
Ethylbenzene	50.6	1.0	50	0	101	80-120	()		
Methylene chloride	49.13	2.0	50	0	98.3	75-125	()		
Tetrachloroethene	55.78	1.0	50	0	112	80-120	()		
Toluene	49.91	1.0	50	0	99.8	80-121	()		
Trichloroethene	57.43	1.0	50	0	115	80-120	()		
Vinyl chloride	53.66	1.0	50	0	107	75-125	()		
Xylenes, Total	148.5	1.0	150	0	99	80-124	()		
Surr: 1,2-Dichloroethane-d4	44.59	1.0	50	0	89.2	71-125	()		
Surr: 4-Bromofluorobenzene	50.99	1.0	50	0	102	70-125	()		
Surr: Dibromofluoromethane	49.65	1.0	50	0	99.3	74-125	()		
Surr: Toluene-d8	48.21	1.0	50	0	96.4	78-123	()		

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: R142113 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1302069-01	1AMSD				Units: µg/l	-	Analysi	s Date: 2/-	4/2013 02	2:06 PM
Client ID:	Run II	D: VOA4_	130204A	Se	eqNo: 310	0925	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

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 6	7583 Instrument ID UV-2450	Meth	nod: SW90 1	4	(Dissolve	e)			
MBLK	Sample ID: WBLKS1-020513-67583			Units: mg/	Kg	Analysis Da	ate: 2/5	5/2013 04	30 PM
Client ID:	Run I	D: UV-2450_13020 5	ic	SeqNo: 310	3414	Prep Date: 2/5/2013	3	DF: 1	
Analyte	Result	PQL SPK Va	SPK Ref Value	%REC	Control Limit	RPD Ref Value %l	RPD	RPD Limit	Qual
Cyanide	U	2.0							
LCS	Sample ID: WLCSS1-020513-67583			Units: mg/	Kg	Analysis Da	ate: 2/5	/5/2013 04:30 P	
Client ID:	Run	D: UV-2450_13020 5	iC .	SeqNo: 310	3415	Prep Date: 2/5/2013	3	DF: 1	
Analyte	Result	PQL SPK Va	SPK Ref Value	%REC	Control Limit	RPD Ref Value %l	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 Da	ate: 2/5	5/2013 04	30 PM
Client ID:	Run I	D: UV-2450_13020 5	ic	SeqNo: 310	3437	Prep Date: 2/5/2013	3	DF: 1	
Analyte	Result	PQL SPK Va	SPK Ref Value	%REC	Control Limit	RPD Ref Value %l	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 Da	ate: 2/5	5/2013 04	30 PM
Client ID:	Run I	D: UV-2450_13020 5	iC	SeqNo: 310	3436	Prep Date: 2/5/2013	3	DF: 1	
Analyte	Result	PQL SPK Va	SPK Ref Value	%REC	Control Limit	RPD Ref Value %l	RPD	RPD Limit	Qual
Cyanide	9.495	1.9 9.308	0.096	11 101	75-125	0			
The followi	ing samples were analyzed in this batch:	1302026-01 1302026-09 1302026-18	D 13	802026-03D 802026-12D 802026-21D		02026-06D 02026-15D			

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67633	Instrument ID ICS2100		Method	: E300			(Dissolve	e)			
MBLK Sample ID:	WBLKS1-67633				U	nits: mg /	Kg	Analysi	s Date: 2	/5/2013 07	':11 PN
Client ID:	Run II	D: ICS210	0_130205C		Sec	No: 310	3858	Prep Date: 2/5/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				U	nits: mg /	Kg	Analysi	s Date: 2	/5/2013 07	:25 PI
Client ID:	Run I	D: ICS210	0_130205C		Sec	No: 310	3859	Prep Date: 2/5/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				U	nits: mg /	Kg	Analysi	s Date: 2	/6/2013 01	:29 Al
Client ID: MW-114 (35)	Run II	D: ICS210	0_130205C		Sec	No: 310	3884	Prep Date: 2/5/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Chloride	126.4	5.0	98.97	16	5.2	111	75-125	0			
Fluoride	20.19	0.99	19.79	2.63		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		107	75-125	0			

Client: Navajo Refining Company

Work Order: 1302026

Project: RO Discharge Sampling

Batch ID: 67633 Instrument ID ICS2100 Method: E300 (Dissolve) Analysis Date: 2/6/2013 01:43 AM Sample ID: 1302026-21DMSD **MSD** Units: mg/Kg Prep Date: 2/5/2013 SeqNo: 3103885 DF: 1 Client ID: MW-114 (35) Run ID: ICS2100_130205C **RPD** SPK Ref Control RPD Ref Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual Chloride 124.6 4.9 98.65 16.2 110 75-125 126.4 1.49 20 20 Fluoride 19.9 0.99 19.73 2.638 87.5 75-125 20.19 1.45 Nitrogen, Nitrate (As N) 19.73 0 20.76 20.57 0.99 104 75-125 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

1302026-21D

1302026-18D

QC BATCH REPORT

Navajo Refining Company **Client:**

1302026 Work Order:

Percent Moisture

Project: RO Discharge Sampling

Batch ID: R142216 Instrument ID Balance1 Method: SW3550 (Dissolve) DUP Sample ID: 1302026-21DDUP Units: wt% Analysis Date: 2/5/2013 01:50 PM Prep Date: DF: 1 Client ID: MW-114 (35) Run ID: BALANCE1_130205C SeqNo: 3103371 SPK Ref RPD Ref RPD Control Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD

0

The following samples were analyzed in this batch:

17.43

0.010

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		

0

0-0

17.52

0.523

QC BATCH REPORT

Qual

20

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

QUALIFIERS,
ACRONIZACIO

Project: RO Discharge Sampling
WorkOrder: 1302026

RO Discharge Sampling
ACRONYMS, UNITS

Workorder.	1302020
Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	Description
μg/Kg	Micrograms per Kilogram
μg/Kg-d	ry Micrograms per Kilogram - Dry weight corrected
mg/Kg-d	ry Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: N	IAVAJO REFINING			Date/Time I	Received: 31	-Jan-13 09:	<u>10</u>	
Work Order: 1	<u>302026</u>			Received b	y: <u>RC</u>	<u>H</u>		
Checklist complet	eed by Robert D. Harris eSignature		01-Feb-13 Date	Reviewed by:	$\frac{\textit{Patricia} \ \textit{L.}}{\textit{eSignature}}$	Lynch		13-Feb-13 Date
Matrices: Carrier name:	soils FedEx							
Shipping containe	er/cooler in good condition?		Yes 🗸	No 🗌	Not Present			
Custody seals into	act on shipping container/coole	r?	Yes 🗸	No 🗌	Not Present			
Custody seals into	act on sample bottles?		Yes	No 🗌	Not Present	✓		
Chain of custody	present?		Yes 🗸	No 🗌				
Chain of custody	signed when relinquished and	received?	Yes 🗸	No \square				
Chain of custody	agrees with sample labels?		Yes	No 🗸				
Samples in prope	r container/bottle?		Yes 🗸	No 🗌				
Sample container	s intact?		Yes 🗸	No 🗆				
Sufficient sample	volume for indicated test?		Yes 🗸	No 🗌				
All samples receive	ved within holding time?		Yes 🗸	No 🗌				
Container/Temp E	Blank temperature in compliand	e?	Yes 🗸	No 🗌				
Temperature(s)/T	hermometer(s):		1.8c c/u		005			
Cooler(s)/Kit(s):			<u>3725</u>					
	e(s) sent to storage:		2/1/13 14:5					
	s have zero headspace?		Yes 🗹	No 🗆	No VOA vials sub	mitted L		
	table upon receipt?		Yes □	No 🗆	N/A 🔽			
pH adjusted? pH adjusted by:			Yes L	No L	N/A ✓			
Login Notes:	COC and sample count rece PL.	eived didn't mate	ch up. PL spoke	with client and go	ot everything corre	cted. Logge	ed in by	
=====		====	====	====	====			====
Client Contacted:		Date Contacted	d:	Person	Contacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction:							0005	4 . 6 4

Company Name	١
Send Report To	Ę
Δddracs	

Chain of Custody Form

Cincinnati, OH + 1 513 733 5336

1302026 NAVAJO REFINING: Navajo Refining Company

Page

COC ID:

Everett, WA +1 425 356 2600

Project: RO Discharge Sampling

Fort Collins, CO +1 970 490 1511 41198

	ALS Project Manager:								Š		a			m-market-testatatata	marinatan varan	#1500000000000000
Customer Information		Project In	formatio	n				Para	mete	r/Metl	nod R	eques	t for A	nalysis		
Purchase Order	Project N	ame Ro	Disch	rgels	ampling	Α	√0C	(7	3Z6	0	NV	1 G	WLLi	<u> </u>		
Work Order	Project Nur		823	7	1 7		GRO	\ (°	801	5 M	\ \					
Company Name Nausia Refining	Bill To Comp		io R	Linia		1	DRO			SH	\					
Send Report To 55t Robert Combs	Invoice	1 _	14 Cor		7	1	ORO		801			***********		:		
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Phone 575-748-6733		Fax 575				$\exists \exists$	TDS									
Fax 575-746-5421 e-Mail Address	e-Mail Add		- 176	- 27 ₀	41		<u> Nois</u>			(0						\neg
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No. Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	ВО	C	a	E	F	G	H		J	Hold
1 MW-114(1)	115813	1430	501		15_	X	<u> </u>	大	X	X	$\perp X$	零	 -	X		
2 MW-114(3)	1/28/13	<u> 1440 </u>	Soil		1 1	<u> </u>	<u> </u>	<u> </u>	ļ		 	 	 	<u>X</u>		
3 MW-1H (5)	1/28/13	1445	1		女2	39	A	1	夜	X	X	K	<u> </u>	X		
4 Mw-114 (7)	1/28/13	1530	 _	┦-}		<u> </u>	-	 	-	 	-	-	 	×		
5 MW-114(A)	1/28/13	1545	ļ \						-	} -	}	 		X		
6 MW-114 (10)	1/28/15	15 30	 		32	R	84	4	W	不	<u>X</u> _	H	 	X		
1 Hm-14(1)	1/28/13	<u>1530</u>	 	1-1-	1 1	 _		ļ		-	J. 1997.	+		X		
8 MW-114 (13)	1/28/13	1550			Aler		+_				<u> </u>	<u> </u>	-	X		F 30
9 MW-114 (15)	1/28/13	550		+-+	第2	R	R	8	Be	The same of the sa	X	规		X		
10 MW-114 (17) Sampler(s): Please Print & Sign	1/28/13 Ishinm	1600 ent Method:	IRe	quired Tr	ırnaround	Time:]	1	Other	<u> </u>]	IR.	sults Du	X Date:		
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Relinquished by: Date:		Received by:			:		ites:									
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Relinquisfied by: Date:	Time:	Received Lab	oratory):	12111	7 KD	M	oc.er Te	Q	orienia area		heck B	ox Belo	w)			
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Page 2___of <u>3</u>

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South Charleston, WV +1 304 356 3168

Salt Lake City, UT +1 801 266 7700

York, PA +1 717 505 5280

COC ID: 72221

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Work Order			Project Nui	mber	1288	123	The Park World Code and the Second of the Administration of the Second o		В	The second control of									
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Send Report To	Robert Combs		Invoice	Attn	Robe	ert Combs			D	ORO (8015M)									
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Address			Ado	fress						Total Metals (6020/7000) RCRA 8									
City/State/Zip	Artesia, NM 88211		City/State	state/Zip Artesia, NM 88211					G										
Phone	(575) 748-6733		P.	hone	(575	748-6733			н	TDS	3		***************************************						ALTERNATION AND APPEARS PROPERTY OF A PARTY OF THE PARTY
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e-Mail Address e-Mail Address				ress				 _	J	Fing	erprint	(PIANO	D/Sp G	Brav, Sir	n Dist)				AND THE RESERVE AND ADDRESS OF THE PARTY OF
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	14 (23)	IRATES PARK Make	1/28/13	1				ر جو									X		
o sala 🕯 👢	1H(25)		1/28/13		20			52	R	R	82	Z	Z	<u> </u>	R		X.		
775.71	114 (27)		1/28/13	1	75												X		
	114(29)		1/28/13	16	77												人		
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9 Mu	J 114 (31)	**************************************	1/28/13	164	10			1									χ		······································
10 M	0 114(33)		1/28/13	164	0		1	l									X		
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Reunquished by: J		Date:	Time:	Hecelve	d px (rai	poralory):	3113	(910) ^c °	oler ID	Coo	ler Temp). QC		e: (Chec el Il Sid (ox Belo	**=1	RP CheckLis
Logged by (Laboratory):		Date:	Time:	Checke	d by (Lat	oratory):	`\ ' `						34.57 3.55	Lev	el III Std	QC/Rav		TR	RP Level IV
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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.

(ALS)
Environmental

Chain of Custody Form

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☐ Houston, TX +1 281 530 5656

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Spring City, PA +1 610 948 4903

COC ID: 41209

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Middletown, PA +1 717 944 5541

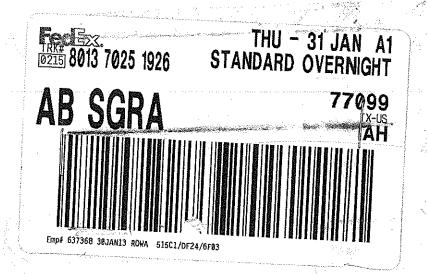
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	ALS Project Manager:											Order	494.6216.00				
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Work Order		Project Nu	mber				В				5 M						
Company Name	Maurio Refining	Bill To Com	pany Na	vajo R	etinin	7	6 DRO (8015 M)										
Send Report To		Invoice		ect Co	Mp2	7	D OKO (8018M)										
Address	501 East Main			-			E LL SVOC (BZ70) NM GW List										
Address	DOI BASH I PAIN	Adt	Iress 50	1 Cas	t Mai	n								8			
City/State/Zip	Artesia, NM 88211	City/Stat	City/State/Zip Actes: 4, NM 88211				GÌ							7000			
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Fax	575-7465421		Fax					-loisi									
e-Mail Address		e-Mail Ado	e-Mail Address						. 13:33				***************************************				
No.	Sample Description	Date	Date Time Matrix Pres. #Bottles						С	D	E	F	G	н	1	J J	Hold
1 Hw.	ામ (35)	1/28/13	1650	Soil		5	X	X	メ	X	X	Х	1	鎏	X		
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6				<u> </u>		,											
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Sampler(s): Please Pri	int & Sign	Shipm	ent Method:			naround	Time:	السعيسي بدوسمان		Other			Res	sults Du	e Date:		
Mul-	# Eric Desg	15cn			STD 10 Wk	Days [] 5 Wk [Days	□ 2 W	k Days	□ 2 ⁴	Hour					
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10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887 CUSTODY SEAL

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Spany: ARCADIC 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,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager ENP ACCREONES

Certificate No: T104704231-12-10

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302079

Work Order Sample Summary

Lab Samp ID	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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	

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling Case Narrative

Work Order: 1302079

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.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (1)

Collection Date: 1/31/2013 08:55 AM

Date: 13-Feb-13

Work Order: 1302079

Lab ID: 1302079-01

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Meth	od: SW8015M		Prep: SW35	41 / 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 - SW8015	С	Meth	od: SW8015				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		Meth	od: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	7.02		0.37	4.55	μg/Kg-dry	1	2/5/2013 17:32
METALS		Meth	od: SW6020		Prep: SW30	50A / 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		Meth	od: SW8270		Prep: SW35	41 / 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

Sample ID:

Client: Navajo Refining Company

Project: RO Discharge Sampling MW-117 (1)

Collection Date: 1/31/2013 08:55 AM

Work Order: 1302079

Lab ID: 1302079-01 Matrix: SOIL

Date: 13-Feb-13

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		Met	hod: 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)		Met	hod: E300		Prep: E300 /	2/7/13	Analyst: JKP
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		Met	hod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.75	2.52	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Met	hod: SW3550				Analyst: KAH
Percent Moisture	22.5		0.010	0.0100	wt%	1	2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (3) Lab ID: 1302079-02

Collection Date: 1/31/2013 09:00 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

Work Order: 1302079

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.7
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (5)

Collection Date: 1/31/2013 09:15 AM

Date: 13-Feb-13

Work Order: 1302079

Lab ID: 1302079-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	.	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.34	4.17	μg/Kg-dry	1	2/5/2013 17:34
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 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

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (7) **Lab ID:** 1302079-04

Collection Date: 1/31/2013 10:15 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

Work Order: 1302079

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.7
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

Work Order: 1302079 **Project: RO Discharge Sampling**

Lab ID: 1302079-05 MW-117 (9) **Sample ID:**

Collection Date: 1/31/2013 10:00 AM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Date: 13-Feb-13

Method: SW3550 **MOISTURE** Analyst: KAH 2/6/2013 15:40 **Percent Moisture** 21.3 0.010 0.0100 wt%

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	2.01	J	0.39	4.76	μg/Kg-dry	1	2/5/2013 17:36
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.76	2.53	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	26.4		0.010	0.0100	wt%	1	2/6/2013 15:40

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 36.2
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302079

 Sample ID:
 MW-117 (13)
 Lab ID: 1302079-08

 Sample ID:
 MW-117 (13)
 Lab ID: 13020

 Collection Date:
 1/31/2013 03:20 PM
 Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 33.6
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-117 (15)

Sample ID: MW-117 (15) **Collection Date:** 1/31/2013 03:20 PM

Work Order: 1302079

Lab ID: 1302079-09

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	.	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	1.10	J	0.37	4.58	μg/Kg-dry	1	2/5/2013 17:38
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.76	2.53	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	23.9		0.010	0.0100	wt%	1	2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302079

 Sample ID: MW-117 (17)
 Lab ID: 1302079-10

Collection Date: 1/31/2013 03:20 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 18.9
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (19)
Collection Date: 1/31/2013 03:25 PM

Collection Date: 1/31/2013 03:25 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

Lab ID: 1302079-11

Work Order: 1302079

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 25.0
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	3.30	J	0.36	4.45	μg/Kg-dry 1		2/5/2013 17:40
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.73	2.45	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	20.7		0.010	0.0100	wt%	1	2/6/2013 15:40

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 21.5
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.4
 0.010
 0.0100
 wt%
 1
 2/6/2013 15:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117 (25) **Collection Date:** 1/31/2013 03:40 PM

W---I- O--I---- 1202070

Date: 13-Feb-13

Work Order: 1302079 **Lab ID:** 1302079-15

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	hod: SW8015M		Prep: SW35	41 / 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 - SW	8015C	Met	hod: SW8015				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		Met	hod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U	U 0.36		4.40	μg/Kg-dry	1	2/5/2013 17:42
METALS		Met	hod: SW6020		Prep: SW30	50A / 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		Met	hod: SW8270		Prep: SW35	41 / 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

Client: Navajo Refining Company

Project: RO Discharge Sampling

MW-117 (25) **Sample ID: Collection Date:** 1/31/2013 03:40 PM

Work Order: 1302079

Lab ID: 1302079-15

Date: 13-Feb-13

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		Met	hod: 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)		Met	hod: E300		Prep: E300 /	2/7/13	Analyst: JKP
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		Met	hod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.67	2.23	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Met	hod: SW3550				Analyst: KAH
Percent Moisture	21.0		0.010	0.0100	wt%	1	2/7/2013 15:15

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

Date: 13-Feb-13

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

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Date: 13-Feb-13

QC BATCH REPORT

	Instrument ID FID-7		Metho	d: SW8015 N	Λ					
MBLK Sample ID:	FBLKS1-130205-67579				Units: mg/	Kg	Analys	is Date: 2/	6/2013 11	:56 AN
Client ID:	Run II	D: FID-7_ 1	130206A	S	eqNo: 310 4	4153	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
ГРН (Oil Range)	U	3.4								
ΓPH (Diesel Range)	U	1.7								
Surr: 2-Fluorobiphenyl	2.092	0.10	3.33	0	62.8	60-135	0			
_CS Sample ID:	FLCSS1-130205-67579				Units: mg/	Kg	Analys	is Date: 2/	6/2013 12	2:19 PN
Client ID:	Run II	D: FID-7_ 1	130206A	S	eqNo: 310	4154	Prep Date: 2/5/	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
ΓΡΗ (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			
Surr: 2-Fluorobiphenyl	2.536	0.10	3.33	0	76.2	60-135	0			
MS Sample ID:	1302018-01BMS				Units: mg/	Kg	Analys	is Date: 2/	6/2013 01	:06 PM
Client ID:	Run II	D: FID-7_ 1	130206A	S	eqNo: 310	4156	Prep Date: 2/5/	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
ГРН (Oil Range)	229.1	3.4	33.23	219.8	28.1	70-130	0			SEC
ΓΡΗ (Diesel Range)	80.52	1.7	33.23	75.45	15.3	70-130	0			SE
Surr: 2-Fluorobiphenyl	2.284	0.10	3.32	0	68.8	60-135	0			
MSD Sample ID:	1302018-01BMSD				Units: mg/	Kg	Analys	is Date: 2/	6/2013 01	:29 PN
Client ID:	Run II	D: FID-7_ 1	130206A	S	eqNo: 310 4	4157	Prep Date: 2/5/	2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qua
ΓΡΗ (Oil Range)	207.2	3.4	33.24	219.8	-37.7	70-130	229.1	10	30	SEC
	76.56	1.7	33.24	75.45	3.32	70-130	80.52	5.05	30	SE
ΓΡΗ (Diesel Range)	70.50	• • • • • • • • • • • • • • • • • • • •								
TPH (Diesel Range) Surr: 2-Fluorobiphenyl	2.311	0.10	3.321	0	69.6	60-135	2.284	1.17	30	

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

nt ID FID-9		Metho	d: SW801 5	5						
0205-R142225				Ur	nits: mg/ l	Kg	Analys	is Date: 2/	5/2013 01	:02 PN
Run	ID: FID-9_	130205A		Seq	No: 310 3	3619	Prep Date:		DF: 1	
Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
U 0.08374	0.050 0.0050	0.1	(0	83.7	70-130	0			
0205-R142225				Ur	nits: mg /l	Kg	Analys	is Date: 2/	5/2013 12	2:25 PN
Run	ID: FID-9_	130205A		Seq	No: 310 3	3613	Prep Date:		DF: 1	
Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
0.942	0.050	1	(0	94.2	70-130	0			
0.09701	0.0050	0.1	(0	97	70-130	0			
30205-R142225				Ur	nits: mg/ l	Kg	Analys	is Date: 2/	5/2013 12	:44 PN
Run	ID: FID-9_	130205A		Seq	No: 310 3	3616	Prep Date:		DF: 1	
Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
0.9525	0.050	1	(0	95.2	70-130	0.942	1.11	30	
0.09686	0.0050	0.1		0	96.9	70-130	0.09701	0.146	30	
4ZMS			Units: mg/Kg Analysi				is Date: 2/	5/2013 04	:11 PN	
Run	ID: FID-9_	130205A		Seq	No: 310 3	3628	Prep Date:		DF: 1	
Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
0.8005	0.050	1	(0	80	70-130	0			
0.08728	0.0050	0.1		0	87.3	70-130	0			
4ZMSD				Ur	nits: mg/l	Kg	Analys	is Date: 2 /	5/2013 04	:30 PN
Run	ID: FID-9_	130205A		Seq	No: 310 3	3632	Prep Date:		DF: 1	
Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
0.8125	0.050	1	(0	81.2	70-130	0.8005	1.49	30	
	Result U 0.08374 0205-R142225 Run Result 0.942 0.09701 30205-R142225 Run Result 0.9525 0.09686 4ZMS Run Result 0.8005 0.08728	Result PQL U 0.050 0.08374 0.0050 0205-R142225 Run ID: FID-9_ Result PQL 0.942 0.050 0.09701 0.0050 30205-R142225 Run ID: FID-9_ Result PQL 0.9525 0.050 0.09686 0.0050 4ZMS Run ID: FID-9_ Result PQL 0.8005 0.050 0.08728 0.0050	Result PQL SPK Val U 0.050 0.08374 0.0050 0.1 0205-R142225 Run ID: FID-9_130205A Result PQL SPK Val 0.942 0.050 1 0.09701 0.0050 0.1 30205-R142225 Run ID: FID-9_130205A Result PQL SPK Val 0.9525 0.050 1 0.09686 0.0050 0.1 4ZMS Result PQL SPK Val 0.9525 0.050 1 0.09686 0.0050 0.1 4ZMS Result PQL SPK Val 0.8005 0.050 1 0.08728 0.0050 1	Run ID: FID-9_130205A Result PQL SPK Val U 0.050 0.08374 0.0050 0.1 C205-R142225 Result PQL SPK Val 0.942 0.050 1 0.09701 0.0050 0.1 30205-R142225 Run ID: FID-9_130205A AZMS Result PQL SPK Val 4ZMS Result PQL SPK Val AZMSD Run ID: FID-9_130205A SPK Ref Value 4ZMSD Run ID: FID-9_130205A SPK Ref Value	Result	Result PQL SPK Val SPK Ref Value %REC U 0.050 0.01 0 83.7 0205-R142225 Units: mg/l SeqNo: 3103 Result PQL SPK Val SPK Ref Value %REC 0.942 0.050 1 0 94.2 0.09701 0.0050 0.1 0 97 30205-R142225 Units: mg/l Result PQL SPK Val SPK Ref Value %REC 0.9525 0.050 1 0 95.2 0.09686 0.0050 0.1 0 96.9 4ZMIS Units: mg/l SeqNo: 3103 Result PQL SPK Val SPK Ref Value %REC 0.8005 0.050 0.1 0 96.9 4ZMIS Units: mg/l SeqNo: 3103 SeqNo: 3103 4ZMISD Units: mg/l SPK Ref Value %REC 1 0 80 0.087.3 SeqNo: 3103 4ZMISD	Result	Result	Result	Result

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67584	Instrument ID ICPMS05		Method	SW602	20						
MBLK Sample	e ID: MBLKS1-020513-67584				Units: mg/	Kg	Analysis Date: 2/8/2013 12:22 PM				
Client ID:	Run	n 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									

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05		Method:	SW602	20						
LCS	Sample ID: MLCSS1-020513-67584				L	Jnits: mg/ l	Kg	Analysis	Date: 2	/6/2013 0	5:15 PM
Client ID:	Rui	n ID: ICPMS		SeqNo: 3104261			Prep Date: 2/5/20	013	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			

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67584	Instrument ID ICPMS05		Method:	SW6020							
MS Sample II	D: 1302079-01CMS				Units: mg/	Kg	Analysis Date: 2/6/2013 05:22 Pf				
Client ID: MW-117 (1)	Run I	D: ICPMS	05_130206A	S	eqNo: 310	4264	Prep Date: 2/5/2013	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %RPD	RPD Limit	Qua		
Aluminum	10850	0.95	9.479	10650	2130	75-125	0		SEC		
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		SEC		
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		SEC		
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 II	D: 1302079-01CMS			Units: mg/Kg Analysis Date: 2/							
Client ID: MW-117 (1)	Run I	D: ICPMS	05_130207A	S	eqNo: 310	5768	Prep Date: 2/5/2013	DF: 2			
			ODKA	SPK Ref	0/ DE0	Control	RPD Ref	RPD Limit	0		

Client ID: MW-117 (1)	Run II	: ICPMS	05_130207	A	SeqNo: 310	5768	Prep Date: 2/5	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	6.71	8 79.2	75-125	i (D		
Sodium	1077	95	947.9	257.	.4 86.4	75-125	(0		
-										

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67584	Instrument ID ICPMS05		Method:	SW6020						
MSD Sample	ID: 1302079-01CMSD			Į	Units: mg /	Kg	Analysi	s Date: 2 /	6/2013 05	:25 PM
Client ID: MW-117 (1)	Run	ID: ICPMS	05_130206A	Se	eqNo: 310	4265	Prep Date: 2/5/2	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: 1302079-01CMS	D				Units: mg/	′Kg	Analys	is Date: 2/	7/2013 03	:40 PM
Client ID:	MW-117 (1)	Run II	: ICPMS	05_130207	4	SeqNo: 310	5769	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	6.7	18 76	75-125	44.25	4.05	25	
Sodium		1054	94	941.4	257	.4 84.7	75-125	1077	2.08	25	

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 6	67584	Instrument ID ICPMS05		Method	: SW602	20						
DUP	Sample ID:	1302079-01CDUP				L	Jnits: mg /	Kg	Analysi	s Date: 2 /	6/2013 05	:20 PN
Client ID: N	/IW-117 (1)	Run II	D: ICPMS	05_130206A		Se	qNo: 310 4	4263	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	
Molybdenu	m	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				L	Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 06	:38 PI
Client ID: N	/IW-117 (1)	Run II	D: ICPMS	05_130206A		Se	qNo: 310 4	4419	Prep Date: 2/5/2	2013	DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	е	291.2	48	0		0	0	0-0	317.5	8.63	25	
DUP	Sample ID:	1302079-01CDUP				L	Jnits: mg /	Kg	Analysi	s Date: 2/	7/2013 03	:35 PI
Client ID: N	/IW-117 (1)	Run II	D: ICPMS	05_130207A		Se	qNo: 310	5767	Prep Date: 2/5/2	2013	DF: 2	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
						_			0.515			
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 follow	ring samples	were analyzed in this batch:		302079-01C 302079-09A			79-03A 79-12A		02079-06A 02079-15C			

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 6	7586	Instrument ID HG02		Metho	d: SW747	1A						
MBLK	Sample ID: (GBLKS2-020513-67586				Units	∶µg/ŀ	K g	Analysi	s Date: 2	/5/2013 05	5:08 PN
Client ID:		Run ID	: HG02_	_130205A		SeqNo	: 310	2385	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%I	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		U	3.3									
LCS	Sample ID: 0	GLCSS2-020513-67586				Units	: µg/ŀ	K g	Analysi	s Date: 2	/5/2013 05	5:10 PN
Client ID:		Run ID	: HG02 _	_130205A		SeqNo	: 310	2386	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%I	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		342.7	3.3	333.3		0	103	85-115	0			
MS	Sample ID: 1	1302097-02AMS				Units	: µg/ŀ	K g	Analysi	s Date: 2	/5/2013 05	5:16 PN
Client ID:		Run ID	: HG02 _	_130205A		SeqNo	: 310	2389	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%I	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		318.7	3.4	344.1	2.74	13 9	91.8	85-115	0			
MSD	Sample ID: 1	1302097-02AMSD				Units	: µg/ŀ	(g	Analysi	s Date: 2	/5/2013 0	5:18 PN
Client ID:		Run ID	: HG02 _	_130205A		SeqNo	: 310	2390	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%I	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		311.1	3.4	336.7	2.74	13 9	91.6	85-115	318.7	2.39	20	
DUP	Sample ID: *	1302097-02ADUP				Units	: µg/l	K g	Analysi	s Date: 2	/5/2013 0	5:14 PN
Client ID:		Run ID	: HG02 _	_130205A		SeqNo	: 310	2388	Prep Date: 2/5/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%I	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		3.425	3.5	0		0	0		2.743	C	20	J
The followi	ing samples w	ere analyzed in this batch:		302079-01C 302079-09A		02079-(02079-			02079-06A 02079-15C		_	

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67581	Instrument ID SV-4		Metho	d: SW827	70						
MBLK Sample ID: S	BLKS1-130205-67581				ι	Jnits: µg/l	(g	Analys	sis Date: 2	/5/2013 0 ⁻	1:55 PM
Client ID:	Ru	ın ID: SV-4_1	30205B		Se	eqNo: 310	2442	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									
Surr: 2,4,6-Tribromopher		6.6	166.7		0	69.1	36-126	C	<u> </u>		
Surr: 2-Fluorobiphenyl	135.8	6.6	166.7		0	81.5	43-125	C			
Surr: 2-Fluorophenol	116.8	6.6	166.7		0	70.1	37-125				
Surr: 4-Terphenyl-d14	161.5	6.6	166.7		0	96.9	32-125	C			
Surr: Nitrobenzene-d5	129.6	6.6	166.7		0	77.7	37-125				
Surr: Phenol-d6	120.6	6.6	166.7		0	72.4	40-125	C	l		
LCS Sample ID: S	LCSS1-130205-67581				Į	Jnits: µg/l	(g	Analys	sis Date: 2	/5/2013 02	2:15 PM
Client ID:	Ru	ın ID: SV-4_1	30205B		Se	eqNo: 310	2443	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	C	1		
2-Methylnaphthalene	153.8	6.6	166.7		0	92.3	50-120	C			
Benzo(a)pyrene	136.8	6.6	166.7		0	82.1	50-130	C	1		
Naphthalene	149.2	6.6	166.7		0	89.5	50-125	C			
Surr: 2,4,6-Tribromopher	nol 142.1	6.6	166.7		0	85.3	36-126	C	1		
Surr: 2-Fluorobiphenyl	150.5	6.6	166.7		0	90.3	43-125	C			
Surr: 2-Fluorophenol	117.9	6.6	166.7		0	70.8	37-125	C	1		
Surr: 4-Terphenyl-d14	170.9	6.6	166.7		0	103	32-125	C			
Surr: Nitrobenzene-d5	136.3	6.6	166.7		0	81.8	37-125	C	1		
Surr: Phenol-d6	120.3	6.6	166.7		0	72.2	40-125	C			

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67581 Instrume	ent ID SV-4		Metho	d: SW8270						
MS Sample ID: 1302050-0	D6CMS			l	Jnits: µg/k	(g	Analysi	s Date: 2 /	5/2013 05	:39 PN
Client ID:	Run ID	SV-4_1	30205B	Se	qNo: 310 2	2445	Prep Date: 2/5/2	2013	DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1-Methylnaphthalene	4344	66	166.3	1316	1820	50-120	0			SEC
2-Methylnaphthalene	5004	66	166.3	1528	2090	50-120	0			SEC
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			
Surr: 2,4,6-Tribromophenol	102.1	66	166.3	0	61.4	36-126	0			
Surr: 2-Fluorobiphenyl	176.2	66	166.3	0	106	43-125	0			
Surr: 2-Fluorophenol	89.44	66	166.3	0	53.8	37-125	0			
Surr: 4-Terphenyl-d14	126.1	66	166.3	0	75.9	32-125	0			
Surr: Nitrobenzene-d5	131.6	66	166.3	0	79.1	37-125	0			
Surr: Phenol-d6	101.7	66	166.3	0	61.2	40-125	0			
MSD Sample ID: 1302050-0)6CMSD			l	Jnits: µg/k	(g	Analysi	s Date: 2 /	5/2013 05	:59 PN
Client ID:	Run ID	: SV-4_1	30205B	Se	qNo: 310 2	2446	Prep Date: 2/5/2	2013	DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	_
	- Ttoodit	I QL	SPK Vai	Value	%REC					Qua
1-Methylnaphthalene	4603	66	166.2	1316	1980	50-120	4344	5.78	30	Qua SEC
1-Methylnaphthalene 2-Methylnaphthalene						50-120 50-120	4344 5004	5.78 8.09	30 30	
2-Methylnaphthalene	4603	66	166.2	1316	1980					SEC
	4603 5426	66 66	166.2 166.2	1316 1528	1980 2350	50-120	5004	8.09	30	SEC
2-Methylnaphthalene Benzo(a)pyrene	4603 5426 104.2	66 66 66	166.2 166.2 166.2	1316 1528 2.558	1980 2350 61.2	50-120 50-130	5004 123.5	8.09 17	30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene	4603 5426 104.2 181.7	66 66 66	166.2 166.2 166.2 166.2	1316 1528 2.558	1980 2350 61.2 109	50-120 50-130 50-125	5004 123.5 147.1	8.09 17 21.1	30 30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol	4603 5426 104.2 181.7 113	66 66 66 66	166.2 166.2 166.2 166.2 166.2	1316 1528 2.558 0	1980 2350 61.2 109 68	50-120 50-130 50-125 36-126	5004 123.5 147.1 102.1	8.09 17 21.1 10.1	30 30 30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl	4603 5426 104.2 181.7 113	66 66 66 66 66	166.2 166.2 166.2 166.2 166.2	1316 1528 2.558 0 0	1980 2350 61.2 109 68 103	50-120 50-130 50-125 36-126 43-125	5004 123.5 147.1 102.1 176.2	8.09 17 21.1 10.1 2.92	30 30 30 30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl Surr: 2-Fluorophenol	4603 5426 104.2 181.7 113 171.2 87.26	66 66 66 66 66 66	166.2 166.2 166.2 166.2 166.2 166.2	1316 1528 2.558 0 0 0	1980 2350 61.2 109 68 103 52.5	50-120 50-130 50-125 36-126 43-125 37-125	5004 123.5 147.1 102.1 176.2 89.44	8.09 17 21.1 10.1 2.92 2.47	30 30 30 30 30 30 30	SEC

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

The following samples were analyzed in this batch:

Note:

1302079-01D

1302079-15D

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5		Metho	d: SW82 6	60					
MBLK Sample ID: V	BLKS1-020413-R142091				Units: µg/l	K g	Analy	/sis Date: 2	/4/2013 0	2:20 PM
Client ID:	Run II): VOA5_	130204A		SeqNo: 310	1239	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-Bromofluorobenze	ene 46.3	0	50		0 92.6	73-126		0		
Surr: Dibromofluorometha	ane 48.2	0	50		0 96.4	71-128		0		
Surr: Toluene-d8	51.1	0	50		0 102	73-127	•	0		

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5		Method	d: SW826 0	0						
LCS Sample ID:	VLCSS1-020413-R142091				U	nits: μg/k	ζg	Analy	sis Date: 2	/4/2013 1	2:48 PM
Client ID:	Run	ID: VOA5_	130204A		Sec	qNo: 310 ′	1238	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	()		
1,1,2,2-Tetrachloroethane	55.2	5.0	50		0	110	75-123	()		
1,1,2-Trichloroethane	60.76	5.0	50		0	122	79-120	()		S
1,1-Dichloroethane	57.8	5.0	50		0	116	75-124	()		
1,1-Dichloroethene	58.39	5.0	50		0	117	80-122	()		
1,2-Dibromoethane	55.86	5.0	50		0	112	79-120	()		
1,2-Dichloroethane	53.68	5.0	50		0	107	73-121	()		
Benzene	56.68	5.0	50		0	113	79-120	()		
Carbon tetrachloride	54.78	5.0	50		0	110	74-126	()		
Chloroform	51.07	5.0	50		0	102	78-120	()		
Ethylbenzene	59.14	5.0	50		0	118	80-122	()		
Methylene chloride	57.27	10	50		0	115	70-123	()		
Tetrachloroethene	55.19	5.0	50		0	110	80-121	()		
Toluene	59.27	5.0	50		0	119	79-120	()		
Trichloroethene	59.99	5.0	50		0	120	80-121	()		
Vinyl chloride	58.95	2.0	50		0	118	76-126	()		
Xylenes, Total	169.3	15	150		0	113	80-120	()		
Surr: 1,2-Dichloroethane	e-d4 45.09	0	50		0	90.2	70-128	()		
Surr: 4-Bromofluoroben:	zene 48.08	0	50		0	96.2	73-126	()		
Surr: Dibromofluorometh	hane 49.73	0	50		0	99.5	71-128	()		
Surr: Toluene-d8	50.18	0	50		0	100	73-127	()		

Client: Navajo Refining Company

Work Order: 1302079

Trichloroethene

Vinyl chloride

Xylenes, Total

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5		Metho	d: SW826 0	0						
MS Sample ID:	1302079-15AMS				U	nits: µg/k	(g	Analy	ysis Date: 2	/4/2013 0	4:14 PM
Client ID: MW-117 (25)	Ru	un ID: VOA5_	130204A		Sec	No: 310	1244	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	5.43	8	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		

49

53.2

136.9

41.91

47.54

48.39

46.26

5.0

2.0

15

0

0

0

0

50

50

150

50

50

50

50

0

0

0

0

0

0

0

98

106

91.3

83.8

95.1

96.8

92.5

80-121

76-126

80-120

70-128

73-126

71-128

73-127

0

0

0

0

0

0

0

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5	Method: SW8260
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MSD Sample ID: 1302079-1	5AMSD			ı	Units: µg/l	(g	Analysi	is Date: 2/	4/2013 04	1:37 PM
Client ID: MW-117 (25)	Run II	D: VOA5_	130204A	Se	eqNo: 310	1245	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:

Note:

1302079-01A 1302079-15A

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	/BLKW-130205-R142161				Units: µg	′L	Analy	/sis Date: 2	/5/2013 1	0:49 AM
Client ID:	Run II	D: VOA4_	130205A		SeqNo: 310)2121	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	i	0		
Surr: 4-Bromofluorobenz	ene 47.73	1.0	50		0 95.5	70-125	i	0		
Surr: Dibromofluorometh	ane 50.94	1.0	50		0 102	74-125	i	0		
Surr: Toluene-d8	49.25	1.0	50		0 98.5	78-123	}	0		

Navajo Refining Company Client:

Work Order: 1302079

RO Discharge Sampling Project:

Batch ID: R142161	Instrument ID VOA4		Method	: SW826	0						
LCS Sample ID: Y	VLCSW-130205-R142161				L	Jnits: µg/L		Analys	sis Date: 2	2/5/2013 0	9:37 AM
Client ID:	Run	ID: VOA4_	130205A		Se	qNo: 310 2	2119	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	()		
1,1,2,2-Tetrachloroethane	45.4	1.0	50		0	90.8	74-123	()		
1,1,2-Trichloroethane	48.9	1.0	50		0	97.8	80-120	()		
1,1-Dichloroethane	46.19	1.0	50		0	92.4	80-120	()		
1,1-Dichloroethene	53.85	1.0	50		0	108	80-120	()		
1,2-Dibromoethane	52.93	1.0	50		0	106	80-120	()		
1,2-Dichloroethane	48.97	1.0	50		0	97.9	79-120	()		
Benzene	48.6	1.0	50		0	97.2	80-120	()		
Carbon tetrachloride	59.17	1.0	50		0	118	79-120	()		
Chloroform	47.16	1.0	50		0	94.3	80-120	()		
Ethylbenzene	48.68	1.0	50		0	97.4	80-120	()		
Methylene chloride	47.36	2.0	50		0	94.7	75-125	()		
Tetrachloroethene	52.99	1.0	50		0	106	80-120	()		
Toluene	47.82	1.0	50		0	95.6	80-121	()		
Trichloroethene	54.22	1.0	50		0	108	80-120	()		
Vinyl chloride	50.08	1.0	50		0	100	75-125	()		
Xylenes, Total	142.4	1.0	150		0	94.9	80-124	()		
Surr: 1,2-Dichloroethane	e-d4 44.33	1.0	50		0	88.7	71-125	()		
Surr: 4-Bromofluorobenz	zene 50.11	1.0	50		0	100	70-125	()		
Surr: Dibromofluorometh	nane 49.8	1.0	50		0	99.6	74-125	()		
Surr: Toluene-d8	48.26	1.0	50		0	96.5	78-123	()		

Client: Navajo Refining Company

Work Order: 1302079

Batch ID: R142161

Tetrachloroethene

Trichloroethene

Vinyl chloride

Xylenes, Total

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Toluene

Note:

Project: RO Discharge Sampling

Instrument ID VOA4

52.04

52.61

46.94

140.3

44.11

51.13

48.61

48.17

47

1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

50

50

50

50

150

50

50

50

50

0

0

0

0

0

0

0

0

0

104

94

105

93.9

93.5

88.2

102

97.2

96.3

80-120

80-121

80-120

75-125

80-124

71-125

70-125

74-125

78-123

52.99

47.82

54.22

50.08

142.4

44.33

50.11

49.8

48.26

1.82

1.73

3.01

6.46

1.5

0.493

2.03

2.42

0.187

20

20

20

20

20

20

20

20

20

LCSD Sample ID: VLCSDV	V-130205-R142161				Units: µg/l	-	Analysi	s Date: 2/	5/2013 10	:01 AM
Client ID:	Run II	D: VOA4_	130205A	S	eqNo: 310 :	2120	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	

Method: SW8260

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Method	: SW826	0						
MS Sample ID: 1	302056-09AMS				U	Inits: μg/L	-	Analy	sis Date:	2/5/2013 1	1:14 AM
Client ID:	Ru	n ID: VOA4_	130205A		Se	qNo: 310 2	2122	Prep Date:		DF: 1	0
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-Bromofluorobenze	ene 505	10	500		0	101	70-125		0		
Surr: Dibromofluorometh	ane 495.3	10	500		0	99.1	74-125		0		
Surr: Toluene-d8	482.7	10	500		0	96.5	78-123		0		

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: R142161 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1302056-09	9AMSD				Units: µg/I	L	Analysi	is Date: 2/	5/2013 11	:38 AN
Client ID:	Run II	D: VOA4_	130205A	S	eqNo: 310	2123	Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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:

Note:

1302079-16A

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID UV-2450		Method	l: SW901	4	(Dissolv	e)			
MBLK	Sample ID: WBLKS1-020813-67667				Units: mg/	'Kg	Analysis	s Date: 2	/8/2013 05	:30 PM
Client ID:	Run II	D: UV-245	0_130208F		SeqNo: 310	7315	Prep Date: 2/8/2	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	s Date: 2	/8/2013 05	:30 PN
Client ID:	Run II	D: UV-245	0_130208F		SeqNo: 310	7316	Prep Date: 2/8/2	.013	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	s Date: 2	/8/2013 05	:30 PN
Client ID:	Run II	D: UV-245	0_130208F		SeqNo: 310	7332	Prep Date: 2/8/2	.013	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	s Date: 2	/8/2013 05	:30 PN
Client ID: MV	V-117 (25) Run II): UV-245	0_130208F		SeqNo: 310	7331	Prep Date: 2/8/2	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	0.35	52 84.7	75-125	0			
The followin	g samples were analyzed in this batch:		802079-01C 802079-09B		02079-03B 02079-12B		302079-06B 302079-15C			

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67697	Instrument ID ICS2100		Method	: E300			(Dissolve)			
MBLK Sample ID:	WBLKS2-67697				Unit	s: mg /	Kg	Analys	sis Date: 2	/7/2013 10	:08 PN
Client ID:	Run I	D: ICS210	0_130207B		SeqN	o: 310	6617	Prep Date: 2/7	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	1		
LCS Sample ID:	WLCSS2-67697				Unit	s: mg /	Kg	Analys	sis Date: 2	/7/2013 10	:22 PI
Client ID:	Run I	D: ICS210	0_130207B		SeqN	o: 310	6618	Prep Date: 2/7	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	1		
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	1		
Surr: Selenate (surr)	44.44	1.0	50		0	88.9	85-115	C	1		
MS Sample ID:	1302079-15CMS				Unit	s: mg /	Kg	Analys	sis Date: 2	/8/2013 12	:04 AI
Client ID: MW-117 (25)	Run I	D: ICS210	0_130207B		SeqN	o: 310	6625	Prep Date: 2/7	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Chloride	128.1	5.0	99.77	20	.8	108	75-125	C)		
Fluoride	25.76	1.0	19.95	4.09		109	75-125	0			
Nitrogen, Nitrate (As N)	18.89	1.0	19.95	0.447		92.4	75-125	0	1		
Nitrogen, Nitrite (As N)	21.5	1.0	19.95		0	108	75-125	0			
Sulfate	496.6	5.0	99.77	3′	13	184	75-125	0	1		S
Surr: Selenate (surr)	43.75	1.0	49.89		0	87.7	80-120	O			

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Batch ID: 67697	nstrument ID ICS2100		Method	i: E300		(Dissolve	e)			
MSD Sample ID: 13	02079-15CMSD				Units: mg/	Kg	Analys	is Date: 2 /	8/2013 12	:19 AM
Client ID: MW-117 (25)	Ru	ın ID: ICS210	0_130207B	S	SeqNo: 310	6626	Prep Date: 2/7/2	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	

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302079

Project: RO Discharge Sampling

Project: R	O Discharge Sampling										
Batch ID: R142287	Instrument ID Balance1		Method	d: SW35 8	60	(D	issolve)			
DUP Sample I	D: 1302079-15ADUP				Units	: wt%		Analysi	s Date: 2/	6/2013 03	3:40 PM
Client ID: MW-117 (25)	Run II	D: BALAN	ICE1_13020	6C	SeqNo	: 31049	36	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%F	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 sample	s were analyzed in this batch:	13	302079-01C 302079-04A 302079-07A 302079-10A	13 13	802079-0 802079-0 802079-0)5A)8A	13 13	02079-03A 02079-06A 02079-09A 02079-12A			

1302079-14A

1302079-15A

1302079-13A

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302079

RO Discharge Sampling Project:

QC BATCH REPORT

Units: wt% SeqNo: 3106553	Analysis Prep Date:	Date: 2/7/20	
SeqNo: 3106553	Prep Date:	_	
		L	DF: 1
Control %REC Limit	RPD Ref Value	RF %RPD ^{Lir}	PD mit Qua
0 0 0-0	18.79	2.77	20
	%REC Limit	%REC Limit Value	%REC Limit Value %RPD Li

ALS Environmental Date: 13-Feb-13

Client: Navajo Refining Company **QUALIFIERS,** RO Discharge Sampling **Project:** ACRONYMS, UNITS

1302079 WorkOrder:

wt%

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	Description
μg/Kg-dr	ry Micrograms per Kilogram - Dry weight corrected
mg/Kg-dı	ry Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time	Received:	02-Feb-1	<u>3 09:30</u>	
Work Order:	<u>1302079</u>			Received b	y:	<u>RDH</u>		
Checklist comple	eted by <u>Rishel</u> D. Maran eSignature	(04-Feb-13 Date	Reviewed by:	Sonia X	leat		05-Feb-13 Date
Matrices: Carrier name:	SOIL FedEx	1						l
Shipping contain	ner/cooler in good condition?		Yes 🗸	No 🗌	Not Pres	ent		
Custody seals in	ntact on shipping container/coole	er?	Yes 🗸	No 🗌	Not Pres	ent 🗌		
Custody seals in	ntact on sample bottles?		Yes 🗌	No 🗆	Not Pres	ent 🗹		
Chain of custody	y present?		Yes 🗹	No 🗌				
Chain of custody	y signed when relinquished and	received?	Yes 🗹	No 🗆				
Chain of custody	y agrees with sample labels?		Yes 🗸	No 🗌				
Samples in prop	er container/bottle?		Yes 🗸	No 🗌				
Sample containe	ers intact?		Yes 🗸	No 🗌				
	e volume for indicated test?		Yes 🗹	No 🗌				
	eived within holding time?		Yes 🗹	No 🗆				
	Blank temperature in complian	ce?	Yes 🗸	No 🗌				
	Thermometer(s):		2.7C U/C		00	<u>5</u>		
Cooler(s)/Kit(s):	, ,		7034					
	ole(s) sent to storage:		2/4/13 09:3	32				
	ils have zero headspace?		Yes	No 🗆	No VOA vial	s submitted	✓	
Water - pH acce	eptable upon receipt?		Yes \square	No 🗆	N/A			
pH adjusted?			Yes 🗌	No 🗆	N/A		1	
pH adjusted by:			_					
Login Notes:	A Trip Blank sample was re for VOC 8260.	ceived but was no	t listed on the	chain of custody	. The laborat	ory analyze	d this sample	
Client Contacted	i:	Date Contacted:		Person	Contacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction	1:						000) 4 - f 4

(ALS)			
ii comma		%	_

Chain of Custody Form

COC ID: 41201

1302079

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

Enuironmental Customer Information	C	Transportation and the contraction and	T _L _C O	anager.		a comence										
Purchase Order	Project		omiation			A.	1050	2-1-1	Linere						1	<u> </u>
Work Order	Project N						<u>Voc</u>			- 1	7W	لتك	2 ک	<u>-ist</u>	-	
			0	Λ.			<u>allo</u>		BO 15						-	
Send Report To Robert Combs	bin 10 Con	1 1000	y's Ke	tioig	<u>C</u> 0	10000	<u> </u>	-		,					1	
	Invoice	Attn. (Solor	ect (s	1.4bz		10001	2 RO				,		6-6	M L	5+	
Address 501 East Main	Ad	dress		₩.		1 1	10ta			•	(60i		70cc) KC	<u>RA</u>	<u>-8</u>
Congressed of Section 1997			East		^	17. 1. 1	_L <	<u>5</u> γα	<u> </u>	BZ	70B)	M	ù Gu	<u>يا ل</u> ر	<u>; s+</u>	
City/State/Zip Artesis, NM	City/Sta	te/Zip / /	esa, 1	1W	····	G			~~~				~~~~~		The state of the s	
Phone		Phone 575-	748-	673	3	H C	<u>~~</u>	ide	~st~	Ani	کمو				-	
Fax		Fax 575 -	746 -	5421		i Y	<u> 106</u>	+01	<u>. </u>							
e-Mail Address	e-Mail Ad	dress				JR	رنامه	ہر							and or a second	
No. Sample Description	Date	Time	Matrix	Pres.	# Bottles	Α	В	С	D	E	F	G	н		J	Hold
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2 MW-117 (3)	l l	0900	,	1	١									X	D440411/10	
3 MW-117(5)		O915			- 3					χ	75		X	x	IX	. "; ,
4 MW-117 (7)		1015			. \									X	A CONTRACTOR OF THE PERSON OF	
5 MW417 (9)		1000			i									Х	or reference of the	
6 MW-117 (10)		1 515 1038			3					X	Z		X	X	X	
7 MW-117 (11)		1515			1									X	-	·
8 MW-117 (13)		1515)		1.				····	:				አ	- STATE OF THE STA	
9 MW-117 (15)		1520		<u> </u>	3	<u> </u>				_X	K,		X	XX	مز	
10 MW-117 (17)		1520	<u> </u>							·····				X	- CONTINUE OF THE PERSON OF TH	
Sampler(s): Please Print & Sign	Shipi	nent Method:		uired Tui STD 10 Wk	naround Days [Time:] 5 Wk t	ays)] 2 Wi	Other k Days		4 Hour	Res	sults Du	e Date:		
Relinquished by: Date:	Time:	Received by:	***************************************	:	:	Not					······································					
Refinguished by: Date:	Tima	Received An Labor	<u> </u>			le	Den	TA	T, ∇);550	Jued	Met	12 S	field	1-14	<u>sed</u>
Eric Segerson 21113	Time: 1,200	Veceived by Lapoi	## -	21111	2 19	12/150	oler Ter	np.		1211	neck Bo Standa	x Belov	ν)			
Logged by (Laboratory): Date:	Time:	Checked by (Labor	albry);	-4	<u>ں ر</u>	Ť		HÉ				tu QC L+ Rav	v Data	H	-	
							e Grander (1					5 CLP-1			-	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaO	H 5-Na2S2O3	6-NaHSO4 7-Ot	her 8-4	degrees	C 9-50	35			Otl	ier:					GARAGAGE	

ALS
Environmenta

Chain of Custody Form

Page _ 2_ of _ 2_

COC ID:

41214

Cincinnati, OH +1 513 733 5336

Everett, WA +1 425 356 2600

Holland, MI

+1 616 399 6070

□ Houston, TX +1 281 530 5656

Sait Lake City, UT +1 801 266 7700

Spring City, PA +1 610 948 4903

Fort Collins, CO +1 970 490 1511 Middletown, PA +1 717 944 5541

Tork, PA +1 717 505 5280

		ALS P	roject Manag	jer:				050077500000554766	k Order	SWINDS NEEDS		ダイク		1000
Customer Information		Project Infor	mation				Parame	ter/Met	hod Re	quest	for Ar	nalysis	<u>: </u>	
Purchase Order	Project	Name ROD	ischage	Szydin	A	CC	(826)	<u> </u>	<u>Jul</u>	Gu	<u>ا ل ل</u>	ist	-	
Work Order	Project N	umber 125%	23	1 0	В	a RO	<i>o</i> 8)	15H	.				And Controlled	
Company Name Navajo Refining	Bill To Con	mpany Alava	o Reti	เลง่อง		>R		712/5	\				- American III	
Send Report To Robert Crubs	Invoice	e Attn. Rober	+Cox	bsJ	D c	7(20		15/1						
							10C			Ni	W 6	ال کی	154	***************************************
Address .	ACCOUNTS ACCOUNTS	ddress 501	East	Flain	1.00		Het	-					-	
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e-Mail Address	e-Mail Ad	de la contrata de la companya de la	<u> </u>		J	Zaliv	<u> </u>						-	
No. Sample Description	Date	Time	Matrix Pr	es. # Bottles	Α	В	С	E	F	G	н	j i	J	Hold
1 MW-117 (19)	1/31/13	1575	Seil -	- 1				* *** ******	18 C		冕	Х	×-	
2 MW-117 (20)	1 1	1575	\	1 3					X		X		K	
3 MW-117 (21)		1530		١ ١								\propto	-	
4 Mw-117(23)		1530		i								Х	A CONTRACTOR OF THE PARTY OF TH	
5 MW-117(25)		1,540		5	X	X	× .	< x	X		×	X	X	
6	ŧ												Anna Anna Anna Anna Anna Anna Anna Anna	
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8													-	
9													***************************************	<u> </u>
10 Sampler(s): Please Print & Sfgn	Chin	ment Method:	Ponuisos	d Turnaround	Timo:					l les	sults Du	Data:	1	<u> </u>
(III)	anipi Anglesia	ment wentou.] 5 Wk D	ays ·	Ot 2 Wk Day		4 Hour	Nes	ouita Dil	c vale.	markeneoff resigned	
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Relinquished by: Date:	Time:	Received by (Laborat	ory): 7/1	12 200	2// 00	c.er Ten		ckage: (C	heck Bo	x Below	ν)			
Logged by (Laboratory); Date:	Tima:	Checked by (Laborate	14 / H	10 Ox	4		اسر ال	zevel II: ∟evel III:			u Dota		-	
								Level IV:					-	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-Na	OH 5-Na2S2O3	6-NaHSO4 7-Othe	a 8-4 degi	rees C 9-50	35		7	Other				İ	ANDANA	

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

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1302079 -

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1RK# 8013 7025 1558

SATURDAY ### A1
PRIORITY OVERNIGHT

X0 SGRA

77099 TX-US IAH



Emp# 637368 01FEB13 ROWA 515C1/0F24/6F03



ALS Environmental

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

Date: Name Comp CUSTODY SEAL

2-1-2013 Time: 1/50

B. Mc Klisson

Dany: ARCADY U.S.



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,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302082

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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	

ALS Environmental

Date: 13-Feb-13

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 13202140-04: 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.

Client: Navajo Refining Company

Project: RO Discharge Sampling

RO-SB-1 (1) **Sample ID:**

Collection Date: 1/31/2013 11:45 AM

Work Order: 1302082

Lab ID: 1302082-01

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	hod: SW8015M		Prep: SW35	41 / 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 - SW8	015C	Met	hod: SW8015				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		Met	hod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	9.79		0.34	4.25	μg/Kg-dry	1	2/5/2013 17:44
METALS		Met	hod: SW6020		Prep: SW30	50A / 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		Met	hod: SW8270		Prep: SW35	41 / 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

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

Date: 13-Feb-13

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		Met	hod: 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)		Met	hod: E300		Prep: E300 /	2/10/13	Analyst: JKP
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		Met	hod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.71	2.36	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Met	hod: SW3550				Analyst: KAH
Percent Moisture	17.7		0.010	0.0100	wt%	1	2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO-SB-1 (3)

Collection Date: 1/31/2013 11:50 AM

Date: 13-Feb-13

Work Order: 1302082

Lab ID: 1302082-02

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.5
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO-SB-1 (5)

Collection Date: 1/31/2013 12:00 PM

Date: 13-Feb-13

Work Order: 1302082

Lab ID: 1302082-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471 A	.	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	3.95	J	0.36	4.38	μg/Kg-dry	1	2/5/2013 17:46
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.72	2.39	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	22.7		0.010	0.0100	wt%	1	2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO-SB-1 (7)

Collection Date: 1/31/2013 12:30 PM

Date: 13-Feb-13

Work Order: 1302082

Lab ID: 1302082-04

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 25.9
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

 Sample ID:
 RO-SB-1 (9)
 Lab ID:
 1302082-05

 Collection Date:
 1/31/2013 12:45 PM
 Matrix:
 SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

Work Order: 1302082

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 32.7
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	1.67	J	0.40	4.89	μg/Kg-dry	1	2/5/2013 17:48
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.81	2.71	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	31.0		0.010	0.0100	wt%	1	2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302082

 Sample ID: RO-SB-1 (11)
 Lab ID: 1302082-07

Collection Date: 2/1/2013 09:53 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 13.9
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302082

 Sample ID: RO-SB-1 (13)
 Lab ID: 1302082-08

Collection Date: 2/1/2013 09:53 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 19.2
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	3.35	J	0.37	4.51	μg/Kg-dry	1	2/5/2013 17:50
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.71	2.35	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	23.5		0.010	0.0100	wt%	1	2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.0
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302082

 Sample ID:
 RO-SB-1 (19)
 Lab ID: 1302082-11

Collection Date: 2/1/2013 09:47 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 20.8
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

RO-SB-1 (20) **Sample ID: Collection Date:** 2/1/2013 09:40 AM **Work Order:** 1302082

Lab ID: 1302082-12

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	1	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	1.02	J	0.35	4.25	μg/Kg-dry	1	2/5/2013 17:56
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	0.788	J	0.73	2.42	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	20.3		0.010	0.0100	wt%	1	2/7/2013 15:15

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302082

 Sample ID: RO-SB-1 (21)
 Lab ID: 1302082-13

Collection Date: 2/1/2013 10:18 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 28.8
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 19.9
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471A	L	Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	27.4		0.35	4.26	μg/Kg-dry	1	2/5/2013 17:58
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	0.747	J	0.75	2.49	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	20.9		0.010	0.0100	wt%	1	2/7/2013 15:15

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

Date: 13-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 18.8
 0.010
 0.0100
 wt%
 1
 2/7/2013 15:15

Date: 13-Feb-13

Client: Navajo Refining Company Work Order: 1302082 **Project: RO Discharge Sampling**

Lab ID: 1302082-17 RO-SB-1 (29) **Sample ID: Collection Date:** 2/1/2013 10:10 AM Matrix: SOIL

Report Dilution **Date Analyzed** Limit **Analyses** Result Qual **MDL Factor** Units

Method: SW3550 **MOISTURE** Analyst: KAH 2/8/2013 14:55 **Percent Moisture** 20.9 0.010 0.0100 wt%

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	0.638	J	0.37	4.54	μg/Kg-dry	1	2/5/2013 18:00
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	U		0.74	2.48	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	26.6		0.010	0.0100	wt%	1	2/8/2013 14:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

 Sample ID:
 RO-SB-1 (31)
 Lab ID:
 1302082-19

 Collection Date:
 2/1/2013 10:05 AM
 Matrix:
 SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

Work Order: 1302082

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.7
 0.010
 0.0100
 wt%
 1
 2/8/2013 14:55

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302082

 Sample ID:
 RO-SB-1 (33)
 Lab ID: 1302082-20

Collection Date: 2/1/2013 10:05 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 16.1
 0.010
 0.0100
 wt%
 1
 2/8/2013 14:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO-SB-1 (35) **Collection Date:** 2/1/2013 10:05 AM

Date: 13-Feb-13

Lab ID: 1302082-21

Work Order: 1302082

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	thod: SW8015M		Prep: SW35	41 / 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 - SW801	5C	Me	thod: SW8015				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		Me	thod: SW7471A		Prep: SW74	71A / 2/5/13	Analyst: OFO
Mercury	U		0.33	4.09	μg/Kg-dry	1	2/5/2013 18:02
METALS		Me	thod: SW6020		Prep: SW30	50A / 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		Me	thod: SW8270		Prep: SW35	41 / 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

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

Date: 13-Feb-13

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		Metl	hod: 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)		Metl	hod: E300		Prep: E300 /	2/10/13	Analyst: JKP
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		Metl	hod: SW9014		Prep: SW90	10C / 2/8/13	Analyst: EDG
Cyanide	0.672	J	0.67	2.24	mg/Kg-dry	1	2/8/2013 17:30
MOISTURE		Metl	hod: SW3550				Analyst: KAH
Percent Moisture	16.0		0.010	0.0100	wt%	1	2/8/2013 14:55

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

Date: 13-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Meth	nod: 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

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Date: 13-Feb-13

QC BATCH REPORT

			ivietno	d: SW801	•						
MBLK Sample ID:	FBLKS1-130205-67579				U	Inits: mg /	Kg	Analys	sis Date: 2/	/6/2013 11	:56 AN
Client ID:	Run	ID: FID-7_	130206A		Sec	qNo: 310	4153	Prep Date: 2/5/	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
ГРН (Oil Range)	U	3.4									
ΓPH (Diesel Range)	U	1.7									
Surr: 2-Fluorobiphenyl	2.092	0.10	3.33		0	62.8	60-135	0)		
LCS Sample ID:	FLCSS1-130205-67579				U	Inits: mg/	Kg	Analys	sis Date: 2/	/6/2013 12	2:19 PN
Client ID:	Run	ID: FID-7_	130206A		Sec	qNo: 310	4154	Prep Date: 2/5/	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
ГРН (Oil Range)	27.05	3.4	33.33		0	81.2	70-130	0)		
ΓPH (Diesel Range)	35.72	1.7	33.33		0	107	70-130	0)		
Surr: 2-Fluorobiphenyl	2.536	0.10	3.33		0	76.2	60-135	0)		
MS Sample ID:	1302018-01BMS				U	Inits: mg /	Kg	Analys	sis Date: 2/	/6/2013 01	1:06 PN
		ID: FID-7_ ′	130206A			Inits: mg/ qNo: 310	_	Analys Prep Date: 2/5		/6/2013 01 DF: 1	1:06 PN
Client ID:		ID: FID-7_	130206A SPK Val	SPK Ref Value		_	_	•			
Client ID:	Run				Sed	qNo: 310	4156 Control	Prep Date: 2/5/	/ 2013 %RPD	DF: 1 RPD	Qua
Client ID: Analyte FPH (Oil Range)	Run Result	PQL	SPK Val	Value	Sec	qNo: 310 / %REC	4156 Control Limit	Prep Date: 2/5/ RPD Ref Value	%RPD	DF: 1 RPD	Qua
Client ID: Analyte FPH (Oil Range)	Run Result 229.1	PQL 3.4	SPK Val	Value 219. 75.4	Sec	9No: 310 %REC 28.1	4156 Control Limit 70-130	Prep Date: 2/5/ RPD Ref Value	%RPD	DF: 1 RPD	Qual SEO
Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl	Run Result 229.1 80.52	PQL 3.4 1.7	SPK Val 33.23 33.23	Value 219. 75.4	.8 15 0	%REC 28.1 15.3	4156 Control Limit 70-130 70-130 60-135	Prep Date: 2/5/ RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual SEC SE
Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl	Result 229.1 80.52 2.284 1302018-01BMSD	PQL 3.4 1.7	SPK Val 33.23 33.23 3.32	Value 219. 75.4	.8 15 0	%REC 28.1 15.3 68.8	4156 Control Limit 70-130 70-130 60-135	Prep Date: 2/5/ RPD Ref Value	%RPD)) sis Date: 2/	DF: 1 RPD Limit	Qua SEC SE
Client ID: Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID:	Result 229.1 80.52 2.284 1302018-01BMSD	PQL 3.4 1.7 0.10	SPK Val 33.23 33.23 3.32	Value 219. 75.4	.8 15 0	%REC 28.1 15.3 68.8 Inits: mg/	4156 Control Limit 70-130 70-130 60-135	Prep Date: 2/5/ RPD Ref Value	%RPD)) sis Date: 2/	DF: 1 RPD Limit	Qua SEC SE
Analyte TPH (Oil Range) TPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID: Analyte	Result 229.1 80.52 2.284 1302018-01BMSD Run	PQL 3.4 1.7 0.10	SPK Val 33.23 33.23 3.32 130206A	Value 219. 75.4 SPK Ref	.8 45 0 U	%REC 28.1 15.3 68.8 Inits: mg/	4156 Control Limit 70-130 70-135 60-135 Kg 4157 Control	Prep Date: 2/5, RPD Ref Value 0 0 0 Analys Prep Date: 2/5, RPD Ref	%RPD sis Date: 2/ /2013 %RPD	DF: 1 RPD Limit /6/2013 01 DF: 1 RPD Limit	Qua SEC SE 1:29 PM
Client ID: Analyte FPH (Oil Range) FPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID:	Run Result 229.1 80.52 2.284 1302018-01BMSD Run Result	PQL 3.4 1.7 0.10 ID: FID-7_	SPK Val 33.23 33.23 3.32 130206A SPK Val	Value 219. 75.4 SPK Ref Value	.8 45 0 U Sec	%REC 28.1 15.3 68.8 Inits: mg/ qNo: 3106 %REC	4156 Control Limit 70-130 70-135 Kg 4157 Control Limit	Prep Date: 2/5/ RPD Ref Value 0 0 0 Analys Prep Date: 2/5/ RPD Ref Value	%RPD sis Date: 2/ //2013 %RPD 10	DF: 1 RPD Limit /6/2013 01 DF: 1 RPD Limit	Qua SEC SE
Client ID: Analyte FPH (Oil Range) FPH (Diesel Range) Surr: 2-Fluorobiphenyl MSD Sample ID: Client ID: Analyte FPH (Oil Range)	Result 229.1 80.52 2.284 1302018-01BMSD Run Result 207.2	PQL 3.4 1.7 0.10 ID: FID-7_ PQL 3.4	SPK Val 33.23 33.23 3.32 130206A SPK Val 33.24	Value 219. 75.4 SPK Ref Value 219. 75.4	.8 45 0 U Sec	%REC 28.1 15.3 68.8 Inits: mg/ qNo: 310 %REC -37.7	4156 Control Limit 70-130 70-135 Kg 4157 Control Limit 70-130	Prep Date: 2/5, RPD Ref Value 0 0 0 Analys Prep Date: 2/5, RPD Ref Value 229.1 80.52	%RPD sis Date: 2/ //2013 %RPD 10 2: 5.05	DF: 1 RPD Limit 76/2013 01 DF: 1 RPD Limit 30 30	Qua SEC SE 1:29 PM

Note:

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142225 Instrume	ent ID FID-9		Metho	d: SW801	5						
MBLK Sample ID: GBLKS-13	30205-R142225				U	Inits: mg /	Kg	Analys	is Date: 2/	5/2013 01	:02 PN
Client ID:	Run	ID: FID-9_1	30205A		Se	qNo: 310 :	3619	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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-13	30205-R142225				U	Inits: mg/	Kg	Analys	is Date: 2/	5/2013 12	:25 PN
Client ID:	Run	ID: FID-9_1	30205A		Se	qNo: 310 :	3613	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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				U	Inits: mg/	Kg	Analys	is Date: 2/	5/2013 12	:44 PI
Client ID:	Run	ID: FID-9_1	30205A		Se	qNo: 310 :	3616	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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: 1302018-0)4ZMS				U	nits: mg/	Kg	Analys	is Date: 2/	5/2013 04	:11 PN
Client ID:	Run	ID: FID-9_1	30205A		Se	qNo: 310 :	3628	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Gasoline Range Organics	0.8005	0.050	1		0	80	70-130	0			
Gasoline Range Organics Surr: 4-Bromofluorobenzene	0.8005 0.08728	0.050 0.0050	1 0.1		0	80 87.3	70-130 70-130	0			
Surr: 4-Bromofluorobenzene	0.08728				0		70-130	0		5/2013 04	:30 PI
Surr: 4-Bromofluorobenzene MSD Sample ID: 1302018-0	0.08728 04ZMSD		0.1		0 U	87.3	70-130 Kg	0		5/2013 04 DF: 1	:30 PI
Surr: 4-Bromofluorobenzene MSD Sample ID: 1302018-0 Client ID:	0.08728 04ZMSD	0.0050	0.1	SPK Ref Value	0 U	87.3 Inits: mg /	70-130 Kg	0 Analys			
	0.08728 04ZMSD Run	0.0050 ID: FID-9_1	0.1 30205A		0 U	87.3 Inits: mg/ qNo: 310 3	70-130 Kg 8632 Control	Analys Prep Date: RPD Ref	is Date: 2 /	DF: 1 RPD	:30 PM

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05	i	Method	: SW602	20					
MBLK	Sample ID: MBLKS1-020513-67584				Units: mg/	Kg	Analy	sis Date: 2	/8/2013 1	2:22 PM
Client ID:	Ru	un ID: ICPMS	05_130208A	<u>.</u>	SeqNo: 310	6572	Prep Date: 2/5	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:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05		Method:	SW602	0						
LCS	Sample ID: MLCSS1-020513-67584				U	Jnits: mg /	Kg	Analysis	Date: 2	/6/2013 0	5:15 PM
Client ID:	Ru	n ID: ICPMS	05_130206A		Se	qNo: 310 4	1261	Prep Date: 2/5/20	13	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			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67584	Instrument ID ICPMS05		Method:	SW6020					
MS Sample	ID: 1302079-01CMS			l	Jnits: mg/	Kg	Analysis Date: 2	2/6/2013 05	:22 PM
Client ID:	Run I	D: ICPMS	05_130206A	Se	eqNo: 310 4	4264	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			l	Jnits: mg/	Kg	Analysis Date: 2	2/7/2013 03	:38 PM
Client ID:	Run I	D: ICPMS	05_130207A	Se	eqNo: 310	5768	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		

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67584	Instrument ID ICPMS05		Method	SW6020						
MSD Sam	nple ID: 1302079-01CMSD				Units: mg/	Kg	Analysi	s Date: 2/	6/2013 05	:25 PM
Client ID:	Ru	n ID: ICPMS	05_130206A	S	eqNo: 310	4265	Prep Date: 2/5/2	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: 1302079-01CMSI)				Units: mg/	Kg	Analys	is Date: 2 /	7/2013 03	:40 PM
Client ID:		Run II	: ICPMS	05_130207	Ą	SeqNo: 310	5769	Prep Date: 2/5/2	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	6.71	8 76	75-125	44.25	4.05	25	
Sodium		1054	94	941.4	257.	4 84.7	75-125	1077	2.08	25	

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05		Method	: SW602	20						
DUP	Sample ID: 1302079-01CDUP				U	Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 05	:20 PN
Client ID:	Run	ID: ICPMS	05_130206A		Se	qNo: 310 4	4263	Prep Date: 2/5/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	
ron	7861	48	0		0	0	0-0	8371	6.29	25	
_ead	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	
Jranium	U	0.48	0		0	0		0.4497	0	25	
Zinc	27.76	0.48	0		0	0	0-0	30	7.75	25	
OUP	Sample ID: 1302079-01CDUP				U	Jnits: mg/	Kg	Analysi	s Date: 2/	6/2013 06	:38 PI
Client ID:	Run	ID: ICPMS	05_130206A		Se	qNo: 310 4	4419	Prep Date: 2/5/ 2	2013	DF: 10	0
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	
OUP	Sample ID: 1302079-01CDUP				U	Jnits: mg /	Kg	Analysi	s Date: 2 /	7/2013 03	:35 PI
Client ID:	Run	ID: ICPMS	05_130207A		Se	qNo: 310	5767	Prep Date: 2/5/2	2013	DF: 2	
			_	SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qua
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	g samples were analyzed in this batch		302082-01C 302082-09A	13	8020	82-03A	13	02082-06A			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67	7586	Instrument ID HG02		Method	d: SW74 7	1A					
MBLK	Sample ID:	GBLKS2-020513-67586				Units: µg/k	(g	Analys	is Date: 2	/5/2013 05	:08 PN
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2385	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		U	3.3								
.cs	Sample ID:	GLCSS2-020513-67586				Units: µg/h	(g	Analys	is Date: 2	/5/2013 05	:10 PN
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310 2	2386	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		342.7	3.3	333.3		0 103	85-115	0			
MS	Sample ID:	1302097-02AMS				Units: µg/k	(g	Analys	is Date: 2	/5/2013 05	:16 PI
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2389	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		318.7	3.4	344.1	2.74	13 91.8	85-115	0			
MSD	Sample ID:	1302097-02AMSD				Units: µg/h	(g	Analys	is Date: 2	/5/2013 05	:18 PI
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2390	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		311.1	3.4	336.7	2.74	13 91.6	85-115	318.7	2.39	20	
DUP	Sample ID:	1302097-02ADUP				Units: µg/k	(g	Analys	is Date: 2	/5/2013 05	:14 PI
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310 2	2388	Prep Date: 2/5/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		3.425	3.5	0		0 0		2.743	C	20	J
The followi	ng samples w	vere analyzed in this batch:	13	302082-01C 302082-09A 302082-18A	13	02082-03A 02082-12A 02082-21C		02082-06A 02082-15A			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICP7500		Method:	SW602	20					
MBLK	Sample ID: MBLKS1-020613-67614				Units: mg/	Kg	Analy	sis Date: 2	/9/2013 04	1:32 AM
Client ID:	Ru	ın ID: ICP750	0_130208A		SeqNo: 3108	8631	Prep Date: 2/6	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								

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67614	Instrument ID ICP7500		Method:	SW602	20						
LCS Sample	ID: MLCSS1-020613-67614				ι	Jnits: mg/ l	Kg	Analysis	s Date: 2	/9/2013 0	1:37 AM
Client ID:	Run	ID: ICP750	0_130208A		Se	qNo: 310 8	3632	Prep Date: 2/6/2	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			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67614	Instrument ID ICP7500		Method	SW6020					
MS Sa	ample ID: 1302140-04DMS				Units: mg/	Kg	Analysis Date:	2/9/2013 0	4:57 AM
Client ID:	Ru	n ID: ICP750	0_130208A	S	eqNo: 310 8	8636	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

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67614	Instrument ID ICP7500		Method:	SW6020						
MSD Sample	ID: 1302140-04DMSD			l	Jnits: mg/	Kg	Analysi	s Date: 2 /9	9/2013 05	:02 AM
Client ID:	Run II	: ICP750	0_130208A	Se	eqNo: 310 8	3637	Prep Date: 2/6/2	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	0
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

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICP7500		Method:	SW602	0						
DUP	Sample ID: 1302140-04DDUP				Ĺ	Jnits: mg /	Kg	Analysi	s Date: 2/	9/2013 04	:47 AM
Client ID:	Run II	D: ICP75 0	0_130208A		Se	qNo: 310 8	3634	Prep Date: 2/6/2	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				Ĺ	Jnits: mg /	Kg	Analysi	s Date: 2 /	11/2013 0	9:15 PM
Client ID:	Run II	D: ICPMS	03_130211A		Se	qNo: 310 9	9667	Prep Date: 2/6/ 2	2013	DF: 50	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%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 followin	g samples were analyzed in this batch:		302082-12A 302082-21C	13	020)82-15A	13	02082-18A			

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

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67581	Instrument ID SV-4		Metho	d: SW827	0						
MBLK Sample ID: \$	SBLKS1-130205-67581				L	Jnits: µg/l	(g	Analy	sis Date: 2	/5/2013 0 ²	1:55 PM
Client ID:	Ru	n ID: SV-4_1	30205B		Se	qNo: 310	2442	Prep Date: 2/5	/2013	DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%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-Tribromopher	nol 115.2	6.6	166.7		0	69.1	36-126	()		
Surr: 2-Fluorobiphenyl	135.8	6.6	166.7		0	81.5	43-125	()		
Surr: 2-Fluorophenol	116.8	6.6	166.7		0	70.1	37-125	()		
Surr: 4-Terphenyl-d14	161.5	6.6	166.7		0	96.9	32-125	()		
Surr: Nitrobenzene-d5	129.6	6.6	166.7		0	77.7	37-125	()		
Surr: Phenol-d6	120.6	6.6	166.7		0	72.4	40-125	()		
LCS Sample ID: S	SLCSS1-130205-67581				L	Jnits: µg/l	(g	Analy	sis Date: 2	/5/2013 02	2:15 PM
Client ID:	Ru	n ID: SV-4_1	30205B		Se	qNo: 310	2443	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	()		
2-Methylnaphthalene	153.8	6.6	166.7		0	92.3	50-120	()		
Benzo(a)pyrene	136.8	6.6	166.7		0	82.1	50-130	()		
Naphthalene	149.2	6.6	166.7		0	89.5	50-125	()		
Surr: 2,4,6-Tribromopher	nol 142.1	6.6	166.7		0	85.3	36-126	()		
Surr: 2-Fluorobiphenyl	150.5	6.6	166.7		0	90.3	43-125	()		
Surr: 2-Fluorophenol	117.9	6.6	166.7		0	70.8	37-125	()		
Surr: 4-Terphenyl-d14	170.9	6.6	166.7		0	103	32-125	()		
Surr: Nitrobenzene-d5	136.3	6.6	166.7		0	81.8	37-125	()		

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67581 Instru	ment ID SV-4		Metho	d: SW8270						
MS Sample ID: 1302050	0-06CMS			l	Jnits: µg/k	ζg	Analysi	s Date: 2 /	5/2013 05	:39 PN
Client ID:	Run ID	SV-4_1	30205B	Se	qNo: 310 2	2445	Prep Date: 2/5/2	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			SEC
2-Methylnaphthalene	5004	66	166.3	1528	2090	50-120	0			SEC
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			
Surr: 2,4,6-Tribromophenol	102.1	66	166.3	0	61.4	36-126	0			
Surr: 2-Fluorobiphenyl	176.2	66	166.3	0	106	43-125	0			
Surr: 2-Fluorophenol	89.44	66	166.3	0	53.8	37-125	0			
Surr: 4-Terphenyl-d14	126.1	66	166.3	0	75.9	32-125	0			
Surr: Nitrobenzene-d5	131.6	66	166.3	0	79.1	37-125	0			
Surr: Phenol-d6	101.7	66	166.3	0	61.2	40-125	0			
MSD Sample ID: 1302050	0-06CMSD			l	Jnits: µg/k	(g	Analysi	s Date: 2 /	5/2013 05	:59 PN
Client ID:	Run ID	: SV-4_1	30205B	Se	qNo: 310 2	2446	Prep Date: 2/5/2	2013	DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
		. «-	Of It val		701 NEO					Qua
1-Methylnaphthalene	4603	66	166.2	1316	1980	50-120	4344	5.78	30	
	4603 5426			1316 1528		50-120 50-120	4344 5004	5.78 8.09	30 30	SEC
2-Methylnaphthalene		66	166.2		1980					SEC SEC
2-Methylnaphthalene Benzo(a)pyrene	5426	66 66	166.2 166.2	1528	1980 2350	50-120	5004	8.09	30	SEC
2-Methylnaphthalene Benzo(a)pyrene	5426 104.2	66 66 66	166.2 166.2 166.2	1528 2.558	1980 2350 61.2	50-120 50-130	5004 123.5	8.09 17	30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene	5426 104.2 181.7	66 66 66	166.2 166.2 166.2 166.2	1528 2.558 0	1980 2350 61.2 109	50-120 50-130 50-125	5004 123.5 147.1	8.09 17 21.1	30 30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol	5426 104.2 181.7 113	66 66 66 66	166.2 166.2 166.2 166.2 166.2	1528 2.558 0 0	1980 2350 61.2 109 68	50-120 50-130 50-125 36-126	5004 123.5 147.1 102.1	8.09 17 21.1 10.1	30 30 30 30	SEC
2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl	5426 104.2 181.7 113 171.2	66 66 66 66 66	166.2 166.2 166.2 166.2 166.2	1528 2.558 0 0	1980 2350 61.2 109 68 103	50-120 50-130 50-125 36-126 43-125	5004 123.5 147.1 102.1 176.2	8.09 17 21.1 10.1 2.92	30 30 30 30 30	SEC
Surr: 2-Fluorobiphenyl Surr: 2-Fluorophenol	5426 104.2 181.7 113 171.2 87.26	66 66 66 66 66 66	166.2 166.2 166.2 166.2 166.2 166.2	1528 2.558 0 0 0	1980 2350 61.2 109 68 103 52.5	50-120 50-130 50-125 36-126 43-125 37-125	5004 123.5 147.1 102.1 176.2 89.44	8.09 17 21.1 10.1 2.92 2.47	30 30 30 30 30 30 30	SEC

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

Note:

The following samples were analyzed in this batch:

1302082-01D

1302082-21D

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5		Method	: SW826	60					
MBLK Sample ID: V	BLKS1-020413-R142091				Units: µg/l	K g	Analy	/sis Date: 2	/4/2013 0	2:20 PM
Client ID:	Run II	: VOA5_	130204A		SeqNo: 310	1239	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-Bromofluorobenze	ene 46.3	0	50		0 92.6	73-126		0		
Surr: Dibromofluorometha	ane 48.2	0	50		0 96.4	71-128		0		
Surr: Toluene-d8	51.1	0	50		0 102	73-127	•	0		

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5		Metho	d: SW8260						
LCS Sample ID: Y	VLCSS1-020413-R142091				Units: µg/k	(g	Analys	is Date: 2	2/4/2013 1	2:48 PM
Client ID:	Run II	D: VOA5_	130204A	S	eqNo: 310	1238	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	e-d4 45.09	0	50	0	90.2	70-128	0			
Surr: 4-Bromofluorobenz	zene 48.08	0	50	0	96.2	73-126	0			
Surr: Dibromofluorometh	nane 49.73	0	50	0	99.5	71-128	0			
Surr: Toluene-d8	50.18	0	50	0	100	73-127	. 0			

Client: Navajo Refining Company

Work Order: 1302082

Project:

Note:

RO Discharge Sampling

Batch ID: R142091 Instrument ID VOA5 Method: SW8260

MS Samp	ole ID: 1302079-15	AMS				Units: µg/l	_	Analy	/sis Date: 2	2/4/2013 0	4:14 PN
Client ID:		Run II	D: VOA5_	130204A	9	SeqNo: 310	1244	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethar	ne	45.09	5.0	50	0	90.2	79-124		0		
1,1,2,2-Tetrachloroe	ethane	40.5	5.0	50	0	81	75-123		0		
1,1,2-Trichloroethar	ne	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	е	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-Dichlord	oethane-d4	41.91	0	50	0	83.8	70-128		0		
Surr: 4-Bromofluo	orobenzene	47.54	0	50	0	95.1	73-126		0		
Surr: Dibromofluo	oromethane	48.39	0	50	0	96.8	71-128		0		
Surr: Toluene-d8		46.26	0	50	0	92.5	73-127		0		

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142091	Instrument ID VOA5	Method:	SW8260
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MSD Sample ID: 1302079-1	5AMSD			ı	Units: µg/l	(g	Analysi	is Date: 2/	4/2013 04	:37 PN
Client ID:	Run II	D: VOA5_	130204A	Se	eqNo: 310	1245	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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:

Note:

1302082-01A 1302082-21A

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Metho	d: SW82 6	60						
MBLK Sample ID: V	BLKW-130205-R142161				Units:	μg/L		Analy	/sis Date: 2	/5/2013 1	0:49 AM
Client ID:	Run II	D: VOA4_	130205A		SeqNo:	3102	121	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%R	EC	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 9	4.3	71-125		0		
Surr: 4-Bromofluorobenze	ene 47.73	1.0	50		0 9	5.5	70-125		0		
Surr: Dibromofluorometh	ane 50.94	1.0	50		0 1	02	74-125		0		
Surr: Toluene-d8	49.25	1.0	50		0 9	8.5	78-123		0		

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Method	: SW8260	0						
LCS Sample ID:	VLCSW-130205-R142161				U	Jnits: μg/L	_	Analy	sis Date: 2	2/5/2013 0	9:37 AM
Client ID:	Run	ID: VOA4_	130205A		Sec	qNo: 310 2	2119	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		
Surr: 1,2-Dichloroethane	e-d4 44.33	1.0	50		0	88.7	71-125		0		
Surr: 4-Bromofluoroben:	zene 50.11	1.0	50		0	100	70-125		0		
Surr: Dibromofluorometi	hane 49.8	1.0	50		0	99.6	74-125		0		
Surr: Toluene-d8	48.26	1.0	50		0	96.5	78-123		0		

Client: Navajo Refining Company

Work Order: 1302082

Surr: Dibromofluoromethane

Surr: Toluene-d8

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Metho	d: SW8260)						
LCSD Sample ID: V	/LCSDW-130205-R142161				U	nits: µg/L	_	Analysi	s Date: 2 /9	5/2013 10	:01 AM
Client ID:	Run II	D: VOA4_	130205A	;	Sec	No: 310	2120	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	e-d4 44.11	1.0	50	(0	88.2	71-125	44.33	0.493	20	
Surr: 4-Bromofluorobenz	zene 51.13	1.0	50	(0	102	70-125	50.11	2.03	20	

48.61

48.17

1.0

1.0

50

50

0

0

97.2

96.3

74-125

78-123

49.8

48.26

2.42

0.187

20

20

Client: Navajo Refining Company

Work Order: 1302082

Surr: Toluene-d8

Project: RO Discharge Sampling

Batch ID: R142161	Instrument ID VOA4		Method	: SW826	0						
MS Sample ID:	1302056-09AMS				U	Inits: μg/L		Analys	sis Date: 2	/5/2013 1	1:14 AM
Client ID:	Ru	ın ID: VOA4 _	130205A		Se	qNo: 310 2	2122	Prep Date:		DF: 1 (0
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	C)		
1,1,2,2-Tetrachloroethane	439.8	10	500		0	88	74-123	C)		
1,1,2-Trichloroethane	477.2	10	500		0	95.4	80-120	C)		
1,1-Dichloroethane	459.9	10	500		0	92	80-120	C)		
1,1-Dichloroethene	525.1	10	500		0	105	80-120	C)		
1,2-Dibromoethane	510.6	10	500		0	102	80-120	C)		
1,2-Dichloroethane	487.4	10	500		0	97.5	79-120	C)		
Benzene	485.1	10	500		0	97	80-120	C)		
Carbon tetrachloride	581.9	10	500		0	116	79-120	C)		
Chloroform	469.7	10	500		0	93.9	80-120	C)		
Ethylbenzene	475	10	500		0	95	80-120	C)		
Methylene chloride	473.5	20	500		0	94.7	75-125	C)		
Tetrachloroethene	524.4	10	500		0	105	80-120	C)		
Toluene	476.7	10	500		0	95.3	80-121	C)		
Trichloroethene	544.7	10	500		0	109	80-120	C)		
Vinyl chloride	495.6	10	500		0	99.1	75-125	C)		
Xylenes, Total	1405	10	1500		0	93.7	80-124	C)		
Surr: 1,2-Dichloroethane	e-d4 449.3	10	500		0	89.9	71-125	C)		
Surr: 4-Bromofluorobenz	zene 505	10	500		0	101	70-125	C)		
Surr: Dibromofluorometh	nane 495.3	10	500		0	99.1	74-125	C)		

482.7

10

500

0

96.5

78-123

0

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142161 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1302056-09	9AMSD				Units: µg/I	L	Analysi	is Date: 2/	5/2013 11	:38 AN
Client ID:	Run II	D: VOA4_	130205A	S	eqNo: 310	2123	Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67	Instrument ID UV-2450		Method	: SW901	4	(Dissolve	e)			
MBLK	Sample ID: WBLKS1-020813-67667				Units: mg	/Kg	Analysis D	ate: 2/	/8/2013 05	:30 PN
Client ID:	Run ID): UV-245	0_130208F		SeqNo: 310	7315	Prep Date: 2/8/2013	3	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %	RPD	RPD Limit	Qua
Cyanide	U	2.0								
LCS	Sample ID: WLCSS1-020813-67667				Units: mg	/Kg	Analysis D	ate: 2 /	/8/2013 05	:30 PN
Client ID:	Run IE): UV-245	0_130208F		SeqNo: 310	7316	Prep Date: 2/8/2013	3	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 D	ate: 2/	/8/2013 05	:30 PN
Client ID:	Run ID): UV-245	0_130208F		SeqNo: 310	7332	Prep Date: 2/8/2013	3	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %	RPD	RPD Limit	Qua
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 D	ate: 2/	/8/2013 05	:30 PN
Client ID:	Run IE): UV-245	0_130208F		SeqNo: 310	7331	Prep Date: 2/8/2013	3	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value %	RPD	RPD Limit	Qua
Cyanide	8.287	1.9	9.364	0.35	52 84.7	75-125	0			
The following	ng samples were analyzed in this batch:	13	802082-01C 802082-09B 802082-18B	13	02082-03B 02082-12B 02082-21C		02082-06B 02082-15B			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67763	Instrument ID ICS3K2		Metho	d: E300			(Dissolve)			
MBLK Sample ID:	WBLKS1-67763				U	nits: mg/	Kg	Analysi	s Date: 2	/11/2013 1	2:42 PM
Client ID:	Run	ID: ICS3K2	_130211A		Sec	No: 311	0269	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				U	nits: mg/	Kg	Analysi	s Date: 2	/11/2013 ()1:03 PM
Client ID:	Run	ID: ICS3K2	_130211A		Sec	No: 311	0270	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				U	nits: mg/	Kg	Analysi	s Date: 2	/11/2013 ()8:11 PM
Client ID: RO-SB-1 (35)	Run	ID: ICS3K2	_130211A		Sec	No: 311	0281	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	39.2	26	101	75-125	0			
Fluoride	27.44	1.0	19.93	4.8		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	5.9	-4.16	75-125	0			SO
Surr: Selenate (surr)	56	1.0	49.82		0	112	80-120	0			

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: 67763	Instrument ID IC	S3K2		Method	d: E300		(Dissolve))			
MSD Sample I	D: 1302082-21CMSD					Units: mg/	Kg	Analysi	s Date: 2 /	11/2013 0	8:33 PM
Client ID: RO-SB-1 (35)	Rur	ID: ICS3K2	_130211A	S	eqNo: 311	0282	Prep Date: 2/10	/2013	DF: 1	
Analyte	I	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
Surr: Selenate (surr)		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		

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

Batch ID: R142356	Instrument ID Balance1		Method	SW355	0		(Dissolve	9)			
DUP Sample II	D: 1302082-16ADUP				Un	its: wt %)	Analysi	is Date: 2/	7/2013 03	3:15 PM
Client ID: RO-SB-1 (27)	Run I	D: BALAN	ICE1_130207	C	Seq	No: 310	6553	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:	13 13 13	302082-01C 302082-04A 302082-07A 302082-10A 302082-13A	13 13 13	02082 02082 02082	2-02A 2-05A 2-08A 2-11A 2-14A	13 13 13	02082-03A 02082-06A 02082-09A 02082-12A 02082-15A			

1302082-16A

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302082

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: F	R142515	Instrument ID Balance	1	Metho	d: SW355	0	((Dissolve	e)			
DUP	Sample II	D: 1302140-04DDUP				U	nits: wt %)	Analysi	s Date: 2 /	8/2013 02	:55 PN
Client ID:		R	un ID: BALAN	NCE1_13020	8C	Sec	No: 310 8	8447	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Mo	oisture	10.25	0.010	0		0	0	0-0	10.21	0.434	20	
DUP	Sample II	D: 1302140-05DDUP				U	nits: wt %)	Analysi	s Date: 2 /	8/2013 02	2:55 PN
Client ID:		R	un ID: BALAN	NCE1_13020	8C	Sec	No: 310 8	3467	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Mo	oisture	9.649	0.010	0		0	0	0-0	9.526	1.29	20	

ALS Environmental Date: 13-Feb-13

Client: Navajo Refining Company **QUALIFIERS,** Project: RO Discharge Sampling ACRONYMS, UNITS

WorkOrder: 1302082

wt%

0 110	
<u>Qualifier</u>	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
Units Reported	Description
μg/Kg-da	ry Micrograms per Kilogram - Dry weight corrected
mg/Kg-d	ry Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time	Received:	<u>02-F€</u>	eb-13 0	<u>9:30</u>	
Work Order:	1302082			Received b	y:	<u>JBA</u>			
Checklist comp	eSignature	04-Feb		Reviewed by:	Sonia X)est			05-Feb-13
Matrices: Carrier name:	SOIL FedEx	·							'
Shipping contain	iner/cooler in good condition?	Y	es 🗸	No 🗌	Not Pre	sent			
Custody seals i	ntact on shipping container/coole	er? Y	es 🗸	No 🗌	Not Pre	sent			
Custody seals i	ntact on sample bottles?	Y	es \square	No 🗌	Not Pres	sent	✓		
Chain of custoo	ly present?	Y	es 🗸	No 🗆					
Chain of custoo	ly signed when relinquished and	received? Y	es 🗸	No 🗆					
Chain of custoo	ly agrees with sample labels?	Y	es 🗸	No 🗌					
Samples in pro	per container/bottle?	Y	es 🗸	No 🗆					
Sample contain	ners intact?	Y	es 🗸	No 🗆					
Sufficient samp	le volume for indicated test?	Y	es 🗹	No 🗌					
All samples rec	eived within holding time?	Y	es 🗸	No 🗌					
Container/Tem	p Blank temperature in compliand	ce? Y	es 🗸	No 🗆					
Temperature(s))/Thermometer(s):	0.6	C U/C		00	<u>)5</u>			
Cooler(s)/Kit(s)	:	467	<u>'2</u>						
Date/Time sam	ple(s) sent to storage:	2/4	/13 10:0	<u>10</u>					
Water - VOA vi	als have zero headspace?	Y	es	No 🗆	No VOA via	ls subm	itted	/	
Water - pH acc	eptable upon receipt?	Y	es \square	No 🗌	N/A 🔽				
pH adjusted?		_ Y	es 🗌	No 🗌	N/A ✓				
pH adjusted by		_							
Login Notes:	A Trip Blank sample was re for VOC 8260.	ceived but was not listed	on the	chain of custody	The labora	tory ana	ilyzed t	his sample	
Client Contacte	d:	Date Contacted:		Person	Contacted:				
Contacted By:		Regarding:							
Comments:									
CorrectiveActio	n:							ene r	2000 1 of 1

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Environmental

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

Chain of Custody Form

COC ID: 41191

1302082

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

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					S Project	07/11/27 1/11/00/11	ger:												
	tomer Information	31 PSR 4870		Project In					Tiati i									-	
Purchase Order			Project N	Name ROT		7.	/S	philons	AV	<u> </u>	(82	<u>60)</u>	M	<u> </u>	<u>G</u>	Scis	٢		
Work Order		Р	roject Nu	mber 125	<u>3823</u>	U			BC	RO	18	015	<u>H)</u>						
Company Name	Havajo Retining Co	Bil	l To Com	pany Nave	io Re	Lini	ng (Cs.	c \[XO	ŠÝ	015.	4)					-	
Send Report To			Invoice		ext C				D C	RO)O\5							
Address			***	and the second					EL	LS	100			(04	Ma) G1	<u>. (</u>	100	
Audress	501 East Main		Auc	Iress 501	EAS	+ >	a.	n	F ~~	otal	M					00)			——— ते-
City/State/Zip	Artesia, NM		City/Stat	e/Zip	sa, t	M			G);45						1700			
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e-Mail Address			-Mail Add	1.1.1.1.1.1					J (- -401					***************************************			-	
No.	Sample Description	C	ate	Time	Matrix	∢ P	res.	# Bottles	A	B	С	D	E	F	G	н	1	J	Hold
1 Ro-S	B-1 (1)	1/31	113	1145	551	-	,,,,,,,,	5	X		X	X	X	X		X	×	X	-
2 RO-5	B-1 (3)	11	(1150	1		١	t									火	-	
3 Ro-5				1200			\	3				-		1		X	×	X	
4 RO-5	56-1 (7)			1230				*****									ゝ	180	
5 RO-	SB-1 (9)			1245				1									Х	羧	
6 RO-S	B-1 (10)	1/31	/13	1250				3						X		X	Х	×	
7 RO-5	B-1 (11)	2/1	13	0953				Ì									Х		
8 RO-5	5B-1 (13)		,	0953				1	·								Υ.		
9 RO-5	B-1 (15)			0957				3						Х		Х	Х	\overline{A}	
	58-1 (17)			0747			1										Х	Line Address	
Sampler(s): Please Pr	rint & Sign		Shipm	ent Method:	- 1	• •		naround '				Other			Re	sults Du	e Date:	1	
1111						STD	10 Wk	Days L	5 Wk D		2 W	k Days	24	4 Hour					
Relinquished by:	9e/sen 7/1/1	Time:	00	Received by	St		31.	3/130	Note	5	, T	AT.),3	تابود	J M	etals	Field	1 E	Hero
Relinquished by:	Date:	Time:		Received by (Labo	ratory):	- i			Cor	oler Ten) QC		ege: (Cl	heck Bo	x Belov	vs)			-1 -3m - 1 - 3
Logged by (Laboratory):	Date:	Time:		Checked by (Labo		enteriore.					ĹΕ		vel II:				[
เราหนึ่งการที่ (กรถอเลเดเล้):	Date:	i ime:		enecked by (Labo	iawy);						-				C + Rav 6 CLP-				·········
Preservative Key: 1	I-HCL 2-HNO3 3-H2SO4 4-NaO	H 5-Na2	S2O3 6	-NaHSO4 7-0	ther 8	I-4 deg	rees	C 9-50	35			_	her:		U CLF	LIKU			

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Chain of Custody Form

Page 2 of 3

COC ID: 41199

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Fort Collins, CO +1 970 490 1511

Middletown, PA + 1 717 944 5541

York, PA + 1 717 505 5280

Environmental Work Order #: ALS Project Manager: Parameter/Method Request for Analysis **Customer Information Project Information** Project Name Purchase Order MW CHO List **Project Number** Work Order Company Name Maurio Refinina Co **Bill To Company** Send Report To Invoice Attn. a) GW List Address Address DOI Fast Main G City/State/Zip City/State/Zip Phone Phone Fax Fax e-Mail Address e-Mail Address B C D E F G Hold Sample Description Time Matrix Pres. # Bottles No. Date **3**50 2/1/13 GAH) 2 X (I,O)1018 3 (21) Χ (23 1018 5 (15 1018 6 (27 1010 99 7 1010 3 8 (প্রভ) 1010 31 × 1005 10 1005 Sampler(s): Please Print & Sign Shipment Method: Required Turnaround Time: Other Results Due Date: STD 10 Wk Days 5 Wk Days 24 Hour 2 Wk Days Time: Received by: Relinquished by 1200 259856v QC Package: (Check Box Below) Relinquished by: Received by (Laboratory): Time: Cooler Temp. 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-H2SQ4 4-NaQH 5-Na2S2Q3 6-NaHSQ4 7-Other 8-4 degrees C 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 3 of 3

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Houston, TX

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Spring City, PA

South Charleston, WV +1 304 356 3168 York, PA

+1 717 505 5280

coc ID: 72314

Environmental ALS Project Manager: ALS Work Order # **Customer Information Project Information** Parameter/Method Request for Analysis Purchase Order Α VCC (8260) NW GW List Project Name RO Discharge/Sampling Work Order В **Project Number** 128823 GRO (8015M) Company Name Navajo Refining Company Bill To Company Navajo Refining Company C DRO (8015M) Send Report To D Robert Combs Invoice Attn Robert Combs ORO (8015M) E 501 East Main 501 East Main LL SVOC (8270) NM GW List Address Address Total Metals (6020/7000) RCRA 8 G City/State/Zip Artesia, NM 88211 City/State/Zip Dissolved Metals (6020/7000) RCRA 8 Artesia, NM 88211 Н (575) 748-6733 Phone Phone (575) 748-6733 ranide + Anions 1 (575) 746-5421 Fax Moisture Fax (575) 746-5421 Radiuh J Fine-mrint (PIANO/Sc Grav Sim Dist) e-Mail Address e-Mail Address Н Ε G J Hold No. Sample Description Date Time Matrix Pres. # Bottles A В C F X 211/13 5 Χ X 50:1 X 10 05 X X X 3 4 6 8 9 10 Sampler(s) Please Print & Sign Shipment Method Required Turnaround Time: (Check Box) Results Due Date: Other ☐ 5 WK_Qays 2 MK Days 24 Hour Time: Received by 10 Day TAT. Dissolved Metals Field Filtered 1700 Received by (Laboratory): Date: Time: QC Package: (Check One Box Below) Cooler ID Cooler Temp, Level II Std QC TRRP CheckList Date: Logged by (Laboratory): Checked by (Laboratory): Level III Std QC/Raw Data TRRP Level IV Time: Level IV SW846/CLP Preservative Key: 1-HCl 2-HNO 3-H₂SO₄ 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035 Other / EDD

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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Form 0215

Manning Min

1	From Date 7/1/42	4 Express Package Service *Tomas locations. NOTE: Service order has changed, Please solect carefully.	Packagas up to 150 lbs. For packagas over 150 lbs. use the Fedex Express Freight US Airbill.
	Sender's Ecc Resection Phone 281 787-1234	Next Business Day 2 gr 3 Busines FedEx First Overnight Entert in thurshes morting delivery to solver Uncations, ligid with prints will be delivered on the other part of the	М.
	Company A G C A D S D S .		tempon." Thursday shipments Monday unless SATURDAY
	Address Copy, Floor, Surva Roard Dept, Floor, Surva Roard	FedEx Standard Overnight Sozurday Delivery NoT available. FedEx Expres Third business afternoon. Sozurday Delivery NoT available.	s Saver 101 syallable.
2	City State ZIP ZIP ZIV	5 Packaging *Declared visible limit \$500. FedEx Envelope* FedEx Pak* FedEx Box	FedEx Other
3	To Recipient's Phone 281 530-5656	Special Handling and Delivery Signature Options SATURDAY Delivery NOT available for Feets Standard Overnight Fedts 20sy A.M., or Fedts Escress Sever.	
	Company ALS LABORATORY GROUP HOLD Weekday fedSalocations address	No Signature Required Package may be left verticat obtaining a signature tor delivery. Does this shipment contain dangerous goods?	indirect Signature If no one is available at recipients address, someone at a naighboring address may sign for delivery. For residential deliveries only. Fee applies
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ALS Environmental

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Date: 2-1-2	C/ Time:		- 3 %
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Company:	NCADIR	<u> </u>	
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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 ÎÎ.

Sonie West

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

Sincerely,

Electronically approved by: Sonia We

Sonia West

Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302213

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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	

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling Case Narrative

Work Order: 1302213

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

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Method: SW8015M			Prep: SW35	41 / 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 - SW8015	С	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				50A / 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		Meth	od: SW8270		Prep: SW35	41 / 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

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

Date: 18-Feb-13

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	1			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: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U	0.75	2.50	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Method: SW3550	l			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.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1302213-02 **Sample ID:** MW-118 (3)

Collection Date: 2/4/2013 09:30 AM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

Date: 18-Feb-13

Work Order: 1302213

MOISTURE Method: SW3550 Analyst: KAH 2/13/2013 14:45 **Percent Moisture** 22.9 0.010 0.0100 wt%

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	1	Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	7.39		0.42	5.12	μg/Kg-dry	1	2/13/2013 14:00
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.85	2.83	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	34.8		0.010	0.0100	wt%	1	2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: \$W3550
 Analyst: KAH

 Percent Moisture
 29.3
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1302213-05 **Sample ID:** MW-118 (9)

Collection Date: 2/4/2013 10:00 AM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

Date: 18-Feb-13

Work Order: 1302213

MOISTURE Method: SW3550 Analyst: KAH 2/13/2013 14:45 **Percent Moisture** 30.4 0.010 0.0100 wt%

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	1	Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	3.51	J	0.41	5.00	μg/Kg-dry	1	2/13/2013 14:02
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.80	2.67	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	29.3		0.010	0.0100	wt%	1	2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-118 (12)
 Lab ID: 1302213-07

Collection Date: 2/4/2013 02:45 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 28.9
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-118 (14)
 Lab ID: 1302213-08

Collection Date: 2/4/2013 02:47 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 39.4
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	1.30	J	0.38	4.63	μg/Kg-dry	1	2/13/2013 14:04
METALS		Meth	od: 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.75	2.51	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	27.2		0.010	0.0100	wt%	1	2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 30.7
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 28.0
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company
Project: RO Discharge Sampling

Sample ID: MW-118 (20)

Collection Date: 2/4/2013 02:52 PM

Date: 18-Feb-13

Work Order: 1302213

Lab ID: 1302213-12

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	0.827	J	0.34	4.13	μg/Kg-dry	1	2/13/2013 14:06
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.69	2.29	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 26.9
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-118 (24)
 Lab ID: 1302213-14

Collection Date: 2/4/2013 02:37 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 21.7
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	hod: SW8015M		Prep: SW35	41 / 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 - SW8019	5C	Met	hod: 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		Met	hod: SW7471A		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	2.80	J	0.34	4.23	μg/Kg-dry	1	2/13/2013 14:08
METALS		Met	hod: SW6020		Prep: SW30	50A / 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		Met	hod: SW8270		Prep: SW35	41 / 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

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual MI	Report L 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: SW8	3260			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: SW:	3550			Analyst: KAH
Percent Moisture	21.0	0.0	0.0100	wt%	1	2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	thod: SW8015M		Prep: SW35	41 / 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 - SW8015	С	Met	thod: SW8015				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		Met	thod: SW7471A		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	20.7		0.35	4.36	μg/Kg-dry	1	2/13/2013 14:10
METALS		Met	thod: SW6020		Prep: SW30	50A / 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		Met	thod: SW8270		Prep: SW35	41 / 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

Client: Navajo Refining Company

Project: P.O. Discharge Sampling

Project: RO Discharge Sampling **Sample ID:** MW-119 (1)

Collection Date: 2/4/2013 11:05 AM

Work Order: 1302213

Lab ID: 1302213-16

Date: 18-Feb-13

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		Meth	nod: 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		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	22.3		0.010	0.0100	wt%	1	2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-119 (3)
 Lab ID: 1302213-17

Collection Date: 2/4/2013 11:15 AM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.9
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Metl	nod: SW7471A		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	7.31		0.37	4.50	μg/Kg-dry	1	2/13/2013 13:46
METALS		Metl	nod: SW6020		Prep: SW30	50A / 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)		Metl	nod: 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		Metl	nod: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.71	2.36	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Metl	nod: SW3550				Analyst: KAH
Percent Moisture	23.0		0.010	0.0100	wt%	1	2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302213

 Sample ID:
 MW-119 (7)
 Lab ID:
 1302213-19

 Collection Date:
 2/4/2013 11:30 AM
 Matrix:
 SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.4
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-119 (9)
 Lab ID: 1302213-20

Collection Date: 2/4/2013 11:35 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 17.9
 0.010
 0.0100
 wt%
 1
 2/13/2013 14:45

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-119 (10)

Work Order: 1302213 **Lab ID:** 1302213-21 **Collection Date:** 2/4/2013 11:45 AM Matrix: SOIL

Date: 18-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	ı	Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	9.12		0.38	4.69	μg/Kg-dry	1	2/13/2013 14:12
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.77	2.58	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	24.8		0.010	0.0100	wt%	1	2/13/2013 15:25

Client: Navajo Refining Company

Project: RO Discharge Sampling

Lab ID: 1302213-22 **Sample ID:** MW-119 (12)

Collection Date: 2/4/2013 04:05 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

Date: 18-Feb-13

Work Order: 1302213

MOISTURE Method: SW3550 Analyst: KAH 2/13/2013 15:25 **Percent Moisture** 14.7 0.010 0.0100 wt%

Client: Navajo Refining Company

Project:RO Discharge SamplingWork Order:1302213Sample ID:MW-119 (14)Lab ID:1302213-23

 Sample ID:
 MW-119 (14)
 Lab ID: 13022

 Collection Date:
 2/4/2013 04:06 PM
 Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 15.2
 0.010
 0.0100
 wt%
 1
 2/13/2013 15:25

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-119 (15)

Collection Date: 2/4/2013 04:08 PM

Date: 18-Feb-13

Work Order: 1302213

Lab ID: 1302213-24

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471	1	Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	6.11		0.37	4.62	μg/Kg-dry	1	2/13/2013 14:14
METALS		Meth	nod: SW6020		Prep: SW30	50A / 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)		Meth	nod: 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		Meth	nod: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.77	2.58	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	26.0		0.010	0.0100	wt%	1	2/13/2013 15:25

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: \$W3550
 Analyst: KAH

 Percent Moisture
 22.8
 0.010
 0.0100
 wt%
 1
 2/13/2013 15:25

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.0
 0.010
 0.0100
 wt%
 1
 2/13/2013 15:25

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-119 (20)

Collection Date: 2/4/2013 04:11 PM

Date: 18-Feb-13

Work Order: 1302213

Lab ID: 1302213-27

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471A	•	Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	5.01		0.36	4.39	μg/Kg-dry	1	2/13/2013 14:16
METALS		Meth	od: SW6020		Prep: SW30	50A / 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)		Meth	od: 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		Meth	od: SW9014		Prep: SW90	10C / 2/14/13	Analyst: EDG
Cyanide	U		0.72	2.40	mg/Kg-dry	1	2/14/2013 15:00
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	20.7		0.010	0.0100	wt%	1	2/13/2013 15:25

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

Date: 18-Feb-13

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 19.7
 0.010
 0.0100
 wt%
 1
 2/13/2013 15:25

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302213

 Sample ID: MW-119 (24)
 Lab ID: 1302213-29

Collection Date: 2/4/2013 04:18 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 18-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.2
 0.010
 0.0100
 wt%
 1
 2/13/2013 15:25

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Meth	od: SW8015M		Prep: SW35	41 / 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 - SW80150	;	Meth	od: 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		Meth	od: SW7471A		Prep: SW74	71A / 2/13/13	Analyst: OFO
Mercury	2.25	J	0.34	4.16	μg/Kg-dry	1	2/13/2013 14:22
METALS		Meth	od: SW6020		Prep: SW30	50A / 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		Meth	od: SW8270		Prep: SW35	41 / 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

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

Date: 18-Feb-13

Matrix: SOIL

Analyses	Result	Qual MDL	Report Dilution MDL Limit Units 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: SW82	60			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	0.6	2 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	0.6	2 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	0.8	7 6.2	μg/Kg-dry	1	2/8/2013 14:57
1,2-Dichloroethane	U	0.7	4 6.2	μg/Kg-dry	1	2/8/2013 14:57
Benzene	U	0.7	4 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	0.8	7 6.2	μg/Kg-dry	1	2/8/2013 14:57
Trichloroethene	U	2.	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	0.3	4 1.13	mg/Kg-dry	1	2/13/2013 21:29
Nitrogen, Nitrate (As N)	U	0.3	4 1.13	mg/Kg-dry	1	2/13/2013 21:29
Nitrogen, Nitrite (As N)	U	0.3	4 1.13	mg/Kg-dry	1	2/13/2013 21:29
Sulfate	495	2.	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: SW35	50			Analyst: KAH
Percent Moisture	19.3	0.01		wt%	1	2/13/2013 15:25

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

Date: 18-Feb-13

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

Date: 18-Feb-13

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 67694	Instrument ID FID-7		Method	d: SW801	5M						
MBLK Sample ID:	FBLKS1-130208-67694				l	Jnits: mg/	Kg	Analysi	s Date: 2/	11/2013 1	1:06 AM
Client ID:	Run ID:	FID-7	7_130211A		Se	qNo: 310 9	9863	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQI	L SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	U	3.4	4								
TPH (Diesel Range)	U	1.	7								
Surr: 2-Fluorobiphenyl	2.223	0.10	0 3.33		0	66.8	60-135	0			
LCS Sample ID:	FLCSS1-130208-67694				Ĺ	Jnits: mg/	Kg	Analysi	s Date: 2/	11/2013 1	1:30 AM
Client ID:	Run ID:	FID-7	7_130211A		Se	qNo: 310 9	9864	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQI	L SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	26.93	3.4	4 33.33		0	80.8	70-130	0			
TPH (Diesel Range)	32.23	1.	7 33.33		0	96.7	70-130	0			
Surr: 2-Fluorobiphenyl	2.189	0.10	0 3.33		0	65.7	60-135	0			
MS Sample ID:	1302130-07CMS				Ĺ	Jnits: mg/	Kg	Analysi	s Date: 2/	11/2013 0	2:14 PM
Client ID:	Run ID:	FID-7	7_130211A		SeqNo: 3109869		9869	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQ	L SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	30.4	3.4	4 33.3	0.92	4	88.5	70-130	0			
TPH (Diesel Range)	33.5	1.	7 33.3	0.0485	5	100	70-130	0			
Surr: 2-Fluorobiphenyl	2.122	0.10	0 3.327		0	63.8	60-135	0			
MSD Sample ID:	1302130-07CMSD				Ĺ	Jnits: mg/	Kg	Analysi	s Date: 2/	11/2013 0	2:38 PM
Client ID:	Run ID:	FID-7	7_130211A		SeqNo: 3109870		Prep Date: 2/8/2013		DF: 1		
Analyte	Result	PQI	L SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Oil Range)	29.07	3.4	4 33.3	0.92	:4	84.5	70-130	30.4	4.49	30	
TPH (Diesel Range)	32.78	1.	7 33.3	0.0485	5	98.3	70-130	33.5	2.19	30	
Surr: 2-Fluorobiphenyl	2.058	0.10	0 3.327		0	61.9	60-135	2.122	3.09	30	
The following samples v	vere analyzed in this batch:		1302213-01C 1302213-30C	13	022	13-15C	13	02213-16C			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142598 Instrume	nt ID FID-9		Metho	d: SW80 1	5							
MBLK Sample ID: GBLKS-13	80208-R142598				ι	Jnits: mg/	Kg	Analysis Date: 2/8/2013 11:2				
Client ID:	Run	n ID: FID-9_130208A			SeqNo: 3110069		Prep Date:		DF: 1	Qual 0:51 AN		
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua	
Gasoline Range Organics	U	0.050										
Surr: 4-Bromofluorobenzene	0.08244	0.0050	0.1		0	82.4	70-130	()			
LCS Sample ID: GLCSS-13	0208-R142598				ι	Jnits: mg /	Kg	Analys	sis Date: 2/	8/2013 10	:51 AN	
Client ID: Run ID:		ID: FID-9_	130208A		Se	qNo: 311	0067	Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua	
Gasoline Range Organics	1.066	0.050	1		0	107	70-130	()			
Surr: 4-Bromofluorobenzene	0.08679	0.0050	0.1		0	86.8	70-130	()			
LCSD Sample ID: GLCSDS-	130208-R142598				ι	Jnits: mg /	Kg	Analys	sis Date: 2/	8/2013 11	:10 AN	
Client ID:	Run	ID: FID-9_	130208A		Se	qNo: 311	0068	Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua	
Gasoline Range Organics	1.046	0.050	1		0	105	70-130	1.066	5 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: 1302130-0	5BMS				ι	Jnits: mg/	Kg	Analys	sis Date: 2/	8/2013 02	:46 PN	
Client ID:	Run	ID: FID-9_	130208A		Se	qNo: 311	0078	Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua	
Gasoline Range Organics	1.048	0.050	1		0	105	70-130	()			
Surr: 4-Bromofluorobenzene	0.08551	0.0050	0.1		0	85.5	70-130	()			
MSD Sample ID: 1302130-0	5BMSD				ι	Jnits: mg/	Kg	Analys	sis Date: 2/	8/2013 03	:05 PN	
Client ID:	Run	ID: FID-9_	130208A		Se	qNo: 311	0079	Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua	
Gasoline Range Organics	1.019	0.050	1		0	102	70-130	1.048	3 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 analyz	ed in this batch		302213-01B 302213-30B	13	3022	213-15B	13	02213-16B				

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPMS05		Method	: SW602	20					
MBLK	Sample ID: MBLKS1-020813-67688				Units: mg/	Kg	Analysis Date: 2/8/2013			
Client ID:	Run	ID: ICPMS	5_130208A		SeqNo: 310	7176	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	MBLK Sample ID: MBLKS1-020813-67688				Units: mg/	Kg	Analysis Date: 2/11/2013 02:			2:05 PM
Client ID:	Run	ID: ICPMS	5_130211A		SeqNo: 310 8	8768	Prep Date: 2/8	/2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD Limit	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	LIIIII	Qual
Boron	U	2.5								
Sodium	U	50								

Client: Navajo Refining Company

Work Order: 1302213

Boron

Sodium

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPM	S05		Method	: SW602	20						
LCS	Sample ID: MLCSS1-020813-676	88				L	Jnits: mg/	Kg	Analys	sis Date: 2	/8/2013 03	:54 PM
Client ID:		Run ID:	ICPMS)5_130208A		Se	qNo: 310 7	7177	Prep Date: 2/8/	/2013	DF: 1	
Analyte	Res	sult	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	9.5	551	1.0	10		0	95.5	80-120	0	ı		
Arsenic	9.2	288	0.50	10		0	92.9	80-120	0	ı		
Barium	9	.21	0.50	10		0	92.1	80-120	0	ı		
Cadmium	8.8	95	0.50	10		0	89.9	80-120	0	ı		
Calcium	87	6.4	50	1000		0	87.6	80-120	0	ı		
Chromium	9.3	865	0.50	10		0	93.7	80-120	0	ı		
Cobalt	9.4	164	0.50	10		0	94.6	80-120	0	ı		
Copper	9.5	594	0.50	10		0	95.9	80-120	0	ı		
Iron	91	8.6	50	1000		0	91.9	80-120	0	1		
Lead	9.2	292	0.50	10		0	92.9	80-120	0	1		
Manganese	9	.29	0.50	10		0	92.9	80-120	0	1		
Molybdenum	9.0)45	0.50	10		0	90.4	80-120	0	1		
Nickel	9.3	358	0.50	10		0	93.6	80-120	0	1		
Potassium	86	6.4	50	1000		0	86.6	80-120	0	ı		
Selenium	9.6	645	0.50	10		0	96.4	80-120	0	ı		
Silver	9.0)71	0.50	10		0	90.7	80-120	0	ı		
Uranium	9	.13	0.50	10		0	91.3	80-120	0	ı		
Zinc	9.5	501	0.50	10		0	95	80-120	0	1		
LCS	Sample ID: MLCSS1-020813-676	88				L	Jnits: mg/	Kg	Analys	sis Date: 2	/11/2013 0	2:07 PM
Client ID:		Run ID:	ICPMS)5_130211A		Se	qNo: 310 8	3769	Prep Date: 2/8/	/2013	DF: 1	
Analyte	Res	sult	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

48.15

959.9

2.5

50

50

1000

0

0

96.3

96

80-120

80-120

0

0

%RPD

0

0

Client: Navajo Refining Company

1302213 Work Order:

Analyte Boron

Sodium

Project: RO Discharge Sampling

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: SeqNo: 3107188 Prep Date: 2/8/2013 DF: 1 Run ID: ICPMS05_130208A **RPD** SPK Ref Control RPD Ref Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual 0 Aluminum 7184 0.94 9.362 5268 20500 75-125 SEO Arsenic 10.43 0.47 9.362 1.442 96 75-125 0 9.362 0 **Barium** 36.97 0.47 27.73 98.7 75-125 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 75-125 Cobalt 10.01 0.47 9.362 0.9823 96.4 0 0.47 9.362 93 0 Copper 11.14 2.43 75-125 Iron 6750 47 936.2 4746 214 75-125 0 SO 4.276 0 Lead 13.34 0.47 9.362 96.8 75-125 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 0 Nickel 0.47 9.362 2.036 97.5 11.16 75-125 Potassium 1214 47 936.2 302.4 97.4 75-125 0 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 Uranium 8.882 0.47 9.362 0.4215 90.4 75-125 0 Zinc 17.66 0.47 9.362 6.006 75-125 0 124 MS Sample ID: 1302251-01BMS Analysis Date: 2/11/2013 01:04 PM Units: mg/Kg SeqNo: 3108707 Prep Date: 2/8/2013 Client ID: Run ID: ICPMS05_130211A DF: 1 RPD SPK Ref RPD Ref Control Value Value Limit Limit

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

Result

43.62

1460

PQL

2.3

47

SPK Val

46.81

936.2

%REC

88.6

100

75-125

75-125

2.12

523

Qual

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 67688	Instrument ID ICPMS05	Method:	SW6020

MSD	Sample ID: 1302251-01BMSD			l	Jnits: mg /	Kg	Analysi	s Date: 2/	8/2013 04	:15 PM
Client ID:	Run	ID: ICPMS	05_130208A	Se	eqNo: 310	7189	Prep Date: 2/8/2	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: 1302251-01BMSE)				Units: m	g/Kg	Analys	is Date: 2/	11/2013 0	1:06 PM
Client ID:		Run I	D: ICPMS	05_130211	4	SeqNo: 3	108708	Prep Date: 2/8/	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron		43.49	2.3	46.61	2.1	12 88.8	3 75-125	5 43.62	0.292	25	
Sodium		1364	47	932.2	52	23 90.2	2 75-125	5 1460	6.78	25	

Client: Navajo Refining Company

Work Order: 1302213

RO Discharge Sampling **Project:**

Batch ID: 67688	8 Instrument ID ICPMS05		Method:	SW602	20						
DUP S	ample ID: 1302251-01BDUP				ι	Jnits: mg/	Kg	Analysi	s Date: 2 /	8/2013 04	:11 PM
Client ID:	Run ID:	ICPMS	05_130208A		Se	eqNo: 310	7184	Prep Date: 2/8/2	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 S	ample ID: 1302251-01BDUP				ι	Jnits: mg/	Kg	Analysi	s Date: 2 /	11/2013 0	2:12 PI
Client ID:	Run ID:	ICPMS	05_130211A		Se	qNo: 310	8771	Prep Date: 2/8/2	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	Е
Boron	2.326	2.4	0		0	0	0-0	2.847	0.00	25	J
Sodium	657.7	47	0		0	0	0-0	721.9	9.3	25	
The following s	samples were analyzed in this batch:	13 13	302213-01D 302213-09A 302213-16D 302213-24A	13 13	3022 3022	213-03A 213-12A 213-18A 213-27A	13 13	02213-06A 02213-15D 02213-21A 02213-30D			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 6	7786 Ir	nstrument ID HG02		Method	l: SW747	'1A					
MBLK	Sample ID: GB	LKS1-021313-67786				Units: µg	/Kg	Analys	sis Date: 2/	13/2013 0	1:42 PM
Client ID:		Run ID:	HG02_	130213A		SeqNo: 31	12188	Prep Date: 2/1	3/2013	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: GL	CSS1-021313-67786				Units: µg	/Kg	Analys	sis Date: 2/	13/2013 0	1:44 PM
Client ID:		Run ID:	HG02_	130213A		SeqNo: 31	12190	Prep Date: 2/1	3/2013	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	C)		
MS	Sample ID: 130	2213-18AMS				Units: µg	/Kg	Analys	sis Date: 2/	13/2013 0	1:50 PM
Client ID: N	IW-119 (5)	Run ID:	HG02_	130213A		SeqNo: 31	12197	Prep Date: 2/1	3/2013	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	5.63	33 95.8	85-115	C)		
MSD	Sample ID: 130	2213-18AMSD				Units: µg	/Kg	Analys	sis Date: 2/	13/2013 0	1:52 PM
Client ID: N	NW-119 (5)	Run ID:	HG02_	130213A		SeqNo: 31	12199	Prep Date: 2/1	3/2013	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	5.63	33 99.2	85-115	337.1	3.38	20	
DUP	Sample ID: 130	2213-18ADUP				Units: µg	/Kg	Analys	sis Date: 2/	13/2013 0	1:48 PM
Client ID: N	IW-119 (5)	Run ID:	HG02_	130213A		SeqNo: 31	12194	Prep Date: 2/1	3/2013	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 follow	ing samples were	analyzed in this batch:	13 13	302213-01D 302213-09A 302213-16D 302213-24A	13 13	802213-03A 802213-12A 802213-18A 802213-27A	13 13	302213-06A 302213-15D 302213-21A 302213-30D			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

MBLK Sample I	D: SBLKS2-130211-	67741				Uı	nits: µg/k	(g	Analy	sis Date: 2	/12/2013 0	7:15 PM
Client ID:		Run I	D: SV-4_1 :	30212A		Sec	No: 311 2	2136	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-Tribromo	ohenol	107.3	6.6	166.7		0	64.4	36-126		0		
Surr: 2-Fluorobipher	yl	131	6.6	166.7		0	78.6	43-125		0		
Surr: 2-Fluoropheno		128.7	6.6	166.7		0	77.2	37-125		0		
Surr: 4-Terphenyl-d1	4	147.3	6.6	166.7		0	88.4	32-125		0		
Surr: Nitrobenzene-d	5	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		

Client ID:	Run II	D: SV-4_1	30212A		Se	qNo: 311	2137	Prep Date: 2/1	1/2013	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	1		
Surr: Phenol-d6	122.8	6.6	166.7		0	73.7	40-125	0	1		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 67741 Instrument ID SV-4 Method: SW8270

MS	Sample ID: 1302175-02B	MS			l	Units: µg/l	K g	Analys	sis Date: 2	2/12/2013 (8:16 PM
Client ID:		Run II	D: SV-4_1	30212A	Se	eqNo: 311	2139	Prep Date: 2/1	1/2013	DF: 10)
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnap	phthalene	699.3	66	166.4	583.8	69.4	50-120	C)		
2-Methylnar	phthalene	132.4	66	166.4	0	79.6	50-120	C)		
Benzo(a)py	rene	101.7	66	166.4	0	61.1	50-130	C)		
Naphthalen	e	159.1	66	166.4	0	95.6	50-125	C)		
Surr: 2,4,	,6-Tribromophenol	124.4	66	166.4	0	74.7	36-126	C)		
Surr: 2-F	-luorobiphenyl	163.5	66	166.4	0	98.2	43-125	C)		
Surr: 2-F	-luorophenol	93.61	66	166.4	0	56.3	37-125	C)		
Surr: 4-T	erphenyl-d14	151.1	66	166.4	0	90.8	32-125	C)		
Surr: Nitr	robenzene-d5	130.9	66	166.4	0	78.7	37-125	C)		
Surr: Phe	enol-d6	186.6	66	166.4	0	112	40-125	C)		
MSD	Sample ID: 1302175-02B i			100.4		Units: µg/l			sis Date: 2	2/1	12/2013 0

						-				
Client ID:	Run II	D: SV-4_1	30212A	Se	eqNo: 311	2140	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			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142332 Instrument ID VOA5 Method: SW8260

MBLK Sample ID: VBLKS1-02	20813-R142332				Units: µg/l	Kg	Analy	/sis Date: 2	/8/2013 0	8:51 AM
Client ID:	Run II	D: VOA5_	130208A		SeqNo: 310	5805	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		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142332 Instrument ID VOA5 Method: SW8260

LCS Sample ID: VLCSS1-02	20813-R142332				Units: µg/l	K g	Analys	sis Date: 2	/8/2013 0	8:06 AM
Client ID:	Run II	D: VOA5_	130208A	S	eqNo: 310	5804	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	()		
1,1,2,2-Tetrachloroethane	43.86	5.0	50	0	87.7	75-123	()		
1,1,2-Trichloroethane	46.4	5.0	50	0	92.8	79-120	()		
1,1-Dichloroethane	47.42	5.0	50	0	94.8	75-124	()		
1,1-Dichloroethene	41.54	5.0	50	0	83.1	80-122	()		
1,2-Dibromoethane	46.55	5.0	50	0	93.1	79-120	()		
1,2-Dichloroethane	49.08	5.0	50	0	98.2	73-121	()		
Benzene	49.42	5.0	50	0	98.8	79-120	()		
Carbon tetrachloride	48.23	5.0	50	0	96.5	74-126	()		
Chloroform	49.47	5.0	50	0	98.9	78-120	()		
Ethylbenzene	48.58	5.0	50	0	97.2	80-122	()		
Methylene chloride	48.46	10	50	0	96.9	70-123	()		
Tetrachloroethene	46.35	5.0	50	0	92.7	80-121	()		
Toluene	48.79	5.0	50	0	97.6	79-120	()		
Trichloroethene	50.47	5.0	50	0	101	80-121	()		
Vinyl chloride	49.07	2.0	50	0	98.1	76-126	()		
Xylenes, Total	148.3	15	150	0	98.9	80-120	()		
Surr: 1,2-Dichloroethane-d4	49.87	0	50	0	99.7	70-128	()		
Surr: 4-Bromofluorobenzene	49.17	0	50	0	98.3	73-126	()		
Surr: Dibromofluoromethane	50.57	0	50	0	101	71-128	()		
Surr: Toluene-d8	48.65	0	50	0	97.3	73-127	()		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142332 Instrument ID VOA5 Method: SW8260

MS Sample ID: 1302237-09	5AMS			I	Units: µg/l	(g	Analys	sis Date: 2	/8/2013 1	1:31 AM
Client ID:	Run II	D: VOA5_	130208A	Se	eqNo: 310	6577	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	()		
1,1,2,2-Tetrachloroethane	43.64	5.0	50	0	87.3	75-123	()		
1,1,2-Trichloroethane	46.42	5.0	50	0	92.8	79-120	()		
1,1-Dichloroethane	51.53	5.0	50	0	103	75-124	()		
1,1-Dichloroethene	47.74	5.0	50	0	95.5	80-122	()		
1,2-Dibromoethane	47.24	5.0	50	0	94.5	79-120	()		
1,2-Dichloroethane	49.61	5.0	50	0	99.2	73-121	()		
Benzene	54.96	5.0	50	1.572	107	79-120	()		
Carbon tetrachloride	50.46	5.0	50	0	101	74-126	()		
Chloroform	54.12	5.0	50	0	108	78-120	()		
Ethylbenzene	50	5.0	50	0	100	80-122	()		
Methylene chloride	49.54	10	50	0	99.1	70-123	()		
Tetrachloroethene	46.55	5.0	50	0	93.1	80-121	()		
Toluene	52.61	5.0	50	1.122	103	79-120	()		
Trichloroethene	54.13	5.0	50	0	108	80-121	()		
Vinyl chloride	51.46	2.0	50	0	103	76-126	()		
Xylenes, Total	153	15	150	0	102	80-120	()		
Surr: 1,2-Dichloroethane-d4	48.02	0	50	0	96	70-128	()		
Surr: 4-Bromofluorobenzene	49.6	0	50	0	99.2	73-126	()		
Surr: Dibromofluoromethane	49.01	0	50	0	98	71-128	()		
Surr: Toluene-d8	49.1	0	50	0	98.2	73-127	()		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142332 Instrument ID VOA5 Method: SW8260

MSD Sample ID: 1302237-09	5AMSD			I	Jnits: µg/l	< g	Analysi	s Date: 2/	8/2013 11	:54 AN
Client ID:	Run I	D: VOA5_	130208A	Se	eqNo: 310	6578	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			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142411 Instrument ID VOA4 Method: SW8260

MBLK Sample ID: VBLKW-13	0208-R142411				Units: µg/I	_	Analy	sis Date: 2	/8/2013 0	3:28 PM
Client ID:	Run II	D: VOA4_	130208A		SeqNo: 310	7211	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		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142411 Instrument ID VOA4 Method: SW8260

LCS Sample ID: VLCSW-13	0208-R142411				Jnits: μg/L	-	Analys	sis Date: 2	/8/2013 02	2:39 PM
Client ID:	Run II	D: VOA4_	130208A	Se	eqNo: 310	7210	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	()		
1,1,2,2-Tetrachloroethane	47.98	1.0	50	0	96	74-123	()		
1,1,2-Trichloroethane	50.07	1.0	50	0	100	80-120	()		
1,1-Dichloroethane	50.7	1.0	50	0	101	80-120	()		
1,1-Dichloroethene	54.16	1.0	50	0	108	80-120	()		
1,2-Dibromoethane	51.59	1.0	50	0	103	80-120	()		
1,2-Dichloroethane	48.17	1.0	50	0	96.3	79-120	()		
Benzene	47.86	1.0	50	0	95.7	80-120	()		
Carbon tetrachloride	48.36	1.0	50	0	96.7	79-120	()		
Chloroform	48.15	1.0	50	0	96.3	80-120	()		
Ethylbenzene	49.39	1.0	50	0	98.8	80-120	()		
Methylene chloride	50.36	2.0	50	0	101	75-125	()		
Tetrachloroethene	51.48	1.0	50	0	103	80-120	()		
Toluene	49.61	1.0	50	0	99.2	80-121	()		
Trichloroethene	51.24	1.0	50	0	102	80-120	()		
Vinyl chloride	53.9	1.0	50	0	108	75-125	()		
Xylenes, Total	146.1	1.0	150	0	97.4	80-124	()		
Surr: 1,2-Dichloroethane-d4	47.45	1.0	50	0	94.9	71-125	()		
Surr: 4-Bromofluorobenzene	53.53	1.0	50	0	107	70-125	()		
Surr: Dibromofluoromethane	50.08	1.0	50	0	100	74-125	()		
Surr: Toluene-d8	51.42	1.0	50	0	103	78-123	()		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142411 Instrument ID VOA4 Method: SW8260

MS Sample ID: 1302186-03	BAMS			ı	Jnits: µg/L	-	Analys	sis Date: 2	/8/2013 0	5:05 PM
Client ID:	Run II	D: VOA4_	130208A	Se	eqNo: 310	7855	Prep Date:		DF: 1 0	00
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	()		
1,1,2,2-Tetrachloroethane	4608	100	5000	0	92.2	74-123	()		
1,1,2-Trichloroethane	4986	100	5000	0	99.7	80-120	()		
1,1-Dichloroethane	5028	100	5000	0	101	80-120	()		
1,1-Dichloroethene	5538	100	5000	0	111	80-120	()		
1,2-Dibromoethane	5196	100	5000	0	104	80-120	()		
1,2-Dichloroethane	5039	100	5000	0	101	79-120	()		
Benzene	10820	100	5000	5736	102	80-120	()		
Carbon tetrachloride	4875	100	5000	0	97.5	79-120	()		
Chloroform	4926	100	5000	0	98.5	80-120	()		
Ethylbenzene	5806	100	5000	730.1	102	80-120	()		
Methylene chloride	5077	200	5000	0	102	75-125	()		
Tetrachloroethene	5283	100	5000	0	106	80-120	()		
Toluene	6015	100	5000	951	101	80-121	()		
Trichloroethene	5148	100	5000	0	103	80-120	()		
Vinyl chloride	5413	100	5000	0	108	75-125	()		
Xylenes, Total	16630	100	15000	1612	100	80-124	()		
Surr: 1,2-Dichloroethane-d4	4817	100	5000	0	96.3	71-125	()		
Surr: 4-Bromofluorobenzene	5461	100	5000	0	109	70-125	()		
Surr: Dibromofluoromethane	5005	100	5000	0	100	74-125	()		
Surr: Toluene-d8	5199	100	5000	0	104	78-123	()		

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: R142411 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1302186-03	BAMSD			I	Units: µg/L	-	Analysi	is Date: 2/	8/2013 05	:30 PM
Client ID:	Run II	D: VOA4_	130208A	Se	eqNo: 310	7856	Prep Date:		DF: 10	0
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	
Surr: 1,2-Dichloroethane-d4	4925	100	5000	0	98.5	71-125	4817	2.21	20	
Surr: 4-Bromofluorobenzene	5363	100	5000	0	107	70-125	5461	1.82	20	
Surr: Dibromofluoromethane	5107	100	5000	0	102	74-125	5005	2.01	20	
Surr: Toluene-d8	5145	100	5000	0	103	78-123	5199	1.05	20	

The following samples were analyzed in this batch:

1302213-31A

Navajo Refining Company

Work Order: 1302213

Client:

Project: RO Discharge Sampling

Batch ID: 6	7808 Instrument ID	UV-2450		Method	: SW901	4	(Dissolve	e)			
MBLK	Sample ID: WBLKS1-02141	3-67808				Units: mg/	Kg	Analy	sis Date: 2/	14/2013 0	3:00 PM
Client ID:		Run I	D: UV-245	0_130214F		SeqNo: 311	4919	Prep Date: 2/1	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: WLCSS1-02141	3-67808				Units: mg/	Kg	Analy	sis Date: 2/	14/2013 0	3:00 PM
Client ID:		Run I	D: UV-245	0_130214F		SeqNo: 311	4920	Prep Date: 2/1	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: WLCSDS1-0214	13-67808				Units: mg/	Kg	Analy	sis Date: 2/	14/2013 0	3:00 PM
Client ID:		Run I	D: UV-245	0_130214F		SeqNo: 311	4932	Prep Date: 2/1	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	9.9	5 3.21	30	
MS	Sample ID: 1302213-12BMS					Units: mg/	Kg	Analy	sis Date: 2/	14/2013 0	3:00 PM
Client ID: N	IW-118 (20)	Run II	D: UV-245	0_130214F		SeqNo: 311	4933	Prep Date: 2/1	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 follow	ing samples were analyzed in	this batch:	13	302213-01E 302213-09B 302213-21B	13	302213-03B 302213-12B 302213-24B	13	302213-06B 302213-18B 302213-27B			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 67821	Instrument ID ICS2100		Method	: E300			(Dissolve	e)			
MBLK Sample ID:	WBLKS1-67821				U	nits: mg/	Kg	Analysis	Date: 2	/13/2013 0	6:20 PN
Client ID:	Run	ID: ICS210	0_130213A		Sec	No: 311	3807	Prep Date: 2/13/2	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									
Surr: Selenate (surr)	47.69	1.0	50		0	95.4	85-115	0			
LCS Sample ID:	WLCSS1-67821				U	nits: mg /	Kg	Analysis	Date: 2	/13/2013 0	6:35 PN
Client ID:	Run	ID: ICS210	0_130213A		Sec	No: 311	3808	Prep Date: 2/13/2	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			
Surr: Selenate (surr)	46.98	1.0	50		0	94	85-115	0			
MS Sample ID:	1302386-02AMS				U	nits: mg /	Kg	Analysis	Date: 2	/13/2013 1	0:57 PN
Client ID:	Run	ID: ICS210	0_130213A		Sec	No: 311	3826	Prep Date: 2/13/2	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			

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

Batch ID: 67821 Instrument ID ICS2100 Method: E300 (Dissolve) Analysis Date: 2/13/2013 11:11 PM **MSD** Sample ID: 1302386-02AMSD Units: mg/Kg Prep Date: 2/13/2013 Client ID: SeqNo: 3113827 DF: 5 Run ID: ICS2100_130213A **RPD** SPK Ref Control RPD Ref Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual Chloride 452.7 23 454.4 0 99.6 75-125 447.7 1.11 20 20 Fluoride 85.05 4.5 90.89 0 93.6 75-125 83.99 1.24 Nitrogen, Nitrate (As N) 93.85 90.89 0 4.5 103 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 1302213-06B The following samples were analyzed in this batch: 1302213-01E 1302213-03B 1302213-09B 1302213-12B 1302213-18B 1302213-21B 1302213-24B 1302213-27B

1302213-30D

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

	2 13 4 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15									
Batch ID: R142774	Instrument ID Balance1		Method	d: SW3550		(Dissolve	!)			
DUP Sample ID:	1302213-20ADUP				Units: wt%	6	Analysi	s Date: 2/	/13/2013 ()2:45 PM
Client ID: MW-119 (9)	Run II	D: Balan	ICE1_13021	3B S	SeqNo: 311	3511	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	C	0	0-0	17.86	2.65	20	
The following samples w	vere analyzed in this batch:		302213-01E 302213-04A		2213-02A 2213-05A	_	02213-03B 02213-06B			
			302213-07A		2213-08A	_	02213-09B			
			302213-10A		2213-11A	_	02213-12B			
			302213-13A		2213-14A	_	02213-15D			
		1;	302213-16D	130	2213-17A	130	02213-18B			

1302213-20A

1302213-19A

Client: Navajo Refining Company

Work Order: 1302213

Project: RO Discharge Sampling

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: Prep Date: DF: 1 Run ID: BALANCE1_130213C SeqNo: 3113534 RPD Ref RPD SPK Ref Control Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual 0 0 0 Percent Moisture 18.14 0.010 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			

Date: 18-Feb-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS, RO** Discharge Sampling **Project:** ACRONYMS, UNITS

WorkOrder: 1302213

wt%

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	d Description
μg/Kg-c	lry Micrograms per Kilogram - Dry weight corrected
mg/Kg-c	lry Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter

Sample Receipt Checklist

Client Name: N	IAVAJO REFINING			Date/	Time F	Received:	<u>06-Feb</u>	<u>-13 08:4</u>	<u>.0</u>	
Work Order: 1	<u>302213</u>			Recei	ived by	/ :	<u>JBA</u>			
Checklist complet Matrices:	ted by Lahnnie B. Allen eSignature soil/water	12	-Feb-13 Date	Reviewed	l by:	eSignature				Date
Carrier name:	ALS.HS									
Shipping containe	er/cooler in good condition?		Yes	✓ N	lo 🗌	Not Pres	sent 🗆			
Custody seals into	act on shipping container/coole	r?	Yes	N	lo 🗌	Not Pres	sent [
Custody seals into	act on sample bottles?		Yes	N	lo 🗌	Not Pres	sent 🔽	•		
Chain of custody	present?		Yes	✓ N	lo 🗌					
Chain of custody	signed when relinquished and r	eceived?	Yes	✓ N	lo 🗌					
Chain of custody	agrees with sample labels?		Yes	✓ N	lo 🗌					
Samples in prope	r container/bottle?		Yes	✓ N	о					
Sample container	rs intact?		Yes	✓ N	lo 🗌					
Sufficient sample	volume for indicated test?		Yes	✓ N	lo 🗌					
All samples receive	ved within holding time?		Yes	✓ N	lo 🗌					
Container/Temp E	Blank temperature in complianc	e?	Yes	✓ N	lo 🗌					
Temperature(s)/T	hermometer(s):		1.6 C,1.	0 C,1.1 C,1.3	C/uc	IR	<u>1</u>			
Cooler(s)/Kit(s):			3747/30	40/3306/4185	<u>i</u>					
Date/Time sample	e(s) sent to storage:		2/6/13 1	8:00						
Water - VOA vials	s have zero headspace?		Yes	N	О	No VOA vial	s submitte	ed		
Water - pH accep	table upon receipt?		Yes	N	lo 🗌	N/A				
pH adjusted? pH adjusted by:			Yes	N	o V	N/A		_		
	MM/ 449/F) no time on COC	acilia ata d 02/4/42 @	- 00.45.0	OC not roling	اد ماداند	l by aliant . D	adium fra	ation ooi		
Login Notes:	MW-118(5) no time on COC samples are in WO 1302223	Collected 02/4/13 @	09.45, C	OC not reling	uisnea	i by client ; K	aulum na	CUON SOI	<u>II </u>	
Client Contacted:		Date Contacted:		P	erson	Contacted:				
Contacted By:		Regarding:								
Comments:										
CorrectiveAction:										
									SRC Pag	je 1 of 1

63 of 66



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Fort Collins, CO +1 970 490 1511

+1 616 399 6070

Holland, MI

Chain of Custody Form

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1.	-5-		_0,		
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COC ID: 72333

1302213

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling Environmental **ALS Project Manager:** Customer Information **Project Information** Purchase Order Project Name RO Discharge/Sampling Α VOC (8260) NIN GW List Work Order Project Number 128823 В 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) 501 East Main 501 East Main E LL SVOC (8270) NW GW List Address Address F LONG LIST Total Metals (602077000) RCRA-B City/State/Zip Artesia, NM 88211 City/State/Zip G Artesia, NM 88211 Dissolved Metals (6020/7000) RCRA 8 Phone (575) 748-13733 Phone Н (575) 748-6733 Fax (575) 746-5421 Fax (575) 746-5421 Moisture e-Mail Address e-Mail Address TINGGOPING (PITATISTING GLOW SIM DIGE) No. iande Anions Sample Description Date Time Matrix Pres. # Bottles Α В C F Hold Soi 3 X CHIC PARC 5 1000 6 1010 X 7 8 9 3 Sampler(s) Please Print & Sign Shipment Method Required Turnaround Time: (Check Box) Results Due Date: Other Std 10 WK Days ☐ 5 WK Days 2 MK Days 24 Hour Relinquished by: Received by Notes: 10 Day TAT. Dissolved Metals Field Filtered Relinquished by: Received by (Laboratory): Cooler ID Cooler Temp. QC Package: (Check One Box Below) .ogged by (Laboratory): Level II Std OC Date: TRRP CheckList Time: Checked by (Laboratory): Level III Std QC/Raw Data | TRRP Level IV Level IV SW846/CLP reservative Key: 1-HCI 2-HNO₂ 3-H2SO4 4-NaOH 5-Na,S,O, 6-NaHSO 7-Other 8-4°C 9-5035 Olher / EDD

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Holland, MI

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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

+1 304 356 3168

South Charleston, WV

York, PA +1 717 505 5280

Environmental					ALS Project Manager:						: ALS Work Order #:										
Customer Information						Project Information					Parameter/Method Request for Analysis										
Purchase Order		RO Discharge/Sampling					Α	A VOC (8260) NW GW List													
Work Order	Project Number					823			EAST 24800 1976 E CT 28800 657 E CT 28	В	GR	O (801	5M)	vv	,				:	Community of the Commun	
Company Name	Navajo Refining Co	mpany	Bill To	Company	Nav	rajo Refining	Compa	any	v-,	С	DR	O (801	5M)	***************************************							
Send Report To	Robert Combs	and the control of th	in	voice Attn	Rot	ert Combs	minoralus) minoralus del Resident		o. 0.0000 Addison/hd /Addison.d # 1.18.884A	D	OR	O (801	5M)	~,~,				Talante Trace To be to be		AND THE PARTY OF T	
	501 East Main				501	East Main	***************************************	AU	***************************************	E	LL	svoc	(8270)	NM G	∧' List					Students and Audit and Audit Phat how him and All Police and	
Address				Address					F	Tot	al Meta	ıls (60 .	20/7/00() RSR/	-8- /	Lon	q L.	<u></u>			
City/State/Zip	Artesia, NM 88211		City	/State/Zip	Arte	esia, NM 88	211			G	Dis	solved	Metals	(6020/	7000) F	CRA 8	_	ל			
Phone	(575) 748-6733			Phone	(57	5) 748-6733			anda muse memorina mea oms as omne en a ne ame	Н	- +0	5>-	Ra	٦: ،	u				:		
Fax	(575) 746-5421		2 (2 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4	Fax	(57	5) 746-5421		************			Moisture Kadium										
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o.	Sample Description		Date	T	ime	Matrix	Pr	es.	# Bottles	Α	В	C	D	Ø/E	F	G	Н	1 1 1	្រា	Hold	
I & HW	-118 (19)		2/4/1	3 1-	140	Soil	-		- (Х			
2 8 MW	(05) 811-		1	14	57	Soil			3	-					X		Χ	メ	×		
3 MW	-118 (22)			12	137	١ ١) ,									X			
4 MW.					{ 37				1						The second second			人			
	1-118 (25)			14	35	J			5	Х	x	X	Х	X	X		X	K	×		
6 HW-				l l C) <i>ح</i>			ļ.	5	Х	χ	X	χ	X	X		X	Х	X		
7 MW	1-19 (3)				5	1	1		5									X			
8 M	W-119 (S)				20	1			3						X		X	χ	X		
· · · · · · · · · · · · · · · · · · ·	LW-119 (7)) .	 	11.	30		1/		1						,			*			
0.51	122-119 (9)			11	35		1		1									4			
ampler(s) Please Pr	int & Sign		SI	nipment Meti	nod	Red			nd Time: (Medical Co.		o	itier WK Da	731 (1516) 247 (1516)			sults (Due Da	te:		
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ogged by (Laboratory):		Date:	Time:	Check	cked by (Laboratory):						endilatras	3 (1974) (1974)	0.0/1.555.000	127k	Lev	el ill Std	QC/Ra			RP Level IV	
Preservative Key:	1-HCI 2-HNO ₃	3-H₂SO₄ 4-Na	011 1	la _° S _° O₃ 6	-NaHSO	₄ 7-Oth		-4°C	9-5035					1072	***************************************	el IV SW		.p	1		

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Fort Collins, CO

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COC ID: 72210

Houston, TX +1 281 530 5656 Middletown, PA

+1 717 944 5541

Spring City, PA +1 610 948 4903

South Charleston, WV +1 304 356 3168

Salt Lake City, UT +1 801 266 7700

York, PA +1 717 505 5280

Environmental					ALS Project Manager:									ALS V	ork O	rder #:	48, 1 4				
Customer Information					Project Information						Parameter/Method Request for Analysis										
Purchase Order			ı	Project N	lame	RO Discharge/Sampling					Α	VOC (8260) NW GW List									
Work Order	** Chana di A. Than a' Anni Ad Y an Chanadh Anni Anni Anni Anni Anni Anni Anni Ann	n than a define at the think at the terms and a vice function from the vice constitute at the	Pro	oject Nui	nber	1288	23				В	GRO (8015M)									
Company Name	Navajo Refining Comp	oany	Bill	To Com	pany	Nava	jo Refini	ng Com	pany		c	DRO	(8015	M)					:		
Send Report To	Robert Combs	- Andrewski (1974) och i 1960 fra de Andrewska († 1974) (1974) (1974) (1974) (1974) (1974)		Invoice	Attn	Robe	ert Comb	s	The second secon	A MARIAN A BOTTON OF A PRINTER P. P. MARIANT	D	ORG) (8015	M)				:			
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City/State/Zip	Artesia, NM 88211			City/State	(2000) 12 (1) (2000) 2000		sia, NM				G				6020/70		8 AS)		
Phone	(575) 748-6733			Pt	none	(575	748-67	33		***************************************	H	108	r	ad	ىرى	1		:			
Fax	Fax (575) 746-5421 Fax				(575)	746-54:	21			1	Mois	sture									
e-Mail Address	Manager Manage															, An					
No.	Sample Description		Appropriate Communication Comm	ite	100000000000000000000000000000000000000	me	Matri	X	Pres.	# Bottles	A	В	С	D	E	irran siar (188)		н∼∣	dawa di	abarita (altari	Hold
	N-119 (12)		214	1113	112	45	501	l		3			-			$X \perp$				メ	Managana anakaran ara-15,4 si asa ata 15 a
	N-119(12)	~	** (US		16	95											~		X		
3	MW-119 (14)		27	16	00,	<u> </u>			1	ļ				···		7		X		
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5	MW-19 (17	4)		~~~	16	015				İ									X		
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7	MW-119	(20)			ار	oll				3,						X)	×	X	X	
8	MW-119	(22)			((017				- (<u> </u>								×		
9	MW-119	(24)	~~~	*******************************	16	,৻ঠ				ļ:			- Annual Maria						X		
10	MW-W	' '		,		050				5	X	X	X	久	XX		\ \ \ \	〈	χ,	بر	
Sampler(s) Please Pr	rint & Sign			Shipme	nt Meth	od سر	ļ.			und Time:			[] (II)				Resu	lts Du) Date:		
Relinquished by: Date: 7 Time:		Time:	40	Receive	by			Std 10 W	i/mays	5 WK Days 2 WK Days 24 Hour Notes: 10 Day TAT. Dissolved Metals Field Filtered											
Relinquished by:	1	Date:	Time:	E ST	Receive	ived by (Laboratory):				Coo	ler ID	Coole	r Temp.	OC Pa		Check Or	пе Вох				
Logged by (Laboratory)		Date:	Time:	4.00		Checked by (Laboratory):									Level II	SId QC SId QC/ / SV/846	Raw D /CLP	ala [TRRP C	heckList evel IV	
Preservative Key:	1-HCI 2-HNO₃ 3	-H₂SO₄ 4-Na	OH 5	-Na₂S₂O	₃ 6-	NaHSO ₄	7-0	ther	8-4°C	9-5035	49-49-765		2000			Other /	EDD		*****		

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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 JJ.

Regards,

Electronically approved by: Sonia West

Sonie West

Sonia West Project Manager TNI

Certificate No: T104704231-12-10

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302223

Work Order Sample Summary

Lah Samn ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1302223-01	MW-118 (1)	Soil	100 1100	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	

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling Case Narrative

Work Order: 1302223

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.

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-118 (1)
 Lab ID: 1302223-01

Collection Date: 2/4/2013 09:20 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 29-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-118 (5)
 Lab ID: 1302223-02

Collection Date: 2/4/2013 09:05 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 29-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-118 (10)
 Lab ID: 1302223-03

Collection Date: 2/4/2013 10:10 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 29-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-118 (15)
 Lab ID: 1302223-04

Collection Date: 2/4/2013 02:50 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 29-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Date: 29-Mar-13

Client: Navajo Refining Company **Work Order:** 1302223 **Project: RO** Discharge Sampling

Lab ID: 1302223-05 Sample ID: MW-118 (20)

Collection Date: 2/4/2013 02:52 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **MDL Factor Analyses** Result Qual Units

MISCELLANEOUS ANALYSIS Method: NA Analyst: SUB 3/15/2013 Miscellaneous Analysis See Attached

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-118 (25)
 Lab ID: 1302223-06

 Sample ID:
 MW-118 (25)
 Lab ID: 13022

 Collection Date:
 2/4/2013 02:35 PM
 Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Date: 29-Mar-13

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (1)
 Lab ID: 1302223-07

Collection Date: 2/4/2013 11:05 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 29-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

ALS Environmental Date: 29-Mar-13

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (5)
 Lab ID: 1302223-08

Collection Date: 2/4/2013 11:20 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (10)
 Lab ID: 1302223-09

Collection Date: 2/4/2013 11:45 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (15)
 Lab ID: 1302223-10

Collection Date: 2/4/2013 04:08 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (20)
 Lab ID: 1302223-11

Collection Date: 2/4/2013 04:11 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-119 (25)
 Lab ID: 1302223-12

Collection Date: 2/4/2013 04:20 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/15/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (1)
 Lab ID: 1302223-13

Collection Date: 1/31/2013 08:55 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (5)
 Lab ID: 1302223-14

Collection Date: 1/31/2013 09:15 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (10)
 Lab ID: 1302223-15

Collection Date: 1/31/2013 10:30 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (15)
 Lab ID: 1302223-16

Collection Date: 1/31/2013 03:20 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (20)
 Lab ID: 1302223-17

Collection Date: 1/31/2013 03:25 PM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: MW-117 (25)
 Lab ID: 1302223-18

Collection Date: 1/31/2013 03:40 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project:RO Discharge SamplingWork Order:1302223Sample ID:RO-SB-1 (1)Lab ID:1302223-19

Collection Date: 1/31/2013 11:45 AM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (5)
 Lab ID: 1302223-20

Collection Date: 1/31/2013 12:00 PM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (10)
 Lab ID: 1302223-21

Collection Date: 1/31/2013 12:50 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSIS
Method: NA

Method: NA

Analyst: SUB

1 3/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (15)
 Lab ID: 1302223-22

Collection Date: 2/1/2013 09:57 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (20)
 Lab ID: 1302223-23

Collection Date: 2/1/2013 09:40 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (25)
 Lab ID: 1302223-24

Collection Date: 2/1/2013 10:18 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSIS
Method: NA

Method: NA

Analyst: SUB

Miscellaneous Analysis
See Attached
0 1 3/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (30)
 Lab ID: 1302223-25

Collection Date: 2/1/2013 10:10 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302223

 Sample ID: RO-SB-1 (35)
 Lab ID: 1302223-26

Collection Date: 2/1/2013 10:05 AM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/6/2013

Client: Navajo Refining Company
Project: RO Discharge Sampling

QUALIFIERS,
ACRONIZACIO

Project: RO Discharge Sampling
WorkOrder: 1302223

ACRONYMS, UNITS

Workorder.	100222
Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	Description

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING		Date/Time Receive	ed: <u>06-Feb-13</u>	00:00
Work Order:	1302223		Received by:	<u>JBA</u>	
Checklist comp	eSignature	18-Feb-13 Date	Reviewed by: eSign	ature	Date
Matrices: Carrier name:	soil/water FedEx Priority Overnight				
Shipping contain	iner/cooler in good condition?	Yes 🔻	No □ No	ot Present	
Custody seals i	intact on shipping container/coole	er? Yes ✓	No □ No	ot Present	
Custody seals i	intact on sample bottles?	Yes	No □ No	ot Present 🔽	
Chain of custoo	dy present?	Yes 🗹	No 🗆		
Chain of custoo	dy signed when relinquished and	received? Yes ✓	No □		
Chain of custoo	dy agrees with sample labels?	Yes 🛂	No 🗆		
Samples in pro	per container/bottle?	Yes 🗸	No 🗆		
Sample contain	ners intact?	Yes 🗸	No 🗆		
Sufficient samp	le volume for indicated test?	Yes 🗹	No □		
All samples rec	eived within holding time?	Yes 🗹	No □		
Container/Tem	p Blank temperature in compliand	ce? Yes ✓	No □		
Temperature(s))/Thermometer(s):	1.6 C,1.0 C/uc	C,1.1 C,1.3 C,2.7 C,0.6	<u>IR 1</u>	
Cooler(s)/Kit(s)	:		0/3306/4185/7034/4672		
Date/Time sam	ple(s) sent to storage:	2/6/13 17	:30; 2/4/13 09:23:02/4/13	10:00	
Water - VOA vi	als have zero headspace?	Yes 🗸	No No VC	A vials submitted	
Water - pH acc	eptable upon receipt?	Yes 🗸			
pH adjusted? pH adjusted by	:	Yes	No ✓ N/A		
Login Notes:		soil samples; WO 1302079-01, 2223-19 thru -21were sent ahea		223-13 thru -15; W	<u>O 1302082 -</u>
=====	=======	=======	======	=====	=======
Client Contacte	ed:	Date Contacted:	Person Contac	cted:	
Contacted By:		Regarding:			
Comments:					
CorrectiveActio	on:				SRC Page 1 of 1



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Chain of Custody Form

NAVAJO REFINING: Navajo Refining Company

Enviro	nmental		i	erganisalis es			<u> 1233:</u>	-			Project	· RO Dis	charge S	:amplii	na
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Purchase Order		Projec	t Name	RO Disc				A	V00.0	. 1					
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Company Name	Navajo Refining Company	Bill To Co			- 6 min			В	GRO (8					 -	
Send Report To	Robert Combs	- 10 10 10 10 10 10 10 10 10 10 10 10 10	ce Attn	Navajo R	·····	ompany		С	DRO (8			*** 			
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	Artesia, NM 88211	City/Sta	ite/Zip	Artesia, N	M 882	11	****	G	Dissolved Metals (6020/7000) RCRA 8						
Phone	(575) 748-6733		Phone	(575) 748	3-6733			Ĥ	108-	Rad	ioM				
Fax	(575) 746-5421		Fax	(575) 746	5-5421			1	Moisture						
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4 M	N-118 (7)		0	140			١						\(\times \)		
	W-18 (9)		ID	00			1								
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9	11718 (12)		150世								X		X		
10 ~	1W-118 (17)				-		3					<u>}</u>	K X	X	· · · · · · · · · · · · · · · · · · ·
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Relinquished by:	Date:	Time:	Refeive	d by (Laborat	ory):			Coo	ler ID C	ooler Temp					
Logged by (Laboratory):	Date:	Time:	Checke	d by (Laborate	ory):			- 14-7. iv			Level Level	l II Std QC I III Std QC/F	Raw Data	_] TRRE	CheckList
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Spring City, PA +1 610 948 4903

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York, PA +1 717 505 5280

coc ID: 72326

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Salt Lake City, UT +1 801 266 7700

York, PA +1 717 505 5280

coc ID: 72319

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Express Package Service

NOTE: Service order has changed. Please

FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday enloss SATUROAY Delivery is selected.

FedEx Standard Overnight Next business afternoon." Saturday Delivery NOT available.

Packaging FedEx Envelope*

Next Business Day FedEx First Overnight

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Indirect Signature

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fedex.com 1.800.GoFedEx 1.800.463.3339

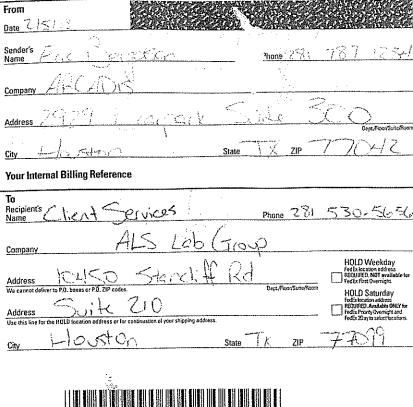
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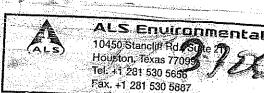
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Rev. Date 1/12 . Part #167002 . 672012 FodEx . PRINTED IN U.S.A. SRF

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

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Package US Airbill Tracking AO13 AO12 5537 Express US Airbill	form 0215	e e e e e e e e e e e e e e e e e e e
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ALS Environmental

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

CUSTOPY SEAL





2 Your Internal Billing Reference

City HOUSTON

From Date 2/5/1

Name

Company

Recipient's Name

Company

3

Total Weight

Our Bability is Bridged to USS100 unless you declare a higher value. See the current FedEx Service Guide for details.

PTT

1	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 Fodex Express Freight US Airbill.
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HOLD Weekday

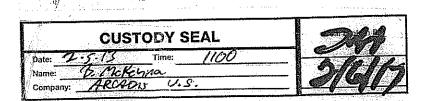
HOLD Saturday FeeEx location address REQUIRED, Available ONLY for FeeEx Priority Overnight and FedEx 2Day to select locations.



LABORATORY GROUP

Use this line for the HOLD location address or for continuation of your shipping address.

Rev. Date 2/12 . Part #163134 . @1994-2012 FedEx . PRINTED IN U.S.A. SRS



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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



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.

Paragover of the contract of t	License or Certification
Accreditation Body	Number 1
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

TEL:

(800) 443-1511

FAX: (970) 490-1522 **CHAIN-OF-CUSTODY RECORD**

Date:

13-Feb-13

COC ID: 13353

Due Date 21-Feb-13

Page 1 of 2

Acct#:

Fort Collins, CO 80524

1302165 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 В Company Name ALS Group USA, Corp. Bill To Company ALS Group USA, Corp. , C. Send Report To Sonia West Accounts Payable Inv Attn 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 Н Fax (281) 530-5887 Fax (281) 530-5887 1 eMail Address Sonia.West@alsglobal.com eMail CC jumoke.lawal@alsglobal.com J Sample ID Collection Date 24hr Matrix Bottle PACAL BERLEVER DE LA EN LA FARIE SE LA CARRESTA DEL CARRESTA DE LA CARRESTA DE LA CARRESTA DEL CARRESTA DE LA CARRESTA DEL CARRESTA DEL CARRESTA DE LA CARRE

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Comments:					
WO 130222	3 - Please analyze for Ra	dium 226/228. Samples that we	ere sent from previous WO 1302	079 & 1302082 match	with this WO those
on enclosed	<u>list</u>		provided in O 1902	.017 & 1302002 matem	with this wo those
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Collife	13/73/3	Mohy			
Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
/		Landi Bay	120 0214-13 0915		Std
Relinquished by:	Date/Time	Received by:			Bergeral Andrew State II
Transport by:	Date, Time	Received by.	Date/Time		



Subcontractor:

ALS Environmental

225 Commerce Drive

Fort Collins, CO 80524

TEL:

Acct#:

(800) 443-1511

FAX: (970) 490-1522

D--- 2 -

CHAIN-OF-CUSTODY RECORD

Date:

13-Feb-13

COC ID: <u>13353</u> Due Date <u>21-Feb-13</u>

Page 2 of 2

Salesperson Mala H. Belmonte

	Salesperson	Maia H. I													
Cú	stomer Information	1960年 早期	·····································	oject inform	nation			Par	ameţer/	Melhod	Request	for Ana	lysis 🔻		
Purchase Order	10-130223	30223 Project Name 1302223		A Ra	dium 22	228 S	ub to AL	S Ft. Co	ollins						
Work Order		Proje	oject Number		В.							,			
Company Name	ALS Group USA, Corp.	Bill T	o Company	ALS Grou	p USA, Corp.	С							-		
Send Report To	Sonia West	Inv A	ttn	Accounts	Payable	D.									
Address	10450 Stancliff Rd, Suite 21	0 Addre	ess	10450 Sta	ncliff Rd, Suite 210	ĴΕ									
						F									
City/State/Zip	Houston, Texas 77099-4338	City/S	State/Zip	Houston,	Гехаs 77099-4338	.G.									
Phone	(281) 530-5656	Phon	е	(281) 530-	-5656	H									
Fax	(281) 530-5887	Fax		(281) 530-	-5887	7.IC)	· · · · · · · · · · · · · · · · · · ·	*							
eMail Address	Sonia.West@alsglobal.com	eMai	CC	jumoke.la	wal@alsglobal.com	JF									
Sample ID		Matrix	Collection	Date 24h	Bottle	Α.	, B	C.	≤ D ;	E.	50 E 1	G	H		. J. ∘
1302223-15A (MW	-117 (10))	Soil	31/Jan/20	013 10:30	(1) 8OZAGNEAT	X			************	1378.27	7 2 1				**************************************
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1302223-18A (MW	v <i>></i>	Soil	31/Jan/20	013 15:40	(1) 8OZAGNEAT	X	T						<u> </u>		
1302223-19A (RO-		Soil	31/Jan/20	013 11:45	(1) 8OZAGNEAT	X				!					
1302223-20A (RO-		Soil	31/Jan/20	013 12:00	(1) 8OZAGNEAT	Х					<u> </u>		l		
1302223-21A (RO-		Soil	31/Jan/20	013 12:50	(1) 8OZAGNEAT	X	-			 	· · · · · ·				
1302223-22A (RO-		Soil	1/Feb/20	013 9:57	(1) 8OZAGNEAT	X	1		-	<u> </u>	 		 		
1302223-23A (RO-	SB-1 (20)) (17)	Soil	1/Feb/20	013 9:40	(1) 8OZAGNEAT	Х	1							<u> </u>	
1302223-24A (RO-		Soil	1/Feb/20	13 10:18	(1) 8OZAGNEAT	X	1				1				
1302223-25A (RO-		Soil	1/Feb/20	13 10:10	(1) 8OZAGNEAT	Х		ļ		T				i	
1302223-26A (RO-	SB-1 (35)) (20)	Soil	1/Feb/20	13 10:05	(1) 8OZAGNEAT	Х	1				<u> </u>		· · · · · · · · · · · · · · · · · · ·		

Comments:					····
	WO 1302223 - Please analyze for Rad	ium 226/228. Samples that w	ere sent from previous WO 1302	079 & 1302082 match	with this WO those
	on enclosed list	· · · · · ·			THE STATE OF THE S
	III 13/103/13	files has	·		
R flinquished by:	Date/Time	Reserved by: Ba	Date/Time Y/3 (191) 2-18-13 0915	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: $\sqrt{45-1}$ Workorder No: $\sqrt{300}$	65	
Project Manager: OK Initials: VB Da	ate: <u>2-14</u> -	<u>ī</u> 3
Does this project require any special handling in addition to standard ALS procedures?	YES	(NO)
2. Are custody seals on shipping containers intact?	NE YES	NO
3. Are Custody seals on sample containers intact?	YES 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?	OFF (YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)		NO
9. Are all aqueous non-preserved samples pH 4-9?	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	YES	NO
15. Do any water samples contain sediment? Amount		
Amount of sediment: dusting moderate heavy	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)	(VEG.	NO
Cooler #: 1 2KB		
Temperature (°C): $\frac{4}{6}$	_ .	
No. of custody seals on cooler:		-
DOT Survey/ Acceptance External µR/hr reading: /S	 .	
Background µR/hr reading: //		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES NO / NA (If no, see Form 00)	. .	
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1		
*** THOUSE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1	AND #16.	
	· · · · · · · · · · · · · · · · · · ·	
		
		
	·····	
		
f applicable, was the client contacted? YES / NO / Contact:	Гіте:	
Project Manager Signature / Date: 2-14-13	·	
*IR Gun #2: Oakton, SN 29922500201-0066 Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002		1

46 of 99

Date: Idrebio. SPECIAL: ef: pl/bf/jba ep: Environmental 9.97 0.00 109.70 Wgt: 48.49 LBS HANDLING: 0.00 TOTAL: DV: 1302165 Svos: PRIORITY OVERNIGHT TRCK: 4340 2174 2850 ORIGIN ID: SGRA (281) 530-5856 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 OROY FRENCH **ALS ENVIRONMENTAL** 225 COMMERCE DRIVE FORT COLLINS CO 80524 (970) 490 - 1511 DEPT: ENVIRONMENTAL **SedEx** Express - 14 FEB 12 PRIORITY OVERNIGHT TRK# 4340 2174 2850 80524

NA FTCA

Part # 156148-434 RIT2 04/12

47 of 99

co-us DEN

Ra-228

SAM PLE SUM M ARY REPORT

3/11/2013 09:43

NA

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 W ork Order: 1302165 Sam ple D: 1302223-01A (MW-118(1)) Lab D: 1302165-1

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 09:20 Percent Moisture:

0.89 (+/- 0.5)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

Ra-226

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

One of the property of the pro

0.86 pCi/g

NQ,G

Ra-228

SAM PLE SUM M ARY REPORT

NA

3/11/2013 09:43

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple ID: 1302223-02A (MW-118 (5)) Lab ID: 1302165-2

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 09:05 Percent Moisture:

0.96 (+/- 0.63)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

Ra-226

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

0.55 pCi/g

NA 3/11/2013 09:43

0.84 pCi/g

NQ,G

Ra-228

SAM PLE SUM M ARY REPORT

3/11/2013 09:43

NA

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple \mathbb{D} : 1302223-03A (MW-118 (10)) Lab \mathbb{D} : 1302165-3

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 10:10 Percent Moisture:

ND (+/- 0.51)

A nalyses Result Qual Limit Units 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

U,G

0.74 pCi/g

Collection Date: 2/4/2013 14:50

Ra-226

Ra-228

SAM PLE SUM M ARY REPORT

3/11/2013 09:43

3/11/2013 09:43

PercentMoisture:

NA

NA

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple ${\mathbb D}$: 1302223-04A (MW-118 (15)) Lab ${\mathbb D}$: 1302165-4

LegalLocation: Matrix: SOIL

ND (+/- 0.19)

ND (+/- 0.38)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

U,G

U,G

GAMMA SPECTROSCOPY RESULTS

Result Qual Limit Units Factor Date Analyzed

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

0.36 pCi/g

0.57 pCi/g

ALS Environmental -- FC

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple \mathbb{D} : 1302223-05A (MW-118 (20)) Lab \mathbb{D} : 1302165-5

LegalLocation: Matrix: SOIL

C ollection Date: 2/4/2013 14:52 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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) 0.89 pCi/g NA 3/11/2013 09:43 U,G

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple ID: 1302223-06A (MW-118 (25)) Lab ID: 1302165-6

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 14:35 Percent Moisture:

A nalyses Result Qual Limit Units Factor Date Analyzed

 GAMMA SPECTROSCOPY RESULTS
 PAI 713
 Prep Date:
 2/18/2013
 PrepBy: SAM

 Ra-226
 0.74 (+/- 0.26)
 LT,G
 0.44 pCi/g
 NA
 3/11/2013 09:43

Ra-226 0.74 (+/- 0.26) L1,G 0.44 pC/g NA 3/11/2013 09:43

Ra-228 1.04 (+/- 0.54) G,TI 0.63 pCi/g NA 3/11/2013 09:43

Ra-228

SAM PLE SUM M ARY REPORT

3/11/2013 09:43

NA

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple \mathbb{D} : 1302223-07A (MW-119 (1)) Lab \mathbb{D} : 1302165-7

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 11:05 Percent Moisture:

ND (+/- 0.4)

A nalyses Result Qual Limit Units Factor Date Analyzed

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GAMMA SPECTROSCOPY RESULTS

Ra-226

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

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ALS Environmental -- FC

Ra-228

SAM PLE SUM M ARY REPORT

NA

3/11/2013 09:43

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple \mathbb{D} : 1302223-08A (MW-119 (5)) Lab \mathbb{D} : 1302165-8

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 11:20 Percent Moisture:

ND (+/- 0.44)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

Ra-226

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

0.46 pCi/g

NA 3/11/2013 09:43

0.67 pCi/g

U,G

Ra-226

Ra-228

SAM PLE SUM MARY REPORT

Date: 14-Mar-13 ALS Environmental Client: 1302223 W ork Order: 1302165 Project:

1302223-09A (MW-119 (10)) Lab ID: 1302165-9 Sam ple ID:

LegalLocation: M atrix: SOIL

Collection Date: 2/4/2013 11:45 PercentMoisture:

R eport D ilution Analyses Result Limit Units Qual

Date Analyzed Factor

GAMMA SPECTROSCOPY RESULTS PAI 713

Prep Date: 2/18/2013 PrepBy: SAM 1.44 (+/- 0.36) G 0.55 pCi/g NA 3/11/2013 10:45 0.8 (+/- 0.53) 3/11/2013 10:45 LT,G,TI 0.68 pCi/g NA

ALS Environmental -- FC

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Project: 1302223 W ork O rder: 1302165 Sam ple D: 130223-10A (MW-119 (15)) Lab D: 1302165-10

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 16:08 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS Prep Date: 2/18/2013 PrepBy: SAM **PAI 713** Ra-226 0.56 (+/- 0.21) LT,G 0.37 pCi/g NA 3/11/2013 10:45 Ra-228 ND (+/- 0.55) 0.97 pCi/g NA 3/11/2013 10:45 U,G

Ra-228

SAM PLE SUM M ARY REPORT

NA

3/11/2013 10:46

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 Work Order: 1302165

Sam ple \mathbb{D} : 1302223-11A (MW-119 (20)) Lab \mathbb{D} : 1302165-11

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 16:11 Percent Moisture:

0.9 (+/- 0.44)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

Ra-226

PAI 713

Prep Date: 2/18/2013

PrepBy: SAM

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0.65 pCi/g

LT,G

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 W ork O rder: 1302165 Sam ple D: 130223-12A (MW-119 (25)) Lab D: 1302165-12

LegalLocation: Matrix: SOIL

Collection Date: 2/4/2013 16:20 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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

SAM PLE SUM MARY REPORT

Client: ALS Environmental Date: 14-Mar-13

Project: 1302223 W ork 0 rder: 1302165

Sam ple \mathbb{D} : 1302223-26A (RO-SB-1 (35)) Lab \mathbb{D} : 1302165-20

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 10:05 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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

60 of 99

LIMS Version: 6.634

SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 14-Mar-13

Project: 1302223 W ork 0 rder: 1302165 Sam ple D: 130223-26A (RO-SB-1 (35)) Lab D: 1302165-20

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 10:05 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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

Client: ALS Environmental

W ork Order: 1302165 Project: 1302223 Date: 3/14/2013 8:55:

QC BATCH REPORT

Batch ID: GS130215-3-1 Instrument ID: GAI			: GAMMA		Method:	Gamma Spectroscopy Results						
DUP	Sample ID: 1302165-1					Units: pCi	/g	Analysi	s Date: 3	/11/2013	10:45	
Client ID:	1302223-01A (MW-118 (1))	R	un ID: GS130	215-3A				Prep Date: 2/18	/2013	DF: N	A	
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,	
LCS	Sample ID: GS130215 -	3A				Units: pCi	/a	Analysi	s Date: 3	/11/2013	11:05	
Client ID:	,		un ID: GS130 :	215-3A		•	J	Prep Date: 2/18		DF: N		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Ra-226		454 (+/- 53)	3	469.4		96.8	85-115				P,M3	
LCS	Sample ID: GS130215 -	3				Units: pCi	/g	Analysi	s Date: 3	/11/2013	10:46	
Client ID:		R	un ID: GS130	215-3A			-	Prep Date: 2/18	/2013	DF: N	Α	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Am-241		463 (+/- 55)	7	475.3		97.5	85-115				Р	
Co-60		205 (+/- 24)	1	204.4		100	85-115				Р	
Cs-137		183 (+/- 22)	1	173.6		105	85-115				Р	
МВ	Sample ID: GS130215 -	3				Units: pCi	/g	Analysi	s Date: 3	/11/2013	10:46	
Client ID:		R	un ID: GS130 2	215-3A				Prep Date: 2/18	/2013	DF: N	A	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Ra-226		ND	0.24								U	
Ra-228		ND	0.37								U	
The folio	owing samples were analyz	ed in this bat	1: 1:	302165-1 302165-4 302165-7 302165-10	130 130)2165-2)2165-5)2165-8)2165-11	13 13	302165-3 302165-6 302165-9 302165-12				

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 <u>OR</u> 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

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.

66 of 99 1 of 15

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

67 of 99

Page 1 of 1



Subcontractor:

ALS Environmental

225 Commerce Drive

Fort Collins, CO 80524

TEL: (800) 443-

(800) 443-1511 (970) 490-1522

FAX: (970) 4 Acct #: **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

Date:

<u>04-Feb-13</u>

COC ID: 13244

Due Date 08-Feb-13

		Salesperson	Mala l						
316133		mer Information	12 y 2 , 1 3 5	ki Çiri	Pr	oject Inforn	nation	26.0	Parameter/Method Request for Analysis
Purchase Order			Pr	Project Name		1302079		A	Radium 226 _228 Sub to ALS Ft. Collins
Work Order			Pr	roject	Number			В	<u> </u>
Company Na	ame A	LS Group USA, Corp.	Bi	il To C	Company	ALS Group	USA, Corp.	С	
Send Report	To So	onia West	Inv Attn		Accounts	Payable	D		
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]								F	
City/State/Zip	о Н	ouston, Texas 77099-4338	Ci	ity/Sta	te/Zip	Houston, Texas 77099-4338		G	1
Phone	(2	81) 530-5656	Pr	hone		(281) 530-5656		н	
Fax	(2	81) 530-5887	Fa	Fax		(281) 530-5887			
eMail Addres	s So	Sonia.West@alsglobal.com		eMail CC				J	
Samp	ole ID		Matri	x	Collection	Date 24hr	Bottle	A	
1302079-01E	(MW-11	7 (1))	Soil		31/Jan/2	013 8:55	(1) 4OZGNEAT	x	X ·
1302079-03C (MW-117 (5))		7 (5))	Soil		31/Jan/2	013 9:15	(1) 4OZGNEAT	Х	
1302079-06C (MW-1			Soil		31/Jan/20	13 10:30	(1) 4OZGNEAT	, 	X.
1302079-09C (MW-11			Soil		31/Jan/20	13 15:20	(1) 4OZGNEAT	X	
1302079-12C (MW-117 (20))		7 (20))	Soil		31/Jan/20	13 15:25	(1) 4OZGNEAT		X
1302079-15E			Soil		31/Jan/20	13 15:40	(1) 4OZGNEAT	X	*··\·-

Commen		malyze for Radium 226/228	B. Email results to sonia wes	t@alsglobal.com and CC jumoke.la	wal@alsglobal.com	
RN	AS	02/04/13 18.	:00 C Irumbl	e 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: $ALS-IX$ Workorder No: 130 ∂	.040)	
Project Manager: TK Initials: CDT	Date:	2-5-	13
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
Amount of sediment: dusting moderateheavy	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	RAD ONLY	YES	NO
Cooler #: 1	OILL		
Temperature (°C): $\overline{\mathcal{A}}$, $\overline{\mathcal{D}}$			
No. of custody seals on cooler:			
DOT Survey/ Acceptance External uR/hr reading:			
Information Background μR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) NO / NA (If no, see I	form OOR)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC	· · · · · ·	ND #16	<u></u>
SAMPLES rECEIVED in 8 02 Soil jars-			
		····	
f applicable, was the client contacted? YES / NO (S) Contact:	n		
111	Date/Tin	ne:	
Project Manager Signature / Date: 2.5-()			
*IR Gun #2: Oakton, SN 29922500201-0066			

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of ____

ORIGIN ID: SGRA (201) 530-5656 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANGLIFF 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) 490-1611 REF: SUB SAMPLES

AND DIRECTION DISTRIBUTED IN THE CONTRACT OF THE PROPERTY OF T



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co-us DEN



70 of 99

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple ${\mathbb D}$: 1302223-13A (MW-117 (1)) Lab ${\mathbb D}$: 1302040-1

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 08:55 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

 GAMMA SPECTROSCOPY RESULTS
 PAI 713
 Prep Date:
 2/8/2013
 PrepBy: SAM

 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

ALS Environmental -- FC

Ra-228

SAM PLE SUM M ARY REPORT

3/4/2013 08:41

NA

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple \mathbb{D} : 1302223-14A (MW-117 (5)) Lab \mathbb{D} : 1302040-2

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 09:15 Percent Moisture:

ND (+/- 0.51)

Report Dilution

Analyses Result Qual Limit Units 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

U

0.82 pCi/g

ALS Environmental -- FC

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple \mathbb{D} : 1302223-15A (MW-117 (10)) Lab \mathbb{D} : 1302040-3

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 10:30 Percent Moisture:

A nalyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS PAI 713 Prep Date: 2/8/2013 PrepBy: SAM 3/4/2013 08:41 Ra-226 0.68 (+/- 0.22) LT,G 0.38 pCi/g NA Ra-228 NA 3/4/2013 08:41 ND (+/- 0.5) U,G 0.81 pCi/g

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple \mathbb{D} : 1302223-16A (MW-117 (15)) Lab \mathbb{D} : 1302040-4

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 15:20 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS PAI 713 Prep Date: 2/8/2013 PrepBy: SAM 3/4/2013 08:41 Ra-226 ND (+/- 0.24) U,G 0.44 pCi/g NA Ra-228 ND (+/- 0.44) 0.73 pCi/g NA 3/4/2013 08:41 U,G

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple \mathbb{D} : 1302223-17A (MW-117 (20)) Lab \mathbb{D} : 1302040-5

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 15:25 Percent Moisture:

A nalyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS Prep Date: 2/8/2013 PrepBy: SAM **PAI 713** Ra-226 0.87 (+/- 0.26) LT,G 0.48 pCi/g NA 3/4/2013 08:42 Ra-228 NA 3/4/2013 08:42 ND (+/- 0.5) U,G 0.75 pCi/g

ALS Environmental -- FC

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302040

Sam ple \mathbb{D} : 1302223-18A (MW-117 (25)) Lab \mathbb{D} : 1302040-6

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 15:40 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

PAI 713

Prep Date: 2/8/2013

PrepBy: SAM

Pag 236

Prep Date: 2/8/2013

PrepBy: SAM

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,TI 0.64 pCi/g NA 3/4/2013 08:42

SAM PLE SUM M ARY 以 因 PORT

LegalLocation: Project: Client: Sample ID: 1302223-18A (MW-117 (25)) 1302223 ALS Environmental Σ ork Order: Lab Ⅲ: M atrix: Date: 06-Mar-13 SOIL 1302040 1302040-6

Collection Date: 1/31/2013 15:40 Report PercentM oisture:

Analyses Ħ esult Q ual Lim it Units D ilution Factor Date Analyzed

Explanation of Q ualifiers

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

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

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SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 W ork Order: 1302040 Sam ple ID: 1302223-18A (MW-117 (25)) Lab ID: 1302040-6

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 15:40 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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

LIMS Version: 6.631

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ALS Environmental -- FC

Client: ALS Environmental

W ork Order: 1302040 Project: 1302223 Date: 3/6/2013 7:16:1

QC BATCH REPORT

Batch ID:	GS130207-2-1	: GAMMA		Method:	Gamma Spectroscopy Results						
DUP	Sample ID: 1302040-6					Units: pCi/	g	Analysi	s Date: 3	4/2013 09	:44
Client ID:	1302223-18A (MW-117 (25))	un ID: GS130 2	207-2A				Prep Date: 2/8/2	2013	DF: NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
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: GS130207-2	A				Units: pCi/	g	Analysi	s Date: 3	4/2013 10	:40
Client ID:		R	un ID: GS130 2	207-2A				Prep Date: 2/8/2	2013	DF: NA	4
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		466 (+/- 55)	3	469.4		99.3	85-115				P,M
LCS	Sample ID: GS130207-2					Units: pCi /	g	Analysi	s Date: 3	4/2013 10	:39
Client ID:		Rı	un ID: GS130 2	207-2A				Prep Date: 2/8/2	2013	DF: NA	4
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Am-241		487 (+/- 59)	15	475.4		103	85-115				Р
Co-60		206 (+/- 24)	1	204.9		100	85-115				Р
Cs-137		179 (+/- 21)	1	173.7		103	85-115				Р
MB	Sample ID: GS130207-2					Units: pCi /	g	Analysi	s Date: 3	4/2013 09	:49
Client ID:		Rı	un ID: GS130 2	207-2A				Prep Date: 2/8/2	2013	DF: N	4
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		ND	0.24								U
Ra-228		ND	0.4								U
The follo	owing samples were analyze	ed in this bat	-	302040-1 302040-4)2040-2)2040-5		302040-3 302040-6			

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 <u>OR</u> 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.

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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

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.

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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

Page 1 of 1

CHAIN-OF-CUSTODY RECORD Date: 04COC ID: 1322
Page 1 of 1

TEL: Fax:

Subcontractor:
ALS Environmental
225 Commerce Drive

Fort Collins, CO 80524

Acct#:

(800) 443-1511 (970) 490-1522

	Salesperson	Mala H. Belmonte	nonte									
Cus	Customer Information			Project Information	lion		P	rameter/ly	lethod Reque	Parameter/Method Request for Analysis		
Purchase Order		Project Name		1302082		A Radiun	A Radium 226 .228 Sub to ALS Ft. Collins	Sub to ALS	Ft. Collins			
Work Order		Project Number	Aumber			മ						
Company Name	ALS Group USA, Corp.	Bill To Company		ALS Group USA, Corp.	JSA, Corp.	ပ		;				
Send Report To	Sonia West	Inv Attn	7	Accounts Payable	ayable	Ω						
Address	10450 Stancliff Rd, Suite 210	Address		0450 Stancl	10450 Stancliff Rd, Suite 210	jų.						
			l	:		ш,						
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip		fouston, Tex	Houston, Texas 77099-4338	ŋ						
Phone	(281) 530-5656	Phone)	(281) 530-5656	56	æ,						
Fax	(281) 530-5887	Fax)	(281) 530-5887	87	180 283						
eMail Address	Sonia.West@alsglobal.com	eMail CC				3						
Sample ID		Matrix	Collection Date 24hr	ate 24hr	Bottle	- X	о В	O		9	KIR PH	10 S
(I) 1302082-01E (RO-SB-1 (1))	18-1 (1))	Soil	31/Jan/2013 11:45	3 11:45	(1) 4OZGNEAT	×						
(2) 1302082-03C (RO-SB-1 (5))	38-1 (5))	Soil	31/Jan/2013 12:00	3 12:00	(1) 40ZGNEAT	×						
(10) 1302082-06C (RO-SB-1 (10))	3B-1 (10))	Soil	31/Jan/2013 12:50	3 12:50	(1) 40ZGNEAT	×						
(3) 1302082-09C (RO-SB-1 (15))	38-1 (15))	Soil	1/Feb/2013 9:57	3 9:57	(1) 4OZGNEAT	×						
3 1302082-12C (RO-SB-1 (20))	88-1 (20))	Soil	1/Feb/2013 9:40	3 9:40	(1) 4OZGNEAT	×						
(B 1302082-15C (RO-SB-1 (25))	3B-1 (25))	Soil	1/Feb/2013 10:18	10:18	(1) 4OZGNEAT	X						
(1) 1302082-18C (RO-S	3B-1 (30))	Soil	1/Feb/2013 10:10	10:10	(1) 4OZGNEAT	×						
(3) 1302082-21E (RO-SB-1 (35))	B-1 (35))	Soil	1/Feb/2013 10:05	10:05	(1) 4OZGNEAT	X						
•	-											
				٠								

	i i	Report/QC Level	
(@alsglobal.com		Cooler IDs R	
al.com and CC jumoke.lawa	35-13 0910	Date/Time	Date/Time
l results to sonia west@alsglob	OC C Dumble	Received by:	Received by:
Please analysis for Radium 226/228. Email results to sonia.west@alsglobal.com and CC jumoke.lawal@alsglobal.com	2/4/12 18:0C	/ Date/Time	Date/Time
Comments: Please anal	Ros All	Relinquished by:	Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: $A \cup S - 1 \times W$ Workorder No: 1300	Client: ALS-1X Workorder No: 1302041								
Project Manager: TK Initials: CDT	Date:	2-5-	13_						
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	(S)						
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									
15. Do any water samples contain sediment? Amount of sediment: dusting moderateheavy	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)	(YES)	NO							
Cooler #:	ONLY	,							
Temperature (°C): $\frac{\partial}{\partial x} \cdot D$									
No. of custody seals on cooler: 2									
DOT Survey/ Acceptance External µR/hr reading:									
Information Background μR/hr reading:									
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, EXC SAMPLES (SCEIVEC IN 8 02.501) INS	CEPT#1 A								
If applicable, was the client contacted? YES / NO / NA Contact:	Date/Tir	ne:							
Project Manager Signature / Date:	-								

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002 ORIGIN ID: SGRA (281) 530-5656 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US

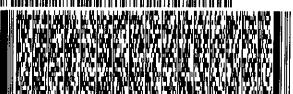
SHIP DATE: 04FEB13 ACTWGT: 49.1 LB CAD: 300130/CAFE2606

BILL SENDER

TO ROY FRENCH **ALS ENVIRONMENTAL** 225 COMMERCE DRIVE

FORT COLLINS CO 80524 (970) 490-1511 REF: SUB SAMPLES

Γ



FedEx Express

TUE - 05 FEB RIORITY OVERNIGHT

Part # 158148-434 RIT2 04/12 🛟

80524 co-us DEN

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SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-19A (RO-SB-1 (1)) Lab \mathbb{D} : 1302041-1

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 11:45 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

 GAMMA SPECTROSCOPY RESULTS
 PAI 713
 Prep Date: 2/8/2013
 PrepBy: SAM

 Ra-226
 1.32 (+/- 0.29)
 G
 0.46 pCi/g
 NA
 3/4/2013 08:42

 Ra-228
 ND (+/- 0.5)
 U,G
 0.9 pCi/g
 NA
 3/4/2013 08:42

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-20A (RO-SB-1 (5)) Lab \mathbb{D} : 1302041-2

LegalLocation: Matrix: SOIL

Collection Date: 1/31/2013 12:00 Percent Moisture:

R eport D ilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS PAI 713 Prep Date: 2/8/2013 PrepBy: SAM
Ra-226 1.09 (+/- 0.34) G 0.54 pCi/g NA 3/4/2013 09:44

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

ALS Environmental -- FC

Ra-228

SAM PLE SUM M ARY REPORT

3/4/2013 09:44

NA

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-21A (RO-SB-1 (10)) Lab \mathbb{D} : 1302041-3

LegalLocation: Matrix: SOIL

C ollection Date: 1/31/2013 12:50 Percent M oisture:

ND (+/- 0.53)

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

Ra-226

0.89 (+/- 0.34) LT,G,TI

0.58 pCi/g

NA

2/8/2013

PrepBy: SAM
3/4/2013 09:44

U,G

0.93 pCi/g

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple ID: 1302223-22A (RO-SB-1 (15)) Lab ID: 1302041-4

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 09:57 Percent Moisture:

A nalyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS PAI 713 Prep Date: 2/8/2013 PrepBy: SAM Ra-226 0.87 (+/- 0.25) LT,G 0.38 pCi/g NA 3/4/2013 09:44 Ra-228 NA 3/4/2013 09:44 ND (+/- 0.4) U,G 0.82 pCi/g

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-23A (RO-SB-1 (20)) Lab \mathbb{D} : 1302041-5

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 09:40 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units Factor Date Analyzed

GAMMA SPECTROSCOPY RESULTS

PAI 713

Prep Date: 2/8/2013

PrepBy: SAM

Ra-226 0.58 (+/- 0.27) LT,G,TI 0.51 pCi/g NA 3/4/2013 09:44
Ra-228 0.99 (+/- 0.62) NQ,G 0.81 pCi/g NA 3/4/2013 09:44

SAM PLE SUM MARY REPORT

NA

3/4/2013 09:44

Date: 06-Mar-13 ALS Environmental C lient: 1302223 W ork Order: 1302041 Project:

1302223-24A (RO-SB-1 (25)) Lab ID: 1302041-6 Sam ple ID:

M atrix: SOIL LegalLocation:

Collection Date: 2/1/2013 10:18 PercentMoisture:

1.11 (+/- 0.43)

R eport D ilution Analyses Result Date Analyzed Limit Units Qual Factor

GAMMA SPECTROSCOPY RESULTS PAI 713 Prep Date: 2/8/2013 PrepBy: SAM G 1.07 (+/- 0.28) 0.45 pCi/g NA 3/4/2013 09:44 Ra-228

0.64 pCi/g

G,TI

ALS Environmental -- FC

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-25A (RO-SB-1 (30)) Lab \mathbb{D} : 1302041-7

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 10:10 Percent Moisture:

A nalyses Result Qual Limit Units Factor Date Analyzed

 GAMMA SPECTROSCOPY RESULTS
 PAI 713
 Prep Date: 2/8/2013
 PrepBy: 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

SAM PLE SUM M ARY REPORT

Client: ALS Environmental Date: 06-Mar-13
Project: 1302223 Work Order: 1302041

Sam ple \mathbb{D} : 1302223-26A (RO-SB-1 (35)) Lab \mathbb{D} : 1302041-8

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 10:05 Percent Moisture:

			R eport		D illution	
Analyses	Result.	Oual	T. mit T	In it s	Doobou	Date Analyzed

Analyses	Result	Qual	Limit Units	Factor	Date Analyzed	
GAMMA SPECTROSCOPY RESULTS			PAI 713	Prep Date: 2/8/2013	PrepBy: SAM	_
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	

SAM PLE SUM M ARY REPORT

Date: 06-Mar-13 Client: ALS Environmental

Project: 1302223 Work Order: 1302041 Sample ID: 1302223-26A (RO-SB-1 (35)) Lab ID: 1302041-8

LegalLocation: M atrix: SOIL

Collection Date: 2/1/2013 10:05 Percent Moisture:

R eport D ilution

Analyses Result Date Analyzed Qual Limit Units Factor

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

AR Page 9 of 10 96 of 99 14 of 17

SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 06-Mar-13

Project: 1302223 W ork O rder: 1302041 Sam ple ID: 1302223-26A (RO-SB-1 (35)) Lab ID: 1302041-8

LegalLocation: Matrix: SOIL

Collection Date: 2/1/2013 10:05 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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

LIMS Version: 6.631 AR Page 10 of 10

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ALS Environmental -- FC

Client: ALS Environmental

W ork Order: 1302041 Project: 1302223 Date: 3/6/2013 7:19:1

QC BATCH REPORT

Batch ID: G	SS130207-2-1	Instrument ID:	GAMMA		Method:	Gamma S	pectroso	copy Results			
LCS	Sample ID: GS13020	7-2A				Units: pCi /	'g	Analys	sis Date:	3/4/2013 1	0:40
Client ID:		Ru	ın ID: GS130 2	207-2A				Prep Date: 2/8/	2013	DF: N	A
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		466 (+/- 55)	3	469.4		99.3	85-115				P,M
LCS	Sample ID: GS13020	7-2				Units: pCi/	g	Analys	sis Date:	3/4/2013 1	0:39
Client ID:		Ru	ın ID: GS130 2	207-2A				Prep Date: 2/8/	2013	DF: N	Α
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Am-241		487 (+/- 59)	15	475.4		103	85-115				Р
Co-60		206 (+/- 24)	1	204.9		100	85-115				Р
Cs-137		179 (+/- 21)	1	173.7		103	85-115				Р
МВ	Sample ID: GS13020	7-2				Units: pCi /	/g	Analys	is Date:	3/4/2013 0	9:49
Client ID:		Ru	ın ID: GS130 2	207-2A				Prep Date: 2/8/	2013	DF: N	Α
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		ND	0.24								U
Ra-228		ND	0.4								U
The follow	ving samples were analy	yzed in this bate	1:	302041-1 302041-4 302041-7	130)2041-2)2041-5)2041-8		302041-3 302041-6			

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 <u>OR</u> 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.

99 of 99 17 of 17



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 9H

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

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonie 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 Environmental

Date: 06-Mar-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302400

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115 (1)

Collection Date: 1/29/2013 02:25 PM

Date: 06-Mar-13

Work Order: 1302400

Lab ID: 1302400-01

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-115 (5)
 Lab ID: 1302400-02

 Sample ID:
 MW-115 (5)
 Lab ID: 1302400

 Collection Date:
 1/29/2013 02:35 PM
 Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSIS
Method: NA

Method: NA

Method: NA

Analyst: SUB

3/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-115 (10)
 Lab ID: 1302400-03

Collection Date: 1/29/2013 04:10 PM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-115 (15)
 Lab ID: 1302400-04

 Sample ID:
 MW-115 (15)
 Lab ID: 130240

 Collection Date:
 1/29/2013 03:20 PM
 Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Client: Navajo Refining Company

Project: RO Discharge Sampling

Work Order: 1302400

Sample ID: MW-115 (20)

Lab ID: 1302400-05

 Sample ID:
 MW-115 (20)
 Lab ID: 130240

 Collection Date:
 1/29/2013 04:00 PM
 Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302400

 Sample ID:
 MW-115 (25)
 Lab ID:
 1302400-06

 Collection Date:
 1/29/2013 03:45 PM
 Matrix:
 SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSIS
Method: NA

Method: NA

Method: NA

Analyst: SUB

Miscellaneous Analysis

See Attached

0 1 3/5/2013

Client:

Date: 06-Mar-13

Navajo Refining Company Work Order: 1302400 **Project: RO Discharge Sampling**

Lab ID: 1302400-07 **Sample ID:** MW-116 (1)

Collection Date: 1/29/2013 04:05 PM Matrix: SOIL

Report **Dilution Date Analyzed** Limit **Analyses MDL Factor** Result Qual Units

MISCELLANEOUS ANALYSIS Method: NA Analyst: SUB 3/5/2013 Miscellaneous Analysis See Attached 0

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-116 (5)
 Lab ID: 1302400-08

Collection Date: 1/29/2013 04:32 PM

Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-116 (10)
 Lab ID: 1302400-09

 Sample ID:
 MW-116 (10)
 Lab ID: 13024

 Collection Date:
 1/30/2013 09:02 AM
 Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-116 (15)
 Lab ID: 1302400-10

Collection Date: 1/30/2013 09:10 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-116 (20)
 Lab ID: 1302400-11

Collection Date: 1/30/2013 09:20 AM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-116 (25)
 Lab ID: 1302400-12

Collection Date: 1/30/2013 09:35 AM **Matrix:** SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-114 (1)
 Lab ID: 1302400-13

 Sample ID:
 MW-114 (1)
 Lab ID: 13024

 Collection Date:
 1/28/2013 02:30 PM
 Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

 Project:
 RO Discharge Sampling
 Work Order: 1302400

 Sample ID:
 MW-114 (5)
 Lab ID: 1302400-14

 Sample ID:
 MW-114 (5)
 Lab ID: 13024

 Collection Date:
 1/28/2013 02:45 PM
 Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-114 (10)
 Lab ID: 1302400-15

Collection Date: 1/28/2013 03:30 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-114 (15)
 Lab ID: 1302400-16

Collection Date: 1/28/2013 03:50 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-114 (20)
 Lab ID: 1302400-17

Collection Date: 1/28/2013 04:10 PM

Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

ALS Environmental Date: 06-Mar-13

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-114 (25)
 Lab ID: 1302400-18

Collection Date: 1/28/2013 04:20 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

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
 Work Order: 1302400

 Sample ID: MW-114 (30)
 Lab ID: 1302400-19

Collection Date: 1/28/2013 04:00 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

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

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 1302400

 Sample ID: MW-114 (35)
 Lab ID: 1302400-20

Collection Date: 1/28/2013 04:50 PM Matrix: SOIL

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 06-Mar-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached013/5/2013

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

Date: 06-Mar-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS, Project:** RO Discharge Sampling ACRONYMS, UNITS

WorkOrder: 1302400

Qualifier	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	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
	D
<u>Acronym</u>	<u>Description</u>
Acronym DCS	Detectability Check Study
-	
DCS	Detectability Check Study
DCS DUP	Detectability Check Study Method Duplicate
DCS DUP LCS	Detectability Check Study Method Duplicate Laboratory Control Sample
DCS DUP LCS LCSD	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate
DCS DUP LCS LCSD MBLK	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank
DCS DUP LCS LCSD MBLK MDL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit
DCS DUP LCS LCSD MBLK MDL MQL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit
DCS DUP LCS LCSD MBLK MDL MQL MS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike
DCS DUP LCS LCSD MBLK MDL MQL MS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS PQL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike Practical Quantitation Limit
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS PQL SD	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike Practical Quantitation Limit Serial Dilution

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time	Received: 31	-Jan-13 09:	<u>:10</u>
Work Order:	1301997			Received b	y: <u>Ri</u>	<u>DH</u>	
Checklist comp	leted by Lahnnie B. Welen eSignature		31-Jan-13 Date	Reviewed by:	$\frac{\text{Patricia} \ \bot.}{\text{eSignature}}$. Lynch	01-Feb-13 Date
Matrices: Carrier name:	soil/water FedEx Priority Overnight						
Shipping contain	iner/cooler in good condition?		Yes 🗸	No 🗆	Not Present		
Custody seals i	ntact on shipping container/coole	er?	Yes 🗸	No 🗆	Not Present		
Custody seals i	ntact on sample bottles?		Yes	No 🗌	Not Present	\checkmark	
Chain of custoo	ly present?		Yes 🗸	No 🗌			
Chain of custoo	dy signed when relinquished and	received?	Yes 🗸	No 🗌			
Chain of custoo	dy agrees with sample labels?		Yes 🗸	No 🗆			
Samples in pro	per container/bottle?		Yes 🗸	No 🗌			
Sample contain	ners intact?		Yes 🗸	No 🗆			
Sufficient samp	le volume for indicated test?		Yes 🗸	No 🗆			
All samples rec	eived within holding time?		Yes 🗸	No 🗌			
Container/Tem	p Blank temperature in compliand	ce?	Yes 🗸	No 🗌			
Temperature(s))/Thermometer(s):		1.2 C/uc		<u>IR 1</u>		
Cooler(s)/Kit(s)	:		<u>5414</u>				
Date/Time sam	ple(s) sent to storage:		1/31/13 14	:50			
Water - VOA vi	als have zero headspace?		Yes 🗸	No 🗆	No VOA vials su	bmitted]
Water - pH acc	eptable upon receipt?		Yes 🗸	No 🗌	N/A		
pH adjusted? pH adjusted by	:		Yes	No 🗹	N/A		
Login Notes:	Ra-226/228 & cyanide not o	n COC. Incorrec	ct metals list on	COC.			
Client Contacte	ed:	Date Contacted	i:	Person	Contacted:		
Contacted By:		Regarding:					
Comments:							
CorrectiveActio	n:						SPC Dage 1 of 1

Sample Receipt Checklist

Client Name: I	NAVAJO REFINING		Date/Time	Received: 31-Jan-	<u>-13 09:10</u>
Work Order:	<u>13011005</u>		Received b	y: RDH	
Matrices:	ested by Lahnnie B. Dollin esignature	31-Jan-13 Date	Reviewed by:	Patricia L. Ly eSignature	oneh 01-Feb-13 Date
Carrier name:	FedEx Priority Overnight				
Shipping contain	er/cooler in good condition?	Yes	✓ No □	Not Present	
Custody seals in	tact on shipping container/coole	? Yes	✓ No □	Not Present	
Custody seals in	tact on sample bottles?	Yes	□ No □	Not Present ▼	•
Chain of custody	present?	Yes	✓ No □		
Chain of custody	signed when relinquished and r	eceived? Yes	✓ No □		
Chain of custody	agrees with sample labels?	Yes	✓ No □		
Samples in prope	er container/bottle?	Yes	✓ No □		
Sample containe	rs intact?	Yes	✓ No □		
Sufficient sample	volume for indicated test?	Yes	✓ No □		
All samples rece	ived within holding time?	Yes	✓ No □		
Container/Temp	Blank temperature in complianc	e? Yes	✓ No □		
Temperature(s)/	Thermometer(s):	1.4 C/u	<u> </u>	<u>IR 1</u>	
Cooler(s)/Kit(s):		4028			
Date/Time samp	le(s) sent to storage:	1/31/13			
Water - VOA vial	s have zero headspace?		✓ No □	No VOA vials submitte	ed 🗀
	otable upon receipt?	Yes	No 🗆	N/A \square	
pH adjusted? pH adjusted by:		Yes -	No ✓	N/A	
Login Notes:	Trip blank received, but not	on COC. Ra-226/228 & cyan	ide not on COC. Inc	orrect metals list on CC	OC.
====:	=======	=======	=====	======	=======
Client Contacted	:	Date Contacted:	Person	Contacted:	
Contacted By:		Regarding:			
Comments:					
CorrectiveAction	:				SRC Page 1 of 1

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Sample Receipt Checklist

Client Name: N	IAVAJO REFINING				Date/Time	Receive	d: <u>31-</u>	<u>Jan-13</u>	09:10	
Work Order: 1	<u>302026</u>				Received b	y:	RD	<u>H</u>		
Matrices:	red by Robert D. Harris eSignature	· (01-Feb-13 Date	<u> </u>	Reviewed by:	Patri eSigna		Lyne	h	13-Feb-13 Date
Carrier name:	<u>FedEx</u>									
Shipping containe	er/cooler in good condition?		Yes	~	No 🗌	No	Present			
Custody seals into	act on shipping container/coole	r?	Yes	✓	No 🗌	No	Present			
Custody seals into	act on sample bottles?		Yes		No 🗌	No	Present	✓		
Chain of custody	present?		Yes	✓	No 🗌					
Chain of custody	signed when relinquished and r	eceived?	Yes	✓	No 🗌					
Chain of custody	agrees with sample labels?		Yes		No 🗸					
Samples in prope	r container/bottle?		Yes	✓	No 🗌					
Sample container	s intact?		Yes	✓	No 🗆					
Sufficient sample	volume for indicated test?		Yes	✓	No 🗆					
All samples receiv	ved within holding time?		Yes	✓	No 🗌					
Container/Temp E	Blank temperature in complianc	e?	Yes	✓	No 🗌					
Temperature(s)/T	hermometer(s):		1.8c c/	<u>'u</u>			<u>005</u>			
Cooler(s)/Kit(s):			3725							
Date/Time sample	e(s) sent to storage:		2/1/13	14:50	<u>)</u>					
Water - VOA vials	s have zero headspace?		Yes	✓	No L	No VO	A vials sub	mitted		
Water - pH accep	table upon receipt?		Yes		No 🗆	N/A	✓			
pH adjusted?			Yes		No 🗌	N/A	✓			
pH adjusted by:			_							
Login Notes:	COC and sample count rece PL.	eived didn't match	up. PL sp	oke w	vith client and go	ot everyt	hing corre	cted. Lo	ogged in by	-
				:						
Client Contacted:		Date Contacted:			Person	Contact	ed.			
		Regarding:			1 013011	Contact	ou.			
Contacted By:		rv o garunig.								
Comments:										
CorrectiveAction:										
									SRC	Page 1 of 1

1302400

Cincinnati, OH +1 513 733 5336

Chain of Custody Form

U Everett, WA +1 425 356 2600

Tert Collins, CO +1 970 490 1511

41202

COC ID:

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

RCRA & 무연 ۳, Parameter/Method Request for Analysis Metals (602017000) Results Due Date: NW GWCist -+al Metals (6020/7000) 乂 X T (B270) NLJ Level III. Std QC + Raw Data Level IV: SW846 CLP-Like Ö 150 QC Package: (Check Box Below ALevel II: Standard QC N TAT, Dissolved 24 Hour (ROISH) (8015A X M (8260) M Officer: Ogher I 5VQ Ø. Ω W O 2 Wk Days þ Ssolved Joseph Ce 154 DRO И Ü CRO æ ķά (X) ☐ 5 WK Days ß, (MC) ⋖ 14 U Sanplina Ω Ш IL. Ö 4) Required Turnaround Time; # Bottles Address 501 East Main Phone 575-748-6733 DSTD 10 WK Days ictions 1245-947-5-5451 Pres. LASIN NA Project Name RD DSCharge Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental Project Information Matrix Kobect Time 1570 205 1612 430 1435 1502 エスス 0191 219 Shipment Wethod; Bill To Company City/State/Zip Project Number Invoice Attn. e-Mail Address 1-79-13 Dafe 300 1/30/13 Address 501 Rest Pain Navio Retining Send Report To Koloch Call City/State/Zip Acsic, NM Customer Information Sample Description 40 1K (3) (%) 9 10 1万 分 <u>ئ</u>ة س 29ersen 五 元 (W) is 7w115 JOE R 11315 10 K Company Name Purchase Order Work Order Fax Phone e-Mail Address impler(s). Please Pi 9

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Cincinnati, OH +1 513 733 5336

Holland, Mi +1 616 399 6070

Everett, WA +1 425 356 2600

Page 2 of Z

Chain of Custody Form

coc ID: 72330

Houston, TX +1 281 530 5656

Parameter/Method Request for Analysis

VOC (8260) NW GW List

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RO Discharge/Sampling Project Information

> Project Name Project Number

Customer Information

128823

GRO (8015M)

Navajo Refining Company

Bill To Company Invoice Attn

Navajo Refining Company

Work Order Company Name Send Report To

Purchase Order

Robert Combs

501 East Main

Address

Robert Combs 501 East Main

ORO (8015M) DRO (8015M)

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Dissolved Metals (6020/7000) RCRA 8 Total Metals (6020/7000) RCRA 8 LL SVOC (8270) NM GW List

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Artesia, NM 88211 (575) 748-6733 (575) 746-5421

City/State/Zip

Artesia, NM 88211 (575) 748-6733

City/State/Zip

Address

Phone

Fax

(575) 746-5421

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ALS Work Order #:

ALS Project Manager:

Middletown, PA +1 717 944 5541

South Charleston, WV +1 304 356 3168 York, PA +1 717 505 5280 Salt Lake City, UT +1 801 266 7700 Spring City, PA +1 610 948 4903

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ite: 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.

Environmental

Chain of Custody Form

41210

COC ID:

U Everett, WA +1 425 356 2600

NAVAJO REFINING: Navajo Refining Company Project: RO Discharge Sampling

Parametermentou request for Analysis

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C Fort Collins, CO +1 970 490 1511

Cincinnati, OH +1 513 733 5336

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

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Bill To Company Navaja Refining

Company Name | Maraic (Ketining Send Report To To Robert Carl

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Invoice Attn.

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Project Name Ro Discherge / Sampling

Project Number

Project Information

Customer Information

Purchase Order Work Order アナカト

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501 East Main

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

Other:

Level III: Std QC + Raw Data Level IV: SW846 CLP-Like

QC Package: (Check Box Below) Level II: Standard QC

31 of 93

1302400 NAVAJO REFINING: Navajo Refining Company

Cincinnati, OH +1 513 733 5336 C Everett, WA +1 425 356 2600 Tert Collins, CO +1 970 490 1511

Chain of Custody Form

Project: RO Discharge Sampling

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COC ID:

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Customer Information	Project Information Parameter/Method Request for Analysis	
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Work Order	JB GRO (801AH	
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Note: Any changes must be made in writing once samples and COC Form have	COC Form have been submitted to ALS Environmental. CoC Form have been submitted to ALS Group	



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Fax	(575) 746-5421	421	Fax	(575) 748-5421		Moisture			
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TRRP Check List

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Sampler(s) Pleas

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10 Day TAT. Dissolved Metals Field Filtered

TRRP Checkly

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Other / EDD

9-5035

Preservative Key: 1-HGI 2:HNO; 3:H,SO; 4:NaOH 5-Na,S,O; 6-NaHSO, 7-Offer 8-4°C

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Note: I. Any changes must be madelin 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 igal document. All information must be completed accurately.

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Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental	COC Form have been	submitted to ALS Environmental.		Copyright 2011 by ALS Group	LS Group



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/mlc

Enclosure (s): Report

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.

	License or Certification
Accreditation Body:	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.

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

CHAIN-OF-CUSTODY RECORD Date: 01-Feb-13 COC 1D: 13239

TEL: FAX: Acct#;

Mala H. Belmonte

Salesperson

Fort Collins, CO 80524

(970) 443-1511 (970) 490-1522

Purchase Order Work Order Company Name Send Report To Address	r 10-1302026 e ALS Group USA, Corp.		Project Name	ne 1302026		A Radiun	n 226 228	228 Sub to ALS Et Collins	Radium 226, 228 Sub to ALS Ft. Collins	ins	Significan	% %	
Work Order Company Name Send Report To Address City/State/Zip	ALS Group USA, Corp.	Proi	•					1022					
Company Name Send Report To Address City/State/Zip	ALS Group USA, Corp.	7	Project Number			Ф	1						
Send Report To Address City/State/Zip		Bill	Bill To Company	ALS Group USA, Corp.	JSA, Corp.	ပ							
Address City/State/Zip	Sonia West	Inv Attn	Attn	Accounts Payable	ayable	٥							
City/State/Zip	10450 Stancliff Rd, Suite 210		Address	10450 Stancl	10450 Stancliff Rd, Suite 210	Ш							
City/State/Zip						ш					-		
	Houston, Texas 77099-4338			Houston, Tex	Houston, Texas 77099-4338	၅							
Phone	(281) 530-5656	Pho	Phone	(281) 530-5656	95	I					-		
Fax	(281) 530-5887	Fax		(281) 530-5887	87	 -					-		
eMail Address	Sonia West@alsglobal.com		eMail CC	jumoke.lawal	jumoke.lawal@alsglobal.com	ا ا						}	
Sample ID		Matrix	Collection Date 24hr	Date 24hr	Bottle	Α	В		Ш	F .	H. H. S		
1302026-01E (MW-114 (1))		Soil	28/Jan/2013 14:30	13 14:30	(1) 4OZGNEAT	×				\vdash). V
1302026-03E (MW-114 (5))		Soil	28/Jan/201	13 14:45	(1) 4OZGNEAT	×						-	
1302026-06E (MW-114 (10))		Soil	28/Jan/201	13 15:30	(1) 4OZGNEAT	×							
1302026-09E (MW-114 (15))	-114 (15))	Soil	28/Jan/201	13 15:50	(1) 4OZGNEAT	×							-
1302026-12E (MW-114 (20))		Soil	28/Jan/2013 16:10	13 16:10	(1) 4OZGNEAT	×							
1302026-15E (MW-114 (25))		Soil	28/Jan/2013 16:20	13 16:20	(1) 4OZGNEAT	×							
1302026-18E (MW-114 (30))	-114 (30))	Soil	28/Jan/201	13 16:00	(1) 4OZGNEAT	×	<u> </u>				-		,
1302026-21E (MW-114 (35))		Soil	28/Jan/2013 16:50	13 16:50	(1) 4OZGNEAT	×							
Comments: Relingstiffed by: Relinquished by:	WO 1302026 - Please analyze for Radium 226/228 WO 1302026 - Please analyze for Radium 226/228 DateTime DateTime Received by	ase analyze for E	Radium 226/228 Received by: Received by:	28 / 18 / 18 / 18 / 18 / 18 / 18 / 18 /	James I.	Date Time Date Time	0430	Cooler IDs	SQL SQL		Report/C	Report/QC Level	* 1



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: HLS 1X Workorder No: 131	J200	29	
Project Manager: JRK Initials: LAS	Date:	221	<u>-</u> <u>3</u>
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
s. 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
Were all samples placed in the proper containers for the requested analyses?		TES	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.)	1	(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	YES	(NO)
Cooler #:	,		
Temperature (°C): Amb			
No. of custody seals on cooler: 2			
DOT Survey Acceptance External μR/hr reading: 12			
Background μR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES NO / NA (If no, see I	Form 008)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC		7#16	
	Ei I #I AII	J #10+	
			
			
Ilu - Limited volume.			
			
		-	
			
If applicable, was the client contacted? VES NO / NA, Contact: S. Wast.	Dete/Ti	2-2-1	
Project Manager Signature / Date: 2. 2. 13			<u></u> _
1 toject istanager Signature / Date:			
/IR Gun #2: Oakton, SN 29922500201-0066			ı
Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 23722220101-0002		Page 1 of	.]



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: HLS 1 X Workorder No: 1302	1029		
Project Manager: JK Initials: CDT		2-5-	<u>.</u> <u>[</u> 3
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
 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
II. 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 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 #: Temperature (°C): 3.0 No. of custody seals on cooler: 3 DOT Survey Acceptance Information External μR/hr reading: 12 Background μR/hr reading: 11 Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/ NO / NA (If no, see Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXEXTRA UDI LIMIC L	Form 008.) CEPT#1 ANI	D#16.	
f applicable, was the client contacted? YES / NO (N) Contact: Project Manager Signature / Date:	Date/Time		
Form 201r24.xis (06/04/2012) *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002			1

ORIGIN ID: SGRA (281) 530-5656 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US SHIP DATE: 01FEB13 ACTUGT: 21.0 LB CAD: 300130/CAFE2606

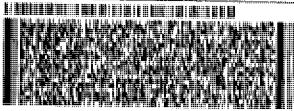
BILL SENDER

10 ROY FRENCH ALS ENVIRONMENTAL 225 COMMERCE DRIVE

FORT COLLINS CO 80524

(970) 490-- 1611 Dept: Environmental

REF: SW/PL/JBA



FedEx EXPIGERS SZIGOROZIZIZIZI

TRK# 4340 2174 0732

SATURDAY ### A2
PRIORITY OVERNIGHT

XO FTCA

80524 co-us DEN



)

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



FedEx

TUE - 05 FEB A2 RIORITY OVERNIGHT

80524

co-us DEN

Part # 156148-434 RIT2 04/12 😘



SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302029

 Sample ID:
 1302400-13A (MW-114 (1))
 Lab ID:
 1302029-1

Legal Location:Matrix:SOILCollection Date:1/28/2013 14:30Percent Moisture:

Analyses	Resul	t 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	0.6	5 pCi/g	NA	2/27/2013 12:58
Ra-228	ND (+/- 0.	69) U,G	0.9	9 pCi/g	NA	2/27/2013 12:58

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			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.9 (+/- 0.39)	G	0.38	pCi/g	NA	2/27/2013 12:58
Ra-228	1.12 (+/- 0.57)	G,NQ	1	pCi/a	NA	2/27/2013 12:58

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302029

 Sample ID:
 1302400-15A (MW-114 (10))
 Lab ID:
 1302029-3

Legal Location: Matrix: SOIL

Collection Date: 1/28/2013 15:30 **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/a	NA	2/27/2013 12:59

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302029

 Sample ID:
 1302400-16A (MW-114 (15))
 Lab ID:
 1302029-4

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	B 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

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			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	0.94 (+/- 0.29)	LT,G	0.46	pCi/g	NA	2/27/2013 14:27
Ra-228	1.06 (+/- 0.63)	G,NQ	0.77	pCi/g	NA	2/27/2013 14:27

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

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	B 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

SAMPLE SUMMARY REPORT

Matrix: SOIL

Date: 04-Mar-13 **Client:** ALS Environmental

Project: Work Order: 1302029 1302400 **Lab ID:** 1302029-8 **Sample ID:** 1302400-20A (MW-114 (35))

Legal Location: 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/a	NA	2/27/2013 14:27

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:**

Report Dilution
Analyses Result Qual Limit Units 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
LIMS Version: 6.631

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:**

Report Dilution
Analyses Result Qual Limit Units 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

Client: ALS Environmental

Work Order: 1302029 **Project:** 1302400

Date: 3/4/2013 1:58:1

QC BATCH REPORT

Batch ID:	GS130205-2-1	Instrument ID	GAMMA		Method:	Gamma S	pectroso	opy Results			
DUP	Sample ID: 1302029-1					Units: pCi/	/g	Analys	is Date: 2/	27/2013 ⁻	14:27
Client ID:	1302400-13A (MW-114 (1))	Ri	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N	A
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,T
LCS	Sample ID: GS130205- 2	2A				Units: pCi/	/g	Analys	is Date: 2	/28/2013 ⁻	15:34
Client ID:		R	un ID: GS130 2	205-2A		·		Prep Date: 2/6/		DF: N	
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	2				Units: pCi/	/g	Analys	is Date: 2/	/28/2013 ⁻	15:32
Client ID:		Ri	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N	Α
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				Р
Co-60		205 (+/- 24)	1	205.2		99.9	85-115				Р
Cs-137		180 (+/- 21)	1	173.7		103	85-115				Р
МВ	Sample ID: GS130205- 2	2				Units: pCi/	/g	Analys	is Date: 2	28/2013 ⁻	15:32
Client ID:		Rı	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N	A
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 follo	owing samples were analyz	ed in this bat	1:	302029-1 302029-4 302029-7	130)2029-2)2029-5)2029-8		302029-3 302029-6			

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 <u>OR</u> 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

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.

	License or Certification
Accreditation Body	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.

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

225 Commerce Drive

ALS Environmental

Subcontractor:

CHAIN-OF-CUSTODY RECORD

(800) 443-1511 Ä

Æ.

(970) 490-1522 Acct#:

Mala H. Belmonte

Fort Collins, CO 80524

Salesperson

Date: <u>01-Feb-13</u> COC ID: <u>13238</u> Due Date **06-Feb-13**

(302030 Parameter/Method Request for Ahalysis Ξ Ö A Radium 226 228 Sub to ALS Ft. Collins щ Δ ပ m Ŕ ပ ۵ ш lu; Ø (1) 40ZGNEAT (1) 4OZGNEAT (1) 40ZGNEAT (1) 4OZGNEAT (1) 4OZGNEAT (1) 4OZGNEAT 10450 Stancliff Rd, Suite 210 jumoke.lawal@alsglobal.com Houston, Texas 77099-4338 Bottle ALS Group USA, Corp. Accounts Payable Project Information (281) 530-5656 (281) 530-5887 13011005 Collection Date 24hr 29/Jan/2013 16:05 29/Jan/2013 16:32 30/Jan/2013 9:10 30/Jan/2013 9:20 30/Jan/2013 9:35 30/Jan/2013 9:02 WO 13011005 - Please analyze for Radium 226/228 Bill To Company Project Number Project Name City/State/Zip eMail CC Inv Attn Address Phone ξě Matrix Soii Soil Soil Soil Soi Soil 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 Sonia. West@alsglobal.com ALS Group USA, Corp. Customer Information 96 (281) 530-5656 (281) 530-5887 10-13011005 Sonia West 3011005-09E (MW-116 (15)) 3011005-12E (MW-116 (20)) 3011005-06E (MW-116 (10)) 3011005-15E (MW-116 (25)) 13011005-01E (MW-116 (1)) 3011005-03E (MW-116 (5)) Sample ID Purchase Order Company Name Send Report To Comments: eMail Address City/State/Zip **Nork Order** Address Phone ă

Report/QC Level

Cooler IDs

Date/Time

Received by:

Date/Time

Relinquished by:

Std



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX Workorder No: 130	203	O	
Project Manager: JRK Initials: LAS	Date:	2/2/1	3
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?	1	(YES)	NO
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 of sediment: dusting moderateheavy	N/A)	YES	NO
16. Were the samples shipped on ice?	_	YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? R gun used*: #2 #4	RAD	YES	(NO)
Cooler #:	1 4441.32	<u>_</u>	
Temperature (°C): ATMB			
No. of custody seals on cooler: 2			
DOT Survey/ Acceptance External µR/hr reading: 12			
Information			
Background μR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES NO / NA (If no, see			
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX	CEPT #1 A1	ND #16.	
#lu-Limited Volume			·····
If applicable, was the client contacted? XES/ NO. (NA. Contact:	Date /T'	ne: 2-2	-/3
		ne: <u>v</u>	• •
Project Manager Signature / Date: 2.2.13	-		
IR Gun #2: Oakton, SN 29922500201-0066			1
Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002			1



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX Workorder No: 130.	203	O	
Project Manager:		2-5-	<u>.</u> 3
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		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
Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)	Ž	YES	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
0. Is there sufficient sample for the requested analyses?		(YES)	NO
Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
2. Are all samples within holding times for the requested analyses?	-	(YES)	NO
3. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
4. 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
Do any water samples contain sediment? Amount			
Amount of sediment: dusting moderate heavy	(N/A)	YES	NO
Were the samples shipped on ice?	' 	(YES)	NO
Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 (#4)	RAD	YES	NO
Cooler #:	ONLY		
Temperature (°C): 2.0			
No. of custody seals on cooler:			 -
DOT Survey/ Acceptance External μR/hr reading: Δ			
Background μR/hr reading:			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES// NO / NA (If no, see F	Form 008.)		
dditional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC		D#16.	
Extra volume that was requested			

applicable, was the client contacted? YES / NO / Contact:	Date/Time	:	
oject Manager Signature / Date: 2-5-0 *IR Gun #2: Oakton, SN 29922500201-0066			

*IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of 1

TO ROY FRENCH ALS ENVIRONMENTAL 225 COMMERCE DRIVE FORT COLLINS CO 80524
(970) 490-1611
DEPT: ENVIRONMENTAL FedEx Express ### SATURDAY ### A2 TRK# 4340 2174 0732 PRIORITY OVERNIGHT 80524 co-us DEN Part # 156148-434 RTI2 04/12 😷

)

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

 Γ

REF: SUB SAMPLES



FedEx Express

05 FEB A2

80524 co-us DEN



64 of 93

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302030

 Sample ID:
 1302400-07A (MW-116 (1))
 Lab ID:
 1302030-1

Collection Date: 1/29/2013 16:05 **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,TI	0.64	pCi/a	NA	2/27/2013 14:27

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302030

 Sample ID:
 1302400-08A (MW-116 (5))
 Lab ID:
 1302030-2

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/a	NA	2/27/2013 14:49

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			PAI 713		Prep Date: 2/6/2013	PrepBy: SAM
Ra-226	1.75 (+/- 0.41)	G	0.61	pCi/g	NA	2/28/2013 13:52
Ra-228	1.4 (+/- 0.6)	M3,G	1.05	pCi/a	NA	2/28/2013 13:52

SAMPLE SUMMARY REPORT

Matrix: SOIL

Date: 04-Mar-13 **Client:** ALS Environmental

Project: Work Order: 1302030 1302400 **Lab ID:** 1302030-4 **Sample ID:** 1302400-10A (MW-116 (15))

Legal Location: Collection Date: 1/30/2013 09:10 **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	5 pCi/a	NA	2/28/2013 13:52

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302030

 Sample ID:
 1302400-11A (MW-116 (20))
 Lab ID:
 1302030-5

Collection Date: 1/30/2013 09:20 **Percent Moisture:**

Analyses	Result	Qual	Report Limit U	nits	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

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302030

 Sample ID:
 1302400-12A (MW-116 (25))
 Lab ID:
 1302030-6

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/a	NA	2/28/2013 13:52

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:**

Report Dilution
Analyses Result Qual Limit Units 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:

SAMPLE SUMMARY REPORT

Date: 04-Mar-13 **Client: ALS** Environmental

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:**

Report Dilution Analyses Result **Date Analyzed** Qual Limit Units **Factor**

- 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

Client: ALS Environmental

Work Order: 1302030 **Project:** 1302400

Date: 3/4/2013 1:59:4

QC BATCH REPORT

Batch ID: G	S130205-2-1	Instrument ID	GAMMA		Method:	Gamma S	pectrosc	copy Results			
LCS	Sample ID: GS13020	05-2A				Units: pCi/	g	Analys	is Date:	2/28/2013	15:34
Client ID:		Rı	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N .	A
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: GS1302	05-2				Units: pCi/	'g	Analys	is Date:	2/28/2013	15:32
Client ID:		Ri	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N .	A
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				Р
Co-60		205 (+/- 24)	1	205.2		99.9	85-115				Р
Cs-137		180 (+/- 21)	1	173.7		103	85-115				Р
МВ	Sample ID: GS13020	05-2				Units: pCi/	'g	Analys	is Date:	2/28/2013	15:32
Client ID:		Ri	un ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N .	A
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 follow	ving samples were ana	llyzed in this bat		302030-1 302030-4		02030-2 02030-5		302030-3 302030-6			

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 <u>OR</u> 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/mlc

Enclosure (s): Report

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
Okiahoma	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.

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

225 Commerce Drive ALS Environmental Subcontractor:

TEL: Fax:

(800) 443-1511 (970) 490-1522 Acct #:

Mala H. Belmonte

Salesperson

Fort Collins, CO 80524

CHAIN-OF-CUSTODY RECORD

COC ID: 13237

COC ID: 01-Feb-13

Due Date: 06-Feb-13 1302031

3	Customer Information	D.O.	Droiget Information	
	The state of the s			Parameter/wethod Request for Analysis
Furchase Order	10-1301997	Project Name	1301997	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.	Ö
Send Report To	Sonia West	Inv Attn	Accounts Payable	D.
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	TÚI
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	9
Phone	(281) 530-5656	Phone	(281) 530-5656	
Fax	(281) 530-5887	Fax	(281) 530-5887	
eMail Address	Sonia. West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	j.
Sample ID	M	Matrix Collection Date 24hr	late 24hr Bottle	A SA SA B B SA COLOR DE LA BASE DE LA COLOR DE LA COLO
1301997-01E (MW -115 (1))	0	Soil 29/Jan/2013 14:25	3 14:25 (1) 40ZGNEAT	
1301997-03E (MW- 115 (5))	(2)	Soil 29/Jan/2013 14:35	3 14:35 (1) 40ZGNEAT	X
1301997-06E (MW- 115 (10))	(<u>2</u>)	Soil 29/Jan/2013 16:10	3 16:10 (1) 40ZGNEAT	X
1301997-09E (MW- 115 (15))	(d)	Soil 29/Jan/2013 15:20	3 15:20 (1) 40ZGNEAT	X
1301997-12E (MW -115 (20))	(S)	Soil 29/Jan/2013 16:00	3 16:00 (1) 4OZGNEAT	X
1301997-15E (MW-115 (25))	(6)	Soil 29/Jan/2013 15:45	3 15:45 (1) 40ZGNEAT	X
)			

Report/QC Level Cooler IDs Date/Tithe Date/Time Received by: WO 1301997 - Please analyze for Radium 226/228 Date/Time Comments: Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: HLS TX Workorder No: 13 ()203	> /	
Project Manager:	Date:	2/2/1	<u>-</u> <u>3</u>
 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
II. Were all samples placed in the proper containers for the requested analyses?			NO
12. Are all samples within holding times for the requested analyses?			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 moderateheavy	(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)	YES	(NO)
Cooler #:	CASE		
Temperature (°C): ATMB			
DOT Survey/ Acceptance External uR/hr reading: 12	 -		
Information	 -		
	io 008 \		
		D #16	
TOTAL QUESTION ABOVE, EAC	Eri #i ANI	J#10 .	
		 _	
# W- Limited Volume			
	this project require any special handling in addition to standard ALS procedures? This project require any special handling in addition to standard ALS procedures? This project require any special handling in addition to standard ALS procedures? The COC and special handling in addition to standard ALS procedures? The COC and special handling in addition to standard ALS procedures? The COC and special handling in addition to standard ALS procedures? The COC and special handling in addition to standard ALS procedures? The COC and special handling in addition to standard ALS procedures? The COC and bottle labels complete and legible? The COC and bottle labels complete and legible? The COC in agreement with samples received? (IDs. dates, times, no. of samples, no. o		
If applicable, was the client contacted VES/NO/NA Contact:	Date/Time	2-2.6	3
Project Manager Signature / Date: 1/1/ /2' 2. J. U			
Form 201r24.xls (06/04/2012) *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002		Page 1 of	.]



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS - 1 X Workorder No: 13 0	203	1	
Project Manager: JK Initials: CDT	Date:	2-5-	<u>.</u> <u>1</u> 3
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 of sediment: dusting moderate heavy	(N/A)	YES	NO
16. Were the samples shipped on ice?	1	(YES)	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 (#4)	RAD ONLY	YES	NO
Cooler #:	I ONLY I		
Temperature (°C): 2.0			
No. of custody seals on cooler:			
DOT Survey/ Acceptance External µR/hr reading:]2			
Information Background µR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/ NO / NA (If no, see	Earn 009)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX		JD #16	
Extra volume that was requested.	CLF1#1Al	10 #10.	
A			
If applicable, was the client contacted? YES / NO /NA Contact:	_ Date/Tin	ne:	
Project Manager Signature / Date: 2-5-(3			
Form 201r24.xls (06/04/2012) *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002			1

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ORIGIN ID: SGRA (201) 530-5656 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US

SHIP DATE: 01FEB13 ACTUGT: 21.0 LB CAD: 300130/CAFE2606

BILL SENDER

TO ROY FRENCH **ALS ENVIRONMENTAL**

225 COMMERCE DRIVE



(970) 490-1511 DEPT: ENVIRONMENTAL



FedEx Express

TRK# 4340 2174 0732

SATURDAY ### A2 PRIORITY OVERNIGHT

80524 co-us DEN



Part # 156148-434 RIT2 04/12 🚓

)

ORIGIN ID: SGRA (201) 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

REF: SUB SAMPLES



FedEx Express

TUE - 05 FEB A2

80524

co-us DEN



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SAMPLE SUMMARY REPORT

Matrix: SOIL

Date: 04-Mar-13 **Client:** ALS Environmental

1302400 **Project: Work Order:** 1302031 **Lab ID:** 1302031-1 **Sample ID:** 1302400-01A (MW-115 (1))

Legal Location: Collection Date: 1/29/2013 14:25 **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,TI	0.83	pCi/a	NA	2/28/2013 14:48

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302031

 Sample ID:
 1302400-02A (MW-115 (5))
 Lab ID:
 1302031-2

Collection Date: 1/29/2013 14:35 **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	1.29 (+/- 0.28)	G	0.41	pCi/g	NA	2/28/2013 14:48
Ra-228	0.78 (+/- 0.5)	LT,G,TI	0.7	pCi/a	NA	2/28/2013 14:48

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302031

 Sample ID:
 1302400-03A (MW-115 (10))
 Lab ID:
 1302031-3

Collection Date: 1/29/2013 16:10 **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

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302031

 Sample ID:
 1302400-04A (MW-115 (15))
 Lab ID:
 1302031-4

Legal Location:Matrix:SOILCollection Date:1/29/2013 15:20Percent 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	B pCi/g	NA	2/28/2013 14:49

Legal Location:

SAMPLE SUMMARY REPORT

Matrix: SOIL

Client: ALS Environmental Date: 04-Mar-13

 Project:
 1302400
 Work Order:
 1302031

 Sample ID:
 1302400-05A (MW-115 (20))
 Lab ID:
 1302031-5

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

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

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:**

Report Dilution
Analyses Result Qual Limit Units 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:

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:

Report Dilution
Analyses Result Qual Limit Units 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

Client: ALS Environmental

Work Order: 1302031 **Project:** 1302400

Date: 3/4/2013 2:01:2

QC BATCH REPORT

Batch ID: 6	GS130205-2-1	Instrument ID:	GAMMA		Method:	Gamma S	pectroso	opy Results			
LCS	Sample ID: GS1302	05-2A				Units: pCi/	g	Analys	is Date:	2/28/2013 1	15:34
Client ID:		Ru	ın ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N .	A
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: GS1302	05-2				Units: pCi/	'g	Analys	sis Date:	2/28/2013 1	15:32
Client ID:		Run ID: GS130205-2A						Prep Date: 2/6/	2013	DF: N	A
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				Р
Co-60		205 (+/- 24)	1	205.2		99.9	85-115				Р
Cs-137		180 (+/- 21)	1	173.7		103	85-115				Р
МВ	Sample ID: GS1302	05-2				Units: pCi/	g	Analys	is Date:	2/28/2013 1	15:32
Client ID:		Ru	ın ID: GS130 2	205-2A				Prep Date: 2/6/	2013	DF: N .	A
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 follow	wing samples were ana	alyzed in this bate		302031-1 302031-4		02031-2 02031-5		302031-3 302031-6			

QC Page: 1 of 1

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,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager EN ACCREOURS

Certificate No: T104704231-12-10

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13011005

Work Order Sample Summary

Lab Samp ID Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
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	

ALS Environmental

Date: 13-Feb-13

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.

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	hod: SW8015M		Prep: SW3	3541 / 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 - SW801	5C	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		Met	hod: SW7471A		Prep: SW	7471A / 2/5/13	Analyst: OFO
Mercury	8.10		0.28	3.48	μg/Kg	1	2/5/2013 16:47
METALS		Met	hod: SW6020		Prep: SW3	3050A / 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		Met	hod: SW8270		Prep: SW3	3541 / 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

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

Date: 13-Feb-13

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		Meth	nod: 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)		Meth	nod: E300		Prep: E30	0 / 2/5/13	Analyst: JKP
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		Meth	nod: SW9014		Prep: SW9	9010C / 2/5/13	Analyst: EDG
Cyanide	U		0.58	1.94	mg/Kg	1	2/5/2013 16:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	17.9		0.010	0.0100	wt%	1	2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (3)
 Lab ID: 13011005-02

Collection Date: 1/29/2013 04:18 PM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 19.1
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Metho	od: SW7471A	1	Prep: SW	7471A / 2/5/13	Analyst: OFO
Mercury	6.77		0.29	3.59	μg/Kg	1	2/5/2013 16:49
METALS		Metho	od: SW6020		Prep: SW	3050A / 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)		Metho	od: E300		Prep: E30	0 / 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		Metho	od: SW9014		Prep: SW	9010C / 2/4/13	Analyst: EDG
Cyanide	U		0.54	1.80	mg/Kg	1	2/4/2013 13:30
MOISTURE		Metho	od: SW3550				Analyst: KAH
Percent Moisture	16.1		0.010	0.0100	wt%	1	2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (7)
 Lab ID: 13011005-04

Collection Date: 1/30/2013 08:55 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 16.0
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Work Order: 13011005 **Project: RO** Discharge Sampling **Lab ID:** 13011005-05 MW-116 (9)

Sample ID:

Collection Date: 1/30/2013 08:55 AM Matrix: SOIL

				Report		Dilution	
Analyses	Result	Qual	MDL	Limit	Units	Factor	Date Analyzed

Date: 13-Feb-13

MOISTURE	Meti	hod: SW3550			Analyst: KAH
Percent Moisture	16.2	0.010	0.0100 wt%	1	2/1/2013 13:00

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

Date: 13-Feb-13

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	od: SW7471	\	Prep: SW	7471A / 2/5/13	Analyst: OFO
Mercury	7.74		0.27	3.36	μg/Kg	1	2/5/2013 16:51
METALS		Meth	od: SW6020		Prep: SW:	3050A / 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)		Meth	od: E300		Prep: E30	0 / 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		Meth	od: SW9014		Prep: SW9	9010C / 2/5/13	Analyst: EDG
Cyanide	U		0.59	1.96	mg/Kg	1	2/5/2013 16:30
MOISTURE		Meth	od: SW3550				Analyst: KAH
Percent Moisture	16.4		0.010	0.0100	wt%	1	2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (11)
 Lab ID: 13011005-07

Collection Date: 1/30/2013 09:05 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.0
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (13)
 Lab ID: 13011005-08

Collection Date: 1/30/2013 09:05 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 28.5
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-116 (15)

Collection Date: 1/30/2013 09:10 AM

Date: 13-Feb-13

Work Order: 13011005 **Lab ID:** 13011005-09

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Meth	nod: SW7471A		Prep: SW7	7471A / 2/5/13	Analyst: OFO
Mercury	0.647	J	0.29	3.59	μg/Kg	1	2/5/2013 16:53
METALS		Meth	nod: SW6020		Prep: SW3	3050A / 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)		Meth	nod: E300		Prep: E30	0 / 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		Meth	nod: SW9014		Prep: SW9	9010C / 2/5/13	Analyst: EDG
Cyanide	U		0.55	1.82	mg/Kg	1	2/5/2013 16:30
MOISTURE		Meth	nod: SW3550				Analyst: KAH
Percent Moisture	15.3		0.010	0.0100	wt%	1	2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (17)
 Lab ID: 13011005-10

Collection Date: 1/30/2013 09:15 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 20.5
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (19)
 Lab ID: 13011005-11

Collection Date: 1/30/2013 09:15 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 24.0
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
Sample ID: MW-116 (20)

Collection Date: 1/30/2013 09:20 AM Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY - SW7471B		Metho	od: SW7471A		Prep: SW	7471A / 2/5/13	Analyst: OFO
Mercury	8.29		0.28	3.44	μg/Kg	1	2/5/2013 16:55
METALS		Metho	od: SW6020		Prep: SW3	3050A / 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)		Metho	od: E300		Prep: E30	0 / 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		Metho	od: SW9014		Prep: SW	9010C / 2/5/13	Analyst: EDG
Cyanide	U		0.59	1.96	mg/Kg	1	2/5/2013 16:30
MOISTURE		Metho	od: 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.

Date: 13-Feb-13

Lab ID: 13011005-12

Work Order: 13011005

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (21)
 Lab ID: 13011005-13

Collection Date: 1/30/2013 09:30 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 22.9
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID:
 MW-116 (23)
 Lab ID: 13011005-14

Collection Date: 1/30/2013 09:30 AM Matrix: SOIL

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 13-Feb-13

 MOISTURE
 Method: SW3550
 Analyst: KAH

 Percent Moisture
 23.5
 0.010
 0.0100
 wt%
 1
 2/1/2013 13:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID: MW-116 (25)
 Lab ID: 13011005-15

Collection Date: 1/30/2013 09:35 AM Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Meth	nod: SW8015M		Prep: SW	3541 / 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 - SW8015	С	Meth	nod: SW8015				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		Meth	nod: SW7471A		Prep: SW	7471A / 2/5/13	Analyst: OFO
Mercury	0.757	J	0.28	3.43	μg/Kg	1	2/5/2013 16:57
METALS		Meth	nod: SW6020		Prep: SW3	3050A / 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		Meth	nod: SW8270		Prep: SW3	3541 / 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.

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 Matrix: SOIL

Analyses	Result	Qual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	70.7		37-125	%REC	1	2/7/2013 17:28
Surr: 4-Terphenyl-d14	98.5		32-125	%REC	1	2/7/2013 17:28
Surr: Nitrobenzene-d5	81.0		37-125	%REC	1	2/7/2013 17:28
Surr: Phenol-d6	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
Surr: 1,2-Dichloroethane-d4	88.4		70-128	%REC	1	2/1/2013 13:41
Surr: 4-Bromofluorobenzene	91.1		73-126	%REC	1	2/1/2013 13:41
Surr: Dibromofluoromethane	98.1		71-128	%REC	1	2/1/2013 13:41
Surr: Toluene-d8	103		73-127	%REC	1	2/1/2013 13:41
ANIONS - EPA 300.0 (1993)		Method: E300		Prep: E30	0 / 2/5/13	Analyst: JKP
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
Surr: Selenate (surr)	86.3		85-115	%REC	1	2/5/2013 20:53
CYANIDE		Method: SW9014		Prep: SW	9010C / 2/5/13	Analyst: EDG
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.

Date: 13-Feb-13

Lab ID: 13011005-15

Work Order: 13011005

Client: Navajo Refining Company

Project: RO Discharge Sampling
 Work Order: 13011005

 Sample ID:
 Trip Blank 011813-15
 Lab ID: 13011005-16

Collection Date: 1/29/2013 Matrix: WATER

Analyses	Result	Qual M	/IDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: S	W8260				Analyst: AKP
1,1,1-Trichloroethane	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
1,1,2,2-Tetrachloroethane	U	0.0	00050	0.0010	mg/L	1	2/4/2013 12:29
1,1,2-Trichloroethane	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
1,1-Dichloroethane	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
1,1-Dichloroethene	U	0.0	00050	0.0010	mg/L	1	2/4/2013 12:29
1,2-Dibromoethane	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
1,2-Dichloroethane	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
Benzene	U	0.0	00020	0.0010	mg/L	1	2/4/2013 12:29
Carbon tetrachloride	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
Chloroform	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
Ethylbenzene	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
Methylene chloride	U	0.0	00040	0.0020	mg/L	1	2/4/2013 12:29
Tetrachloroethene	U	0.0	00040	0.0010	mg/L	1	2/4/2013 12:29
Toluene	U	0.0	00030	0.0010	mg/L	1	2/4/2013 12:29
Trichloroethene	U	0.0	00020	0.0010	mg/L	1	2/4/2013 12:29
Vinyl chloride	U	0.0	00040	0.0010	mg/L	1	2/4/2013 12:29
Xylenes, Total	U	0.0	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.

Date: 13-Feb-13

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Date: 13-Feb-13

QC BATCH REPORT

Batch ID: 67579	Instrument ID FID-7		Metho	d: SW801	5M						
MBLK Sample ID:	FBLKS1-130205-67579				U	Jnits: mg /	Kg	Analys	sis Date: 2/	6/2013 11	:56 AN
Client ID:	Run I	D: FID-7_ ′	30206A		Se	qNo: 310 4	4153	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									
Surr: 2-Fluorobiphenyl	2.092	0.10	3.33		0	62.8	60-135	0)		
LCS Sample ID:	FLCSS1-130205-67579				U	Jnits: mg/	Kg	Analys	sis Date: 2/	6/2013 12	:19 PN
Client ID:	Run I	D: FID-7_ ′	30206A		Se	qNo: 310 4	4154	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			
Surr: 2-Fluorobiphenyl	2.536	0.10	3.33		0	76.2	60-135	0	1		
MS Sample ID:	1302018-01BMS				U	Jnits: mg/	Kg	Analys	sis Date: 2/	6/2013 01	:06 PN
Client ID:	Run I	D: FID-7_	30206A		Se	qNo: 310 4	4156	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	75.4	45	15.3	70-130	0			SE
Surr: 2-Fluorobiphenyl	2.284	0.10	3.32		0	68.8	60-135	0	1		
MSD Sample ID:	1302018-01BMSD				U	Jnits: mg/	Kg	Analys	sis Date: 2/	6/2013 01	:29 PN
Client ID:	Run I	D: FID-7_	30206A		Se	qNo: 310 4	4157	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	75.4	45	3.32	70-130	80.52	5.05	30	SE
Surr: 2-Fluorobiphenyl	2.311	0.10	3.321		0	69.6	60-135	2.284	1.17	30	
The following samples w	vere analyzed in this batch:		3011005- D	13 15		005-					

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

Note:

QC Page: 1 of 24

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: R142225 Instrume	ent ID FID-9		Metho	d: SW80 1	15						
MBLK Sample ID: GBLKS-1	30205-R142225				L	Jnits: mg /	Kg	Analys	is Date: 2/	5/2013 01	:02 PM
Client ID:	Run I	D: FID-9_	130205A		Se	qNo: 310 :	3619	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-1:	30205-R142225				L	Jnits: mg /	Kg	Analys	is Date: 2/	5/2013 12	:25 PN
Client ID:	Run I	D: FID-9_	130205A		Se	qNo: 310 :	3613	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				L	Jnits: mg/	Kg	Analys	is Date: 2/	5/2013 12	:44 PN
Client ID:	Run I	D: FID-9_	130205A		Se	qNo: 310 :	3616	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				L	Jnits: mg/	Kg	Analys	is Date: 2/	5/2013 04	:11 PN
Client ID:	Run I	D: FID-9_	130205A		Se	qNo: 310 :	3628	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: 1302018-0	04ZMSD				L	Jnits: mg /	Kg	Analys	is Date: 2/	5/2013 04	:30 PN
Client ID:	Run I	D: FID-9_	130205A		Se	qNo: 310 :	3632	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 analy	/zed in this batch:		3011005- 1B	13 15		005-					

Note:

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05		Method	: SW602	20					
MBLK	Sample ID: MBLKS1-020113-67523				Units: mg/	Kg	Analy	sis Date: 2	2/5/2013 03	3:05 PM
Client ID:	Ru	n ID: ICPMS	05_130205A		SeqNo: 310 2	2200	Prep Date: 2/4	1/2013	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	Analy	sis Date: 2	2/6/2013 12	2:35 PM
Client ID:	Ru	n ID: ICPMS	05_130206A		SeqNo: 310 3	3603	Prep Date: 2/4	1/2013	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								

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 675	Instrument ID ICPMS05	5	Method:	SW602	0						
LCS	Sample ID: MLCSS1-020113-67523				Ų	Jnits: mg /	Kg	Analysis Da	ate: 2/ 5	5/2013 03	:08 PM
Client ID:	Ri	un ID: ICPMS	05_130205A		Se	qNo: 310 2	2201	Prep Date: 2/4/2013	3	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value %F	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				Ĺ	Jnits: mg/	Kg	Analysis Da	ate: 2/6	6/2013 12	:38 PM
Client ID:	Ru	un ID: ICPMS	05_130206A		Se	qNo: 310	3604	Prep Date: 2/4/2013	3	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			

Client: Navajo Refining Company

13011005 Work Order:

Boron

Potassium

Sodium

Note:

Project: RO Discharge Sampling

Batch ID: 67523 Instrument ID ICPMS05 Method: SW6020 Sample ID: 13011005-01DMS MS Units: mg/Kg Analysis Date: 2/5/2013 03:22 PM SeqNo: 3102207 Prep Date: 2/4/2013 DF: 1 Client ID: MW-116 (1) Run ID: ICPMS05_130205A RPD SPK Ref Control RPD Ref Value Limit Value Limit Result PQL SPK Val %REC %RPD Qual Analyte 13710 12570 13500 75-125 0 SEO Aluminum 0.84 8.429 11.71 0.42 8.429 4.385 86.9 75-125 0 Arsenic 0 Barium 138.7 0.42 8.429 129.6 107 75-125 0 Cadmium 8.001 0.42 0.4065 90.1 75-125 0 8.429 Calcium 57470 42 57640 0 SEO 842.9 -19.775-125 Chromium 22.67 0.42 8.429 14.02 103 75-125 0 13.02 Cobalt 0.42 8.429 5.519 89 75-125 0 18.8 0 Copper 0.42 8.429 11.12 91.1 75-125 11500 42 842.9 10120 164 75-125 0 so Iron Lead 22.81 0.42 8.429 14.66 96.6 75-125 0 381.8 383.5 0 SEO Manganese 0.42 8.429 -20 75-125 0 S Molybdenum 6.315 0.42 8.429 0.5853 68 75-125 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 0.05106 0 0.42 8.429 95.3 75-125 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 0 Sample ID: 13011005-01DMS Analysis Date: 2/6/2013 12:50 PM MS Units: mg/Kg Client ID: MW-116 (1) Run ID: ICPMS05 130206A SeqNo: 3103618 Prep Date: 2/4/2013 DF: 2 SPK Ref RPD Control RPD Ref Value Limit Value Limit SPK Val %REC %RPD Qual Analyte Result **PQL**

-48.4

149

88.5

75-125

75-125

75-125

60.18

3553

168.4

0

0

0

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

39.78

4808

914.3

4.2

84

84

42.14

842.9

842.9

S

SO

Client: Navajo Refining Company

Work Order: 13011005

Analyte

Boron

Sodium

Note:

Potassium

Project: RO Discharge Sampling

MSD Sample ID:	: 13011005-01DMSD			Į	Units: mg /	Kg	Analysi	s Date: 2/	5/2013 03	:25 PM
Client ID: MW-116 (1)	Run II	D: ICPMS	05_130205A	Se	eqNo: 310	2208	Prep Date: 2/4/2	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	0
MSD Sample ID:	13011005-01DMSD			l	Units: mg /	Kg	Analysi	s Date: 2 /0	6/2013 12	:52 PM
Client ID: MW-116 (1)	Run II	D: ICPMS	05_130206A	Se	eqNo: 310	3621	Prep Date: 2/4/2	2013	DF: 2	
				SPK Ref		Control	RPD Ref		RPD	

Value

60.18

3553

168.4

SPK Val

39.78

795.6

795.6

PQL

4.0

80

80

Limit

75-125

75-125

75-125

%REC

-58.1

126

86.4

Value

39.78

4808

914.3

Result

37.07

4552

855.4

Limit

25

25

25

Qual

S

SO

%RPD

7.06

5.48

6.65

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 6	7523	Instrument ID ICPMS05		Method:	SW602	20						
DUP	Sample ID:	13011005-01DDUP				U	nits: mg /	Kg	Analysi	s Date: 2/	5/2013 03	:20 PM
Client ID: M	W-116 (1)	Run II	: ICPMS	05_130205A		Sec	No: 310 2	2206	Prep Date: 2/4/2	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	
ron		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	
Molybdenur	n	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	
OUP	Sample ID:	13011005-01DDUP				U	nits: mg/	Kg	Analysi	s Date: 2 /	6/2013 12	:47 PN
Client ID: M	W-116 (1)	Run II	D: ICPMS	05_130206A		Sec	No: 310	3614	Prep Date: 2/4/2	2013	DF: 2	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
-								0.0	CO 40		05	
Boron		6.159	4.2	0		0	0	0-0	60.18	163	25 25	R
Potassium Sodium		3479 122.9	83	0		0	0	0-0	3553 168.4	2.09	25 25	R
Joulum		122.9	00			0	0	0-0	100.4	31.2	25	Α.
DUP		13011005-01DDUP					nits: mg/	•	-	s Date: 2/0		
Client ID: M	W-116 (1)	Run II	D: ICPMS	05_130206A		Sec	No: 310 :	3960	Prep Date: 2/4/2	2013	DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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 followi	ng samples v	were analyzed in this batch:	01	8011005-	03	0110		06	011005-			

Note:

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 67	7585 Instrumen	t ID HG02		Metho	d: SW747	'1A					
MBLK	Sample ID: GBLKS1-02	0513-67585				Units: µg/	Kg	Analys	sis Date: 2	/5/2013 04	:01 PM
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2354	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: GLCSS1-02	0513-67585				Units: µg/	Kg	Analys	sis Date: 2	/5/2013 04	:03 PM
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2355	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	C)		
MS	Sample ID: 1301997-01	DMS				Units: µg/	Kg	Analys	sis Date: 2	/5/2013 04	:09 PN
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2358	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	14.7	76 102	85-115	C)		
MSD	Sample ID: 1301997-01	DMSD				Units: µg/	Kg	Analys	sis Date: 2	/5/2013 04	:11 PN
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2359	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	14.7	76 102	85-115	376.9	0.484	20	
DUP	Sample ID: 1301997-01	DDUP				Units: µg/	Kg	Analys	sis Date: 2	/5/2013 04	:07 PN
Client ID:		Run ID	: HG02_	130205A		SeqNo: 310	2357	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 followi	ing samples were analyze	ed in this batch:	0 ²	3011005- 1D 3011005- 9D	03	011005-	06	011005-			

Note:

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 67656 Instrur	nent ID SV-6		Metho	d: SW827	0						
MBLK Sample ID: SBLKS2	-130207-67656				Į	Jnits: µg/l	(g	Analy	sis Date: 2	/7/2013 04	4:24 PM
Client ID:	Run II	D: SV-6_1	30207A		Se	qNo: 310	6635	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	()		
Surr: 2-Fluorobiphenyl	132.1	6.6	166.7		0	79.2	43-125	()		
Surr: 2-Fluorophenol	126.1	6.6	166.7		0	75.7	37-125	()		
Surr: 4-Terphenyl-d14	166.2	6.6	166.7		0	99.7	32-125	()		
Surr: Nitrobenzene-d5	134.1	6.6	166.7		0	80.4	37-125	()		
Surr: Phenol-d6	130.7	6.6	166.7		0	78.4	40-125	()		
LCS Sample ID: SLCSS2	-130207-67656				Ĺ	Jnits: µg/l	(g	Analy	sis Date: 2	/7/2013 04	4:45 PM
Client ID:	Run II	D: SV-6_1	30207A		Se	qNo: 310	6636	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	()		
2-Methylnaphthalene	133.3	6.6	166.7		0	80	50-120	()		
Benzo(a)pyrene	148.1	6.6	166.7		0	88.8	50-130	()		
Naphthalene	128.1	6.6	166.7		0	76.9	50-125	()		
Surr: 2,4,6-Tribromophenol	125.4	6.6	166.7		0	75.2	36-126	()		
Surr: 2-Fluorobiphenyl	128.4	6.6	166.7		0	77	43-125	()		
Surr: 2-Fluorophenol	122.2	6.6	166.7		0	73.3	37-125	()		
Surr: 4-Terphenyl-d14	159.7	6.6	166.7		0	95.8	32-125	()		
Surr: Nitrobenzene-d5	126.5	6.6	166.7		0	75.9	37-125	()		

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 67656	nstrument ID SV-6		Method	d: SW8270						
MS Sample ID: 130	02140-04DMS			l	Jnits: µg/k	(g	Analysi	s Date: 2 /	7/2013 07	:35 PN
Client ID:	Run II	D: SV-6_1	30207A	Se	eqNo: 310 6	6643	Prep Date: 2/7/	2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qua
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-Tribromopheno	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: 130	02140-04DMSD			l	Jnits: µg/k	(g	Analysi	s Date: 2 /	7/2013 07	:56 PI
Client ID:	Run II	D: SV-6_1	30207A	Se	eqNo: 310 6	6644	Prep Date: 2/7/ 2	2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qua
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-Tribromopheno	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	
Suit. 4-Terprientyr-u 14				•		37-125	105.2	16.7	20	
Surr: Nitrobenzene-d5	124.3	6.6	166.4	0	74.7	37-125	103.2	10.7	30	

The following samples were analyzed in this batch:

Note:

13011005-01D 15D

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5		Metho	d: SW82 6	60					
MBLK Sample ID: V	BLKS1-020113-R141995				Units: µg/l	K g	Analy	/sis Date: 2	/1/2013 0	9:52 AM
Client ID:	Run IE): VOA5_	130201A		SeqNo: 309	8471	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-Bromofluorobenze	ene 46.86	0	50		0 93.7	73-126		0		
Surr: Dibromofluorometha	ane 48.11	0	50		0 96.2	71-128		0		
Surr: Toluene-d8	44.78	0	50		0 89.6	73-127	,	0		

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: R141995	Instrument ID VOA5		Metho	d: SW826 0	0						
LCS Sample ID: Y	VLCSS1-020113-R141995				U	nits: µg/k	(g	Analys	sis Date: 2	2/1/2013 0	8:43 AM
Client ID:	Run II	D: VOA5_	130201A		Sec	No: 309 8	8470	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	C			
1,1,2,2-Tetrachloroethane	53.32	5.0	50	-	0	107	75-123	C	1		
1,1,2-Trichloroethane	55.87	5.0	50		0	112	79-120	C			
1,1-Dichloroethane	52.6	5.0	50	-	0	105	75-124	C	1		
1,1-Dichloroethene	55.13	5.0	50		0	110	80-122	C			
1,2-Dibromoethane	57.09	5.0	50	-	0	114	79-120	C	1		
1,2-Dichloroethane	52.14	5.0	50		0	104	73-121	C			
Benzene	50.57	5.0	50	-	0	101	79-120	C	1		
Carbon tetrachloride	45.29	5.0	50		0	90.6	74-126	C			
Chloroform	55.04	5.0	50	-	0	110	78-120	C	1		
Ethylbenzene	54.99	5.0	50		0	110	80-122	C			
Methylene chloride	51.62	10	50	-	0	103	70-123	C	1		
Tetrachloroethene	47.09	5.0	50		0	94.2	80-121	C			
Toluene	49.54	5.0	50	-	0	99.1	79-120	C	1		
Trichloroethene	52.16	5.0	50		0	104	80-121	C			
Vinyl chloride	61.5	2.0	50	-	0	123	76-126	C	1		
Xylenes, Total	150.9	15	150		0	101	80-120	C			
Surr: 1,2-Dichloroethane	e-d4 51.49	0	50	-	0	103	70-128	C	1		
Surr: 4-Bromofluorobenz	zene 47.86	0	50		0	95.7	73-126	C			
Surr: Dibromofluorometh	nane 51.61	0	50	-	0	103	71-128	C	1		
Surr: Toluene-d8	43.85	0	50		0	87.7	73-127	C			

Note:

Client: Navajo Refining Company

Work Order: 13011005

RO Discharge Sampling Project:

Batch ID: R141995	Instrument ID VOA5		Method	SW826	0						
MS Sample ID:	1301997-01AMS				U	nits: µg/K	(g	Analys	sis Date: 2	2/1/2013 1	1:46 AM
Client ID:	Ru	ın ID: VOA5_	130201A		Sec	No: 309 8	3546	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	()		
1,1,2,2-Tetrachloroethane	45.86	5.0	50		0	91.7	75-123	()		
1,1,2-Trichloroethane	56	5.0	50		0	112	79-120	()		
1,1-Dichloroethane	49.56	5.0	50		0	99.1	75-124	()		
1,1-Dichloroethene	54.01	5.0	50		0	108	80-122	()		
1,2-Dibromoethane	49.35	5.0	50		0	98.7	79-120	()		
1,2-Dichloroethane	51.25	5.0	50		0	103	73-121	()		
Benzene	52.11	5.0	50		0	104	79-120	()		
Carbon tetrachloride	46.06	5.0	50		0	92.1	74-126	()		
Chloroform	48.72	5.0	50		0	97.4	78-120	()		
Ethylbenzene	50.85	5.0	50		0	102	80-122	()		
Methylene chloride	48.37	10	50		0	96.7	70-123	()		
Tetrachloroethene	43.7	5.0	50		0	87.4	80-121	()		
Toluene	53.36	5.0	50		0	107	79-120	()		
Trichloroethene	51.31	5.0	50		0	103	80-121	()		
Vinyl chloride	55.22	2.0	50		0	110	76-126	()		
Xylenes, Total	146.8	15	150		0	97.9	80-120	()		
Surr: 1,2-Dichloroethane	e-d4 49.29	0	50		0	98.6	70-128	()		
Surr: 4-Bromofluorobenz	zene 49	0	50		0	98	73-126	()		
Surr: Dibromofluorometh	nane 49.78	0	50		0	99.6	71-128	()		
Surr: Toluene-d8	51.55	0	50		0	103	73-127	()		

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

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: V				SeqNo: 3098547		8547	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:

Note:

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ı	13011005-	13011005-
ı		
ı	Λ1Δ	15Δ

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: R142113	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	/BLKW-130204-R142113				Units: µg/	L	Analy	ysis Date: 2	/4/2013 1	1:16 AM
Client ID:	Run I	D: VOA4_	130204A		SeqNo: 310	0918	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-Bromofluorobenz	rene 49.08	1.0	50		0 98.2	70-125		0		
Surr: Dibromofluorometh	ane 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		

0

0

0

0

Client: Navajo Refining Company

Work Order: 13011005

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Note:

Project: RO Discharge Sampling

Batch ID: R142113 Instrument ID VOA4 Method: SW8260 Units: µg/L Sample ID: VLCSW-130204-R142113 Analysis Date: 2/4/2013 10:03 AM **LCS** Prep Date: Client ID: Run ID: VOA4_130204A SeqNo: 3100916 DF: 1 RPD Ref RPD SPK Ref Control Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual 54.47 0 109 80-120 0 1,1,1-Trichloroethane 1.0 50 46.02 50 0 0 1,1,2,2-Tetrachloroethane 1.0 92 74-123 48.93 0 0 1,1,2-Trichloroethane 1.0 50 97.9 80-120 46.62 50 0 93.2 0 1,1-Dichloroethane 1.0 80-120 1,1-Dichloroethene 53.04 50 0 106 80-120 0 1.0 1,2-Dibromoethane 53.39 50 0 107 0 1.0 80-120 49.07 50 0 0 1,2-Dichloroethane 1.0 98.1 79-120 48.6 Benzene 1.0 50 0 97.2 80-120 0 Carbon tetrachloride 58.54 1.0 50 0 117 79-120 0 Chloroform 46.57 50 0 0 1.0 93.1 80-120 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 50 0 0 53.4 1.0 107 80-120 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 50 0 97.9 0 1.0 75-125 150 0 0 Xylenes, Total 142.5 1.0 95 80-124

44.17

52.31

49.72

48.59

1.0

1.0

1.0

1.0

50

50

50

50

0

0

0

0

88.3

105

99.4

97.2

71-125

70-125

74-125

78-123

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

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

LCSD Sample ID: VLCSDW-1	I30204-R142113				Units: µg/	L	Analysi	s Date: 2/-	4/2013 10	:27 Al
Client ID:	Run II	D: VOA4_	130204A	S	eqNo: 310	0917	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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	

Client: Navajo Refining Company

13011005 Work Order:

Batch ID: R142113

Methylene chloride

Tetrachloroethene

Trichloroethene

Vinyl chloride

Xylenes, Total

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Chloroform

Toluene

Note:

Ethylbenzene

Project: RO Discharge Sampling

Instrument ID VOA4

MS	Sample ID: 1302069-01AM	S				Units: µg/	L	Anal	ysis Date: 2	/4/2013 0	1:41 PM
Client ID:		Run II	D: VOA4_	130204A	S	SeqNo: 31 (0924	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-Tric	hloroethane	56.87	1.0	50	0	114	80-120		0		
1,1,2,2-Te	etrachloroethane	45.23	1.0	50	0	90.5	74-123		0		
1,1,2-Tric	hloroethane	50.26	1.0	50	0	101	80-120		0		
1,1-Dichlo	proethane	48.56	1.0	50	0	97.1	80-120		0		
1,1-Dichlo	proethene	57.49	1.0	50	0	115	80-120		0		
1,2-Dibror	moethane	53.79	1.0	50	0	108	80-120		0		
1,2-Dichlo	proethane	50.8	1.0	50	0	102	79-120		0		
Benzene		51.17	1.0	50	0	102	80-120		0		
Carbon te	trachloride	61.34	1.0	50	0	123	79-120	1	0		S

50

50

50

50

50

50

50

150

50

50

50

50

0

0

0

0

0

0

0

0

0

0

0

0

98.4

101

98.3

112

99.8

115

107

99

89.2

102

99.3

96.4

80-120

80-120

75-125

80-120

80-121

80-120

75-125

80-124

71-125

70-125

74-125

78-123

0

0

0

0

0

0

0 0

0

0

0

0

1.0

1.0

2.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

49.2

50.6

49.13

55.78

49.91

57.43

53.66

148.5

44.59

50.99

49.65

48.21

Method: SW8260

Navajo Refining Company

Work Order: 13011005

Client:

Project: RO Discharge Sampling

Batch ID: R142113 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1302069-0	1AMSD			ı	Units: µg/l	-	Analysis Date: 2/4/2013 02:06 PM			
Client ID:	Run II	D: VOA4_	130204A	Se	eqNo: 310	0925	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
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:

Note:

13011005-16A QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 67	7564 Instrument ID UV-2450		Method	: SW901	4	(Dissolve	e)			
MBLK	Sample ID: WBLKS1-020413-67564				Units: mg /	/Kg	Analysis I	Date: 2/4	/2013 01	:30 PM
Client ID:	Run ID	: UV-245	0_130204B		SeqNo: 310	0816	Prep Date: 2/4/20	13	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 I	Date: 2/4	/2013 01	:30 PM
Client ID:	Run ID	: UV-245	0_130204B		SeqNo: 310	0817	Prep Date: 2/4/20	13	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 I	Date: 2/4	/2013 01	:30 PM
Client ID:	Run ID	: UV-245	0_130204B		SeqNo: 310	0821	Prep Date: 2/4/20	13	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 I	Date: 2/4	/2013 01	:30 PM
Client ID: M	W-116 (5) Run ID	: UV-245	0_130204B		SeqNo: 310	0819	Prep Date: 2/4/20	13	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	0.314	49 94	75-125	0			
	ng samples were analyzed in this batch:		3011005-							

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 6	7583 Instrument I	D UV-2450		Method	d: SW901	4 (Dissolve)			e)			
MBLK	Sample ID: WBLKS1-020	513-67583				Units:	mg/l	Kg	Analy	sis Date: 2	/5/2013 04	:30 PN
Client ID:		Run II	D: UV-245	0_130205C		SeqNo	3103	3414	Prep Date: 2/	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U	2.0									
LCS	Sample ID: WLCSS1-020	513-67583				Units:	mg/l	Kg	Analy	sis Date: 2	/5/2013 04	:30 PN
Client ID:		Run II	D: UV-245	0_130205C		SeqNo	3103	3415	Prep Date: 2/5	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		9.05	2.0	10		0 9	0.5	80-120		0		
LCSD	Sample ID: WLCSDS1-02	0513-67583				Units:	mg/l	Kg	Analy	sis Date: 2	/5/2013 04	:30 PN
Client ID:		Run II	D: UV-245	0_130205C		SeqNo	3103	3437	Prep Date: 2/5	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		8.9	2.0	10		0	89	80-120	9.0	5 1.67	30	
MS	Sample ID: 1301997-09DI	MS				Units:	mg/l	Kg	Analy	sis Date: 2	/5/2013 04	:30 PN
Client ID:		Run II	D: UV-245	0_130205C		SeqNo	3103	3436	Prep Date: 2/5	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		9.495	1.9	9.308	0.0961	I1 ′	101	75-125		0		
The followi	ing samples were analyzed	in this batch:	0 ²	3011005- ID 3011005- 9D	06	011005-		06	011005-			

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

Batch ID: 67633	Instrument ID ICS2100		Method	: E300			(Dissolve)			
MBLK Sample ID	: WBLKS1-67633				Un	its: mg/	Kg	Analys	sis Date: 2	/5/2013 07	7:11 PM
Client ID:	Run	ID: ICS210	0_130205C		Seq	No: 310 :	3858	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	()		
LCS Sample ID	: WLCSS1-67633				Un	its: mg/	Kg	Analys	sis Date: 2	/5/2013 07	7:25 PN
Client ID:	Run	ID: ICS210	0_130205C		Seq	No: 310 :	3859	Prep Date: 2/5	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Chloride	219.8	5.0	200		0	110	90-110	()		
Fluoride	37.72	1.0	40		0	94.3	90-110	()		-
Nitrogen, Nitrate (As N)	43.14	1.0	40		0	108	90-110	()		
Nitrogen, Nitrite (As N)	43.82	1.0	40		0	110	90-110	()		
Sulfate	208.7	5.0	200		0	104	90-110	()		
Surr: Selenate (surr)	47.79	1.0	50		0	95.6	85-115	()		
MS Sample ID	: 1302026-21DMS				Un	its: mg/	Kg	Analys	sis Date: 2	/6/2013 01	1:29 AN
Client ID:	Run	ID: ICS210	0_130205C		Seql	No: 310 :	3884	Prep Date: 2/5	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Chloride	126.4	5.0	98.97	16	.2	111	75-125	()		
Fluoride	20.19	0.99	19.79	2.63	38	88.7	75-125	()		
Nitrogen, Nitrate (As N)	20.76	0.99	19.79		0	105	75-125	()		
Nitrogen, Nitrite (As N)	21.36	0.99	19.79		0	108	75-125	()		
Sulfate	319.3	5.0	98.97	213	.5	107	75-125	()		
Surr: Selenate (surr)	42.66	0.99	49.48		0	86.2	80-120	()		

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: 67633	Instrumer	nt ID ICS2100		Method	l: E300		(Dissolve)			
MSD Sa	mple ID: 1302026-2 1	IDMSD				Units: mg/	Kg	Analysi	s Date: 2 /	6/2013 01	:43 AM
Client ID:		Run ID:	ICS210	0_130205C	S	eqNo: 310 :	3885	Prep Date: 2/5/2	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 sa	amples were analyz	ed in this batch:	13 01	011005- D	1301 03D	1005-	130 061	011005- O			
			13 09	8011005- DD	1301 12D	1005-	130 151	011005- D			

Client: Navajo Refining Company

Work Order: 13011005

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R1	42103	Instrument ID B	alance1		Metho	d: SW355	0		(Dissolve)	1			
DUP	Sample ID:	13011005-15DDU	Р		Units: wt%					Analysis Date: 2/1/2013 0			
Client ID: MV	N-116 (25)		Run II	D: BALAN	CE1_13020	1B	SeqNo:	3100	0807 F	Prep Date:		DF: 1	
Analyte			Result	PQL	SPK Val	SPK Ref Value	%R	EC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Mois	sture		23.71	0.010	0		0	0	0-0	23.23	2.05	20	
The following	ng samples v	vere analyzed in t	his batch:	01 13 04 13 07 13	6011005- A 6011005- A 6011005- DA 6011005-	02, 13(05, 13(08, 13(011005- A 011005- A 011005- A 011005-		03D 130 06D 130 09D 130 12D	11005-) 11005-) 11005-) 11005-			

ALS Environmental

Date: 13-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

QUALIFIERS,
ACRONIZACIO

WorkOrder: 13011005 ACRONYMS, UNITS

workOrder:	15011005
Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
Units Reported	<u>Description</u>
$\mu g/Kg$	Micrograms per Kilogram
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
wt%	

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time	Received:	<u>31-Jan-13</u>	<u>09:10</u>	
Work Order:	<u>13011005</u>			Received b	y:	<u>RDH</u>		
Checklist comp	pleted by Lohnnie B. Wlenesignature	31-	-Jan-13 Date	Reviewed by:	Patricia eSignature	L. Lynd	h	01-Feb-13 Date
Matrices: Carrier name:	soil/water FedEx Priority Overnight	'						'
Shipping conta	iner/cooler in good condition?		Yes 🗸	No 🗌	Not Pres	ent 🗌		
Custody seals i	intact on shipping container/coole	er?	Yes 🗹	No 🗌	Not Pres	ent 🗌		
Custody seals	intact on sample bottles?		Yes \square	No 🗆	Not Pres	ent 🗹		
Chain of custoo	dy present?		Yes 🗹	No 🗌				
Chain of custoo	dy signed when relinquished and	received?	Yes 🗹	No 🗌				
Chain of custoo	dy agrees with sample labels?		Yes 🗹	No 🗌				
Samples in pro	per container/bottle?		Yes 🗹	No 🗆				
Sample contain	ners intact?		Yes 🗹	No 🗆				
Sufficient samp	ole volume for indicated test?		Yes 🗹	No 🗌				
All samples rec	eived within holding time?		Yes 🗹	No 🗌				
Container/Tem	p Blank temperature in compliand	ce?	Yes 🗹	No 🗌				
)/Thermometer(s):		1.4 C/uc		IR	<u>1</u>		
Cooler(s)/Kit(s)	:		4028					
Date/Time sam	ple(s) sent to storage:		1/31/13 14:	:30				
Water - VOA vi	als have zero headspace?		Yes 🗸	No 🗆	No VOA vials	s submitted		
Water - pH acc	eptable upon receipt?		Yes 🗸	No 🗆	N/A			
pH adjusted? pH adjusted by	:		Yes 🗌	No 🗹	N/A			
Login Notes:	Trip blank received, but not	on COC. Ra-226/228	8 & cyanide	not on COC. Inc	correct metals	list on COC	<u>;.</u>	
	========					:		
	. d.	Data Cantantant		Daman	0444-			
Client Contacte	eu.	Date Contacted:		Person	Contacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction	on:						000	Daniel of 1

(ALS)
Environmental

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

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



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ALS Project Manager:																		
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Work Order			Project Nur		28823		, J	в (
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Send Report To			Invoice .		sect C			D C	D ORO (8015 M)									
Address			Adc	Address 501 East Main						ELL SYOC (B270) NW GWList								10
City/State/Zip	A		City/Stat	City/State/Zip A.A.S. N.M.								<u>rals</u>						
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10 /	W-116 (17)		1/3=113	6712	1											X]	
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Chain of Custody Form

Page 2 of 2

COC ID:

Cincinnati, OH +1 513 733 5336

41190

Everett, WA + 1 425 356 2600

Fort Collins, CO +1 970 490 1511

☐ Houston, TX +1 281 530 5656

Holland, Mf +1 616 399 6070

Salt Lake City, UT +1 801 266 7700 Spring City, PA +1 610 948 4903

Middletown, PA +1 717 944 5541

York, PA + 1 717 505 5280

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	City/State/Zip	Artesia, N	IM	City/Stat	e/Zip 🗘	rtcs:	1. N	M		G										
	Phone			P	Phone 575-748-6733							5				· · · · · · · · · · · · · · · · · · ·			***************************************	-
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																6 CLP-				
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ALS Environmental

10450 Stanciiff Rd., Suite 210 Houston, Texas 77099 Tal. +1 281 530 5656 Fax. +1 281 530 5887 CUSTODY SEAL

te: 1-30-2013 Time: 1245

me: Ben McKenne

mpany: ARCADK

DATA VALIDATION CHECKLIST

NAVAJO REFINING RO Discharge Sampling

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

ARCADIS, Inc. 2929 Briarpark Dr. Suite 300 Houston, TX 77042 Tel. (713) 953-4800

Environmental Project: Navajo Refinery

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic TX001027.0002 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	REPO REVIE	EXCEP NOT		GENERAL C	ITEM NOT REQUIRED		
	NO	YES	NO	YES	NO	YES	
1. Holding times		Х	Х		Х		
2. Reporting limits		X	Χ		X		
3. Blanks							
A. Method Blanks		Х	Х		X		
B. Equipment Blanks	Х						X
C. Trip Blanks		Х	Х		Х		
4. Laboratory control sample (LCS) (%R)		X	Х		Х		
5. Laboratory control sample duplicate (LCSD) (%R)		Х	Х		Х		
6. LCS/LCSD (RPD)		X	X		Χ		
7. Matrix spike (MS) (%R)		X	X		X		
8. Matrix spike duplicate (MSD) (%R)		X		Х		Х	
9. MS/MSD (RPD)		X	Х		X		
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	Х						Х

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	REPO REVIE	EXCEP NOT		GENERAL C	ITEM NOT REQUIRED		
	NO	YES	NO	YES	YES	NO	
1. Holding times		Χ	Х			X	
2. Reporting limits		Χ	X			X	
3. Blanks							
A. Method Blanks		Χ		Х	X		
B. Field Blanks	X						Χ
C. Equipment Blank	X						Х
4. Laboratory control sample (LCS) (%R)		Х	Х			Х	
5. LCSD (% R)	Х						Х
6. LCS/LCSD (RPD)	X						Х
7. Matrix spike (MS) (%R)		Х	Х		Х		
8. MSD (%R)		Х	Х		Х		
9. MS/MSD (RPD)		Х	Х		Х		
10. Lab Duplicate (RPD)		X	X		X		
11. Field Duplicate (RPD)	Х						Х

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	REPO REVIE	EXCEP NOT		GENERAL C	ITEM NOT REQUIRED		
	NO	YES	NO	YES	NO	YES	
1. Holding times		Χ	Χ		Х		
2. Reporting limits		Χ	Χ		X		
3. Blanks							
A. Method Blanks		Χ	Χ		Χ		
B. Field Blanks	Χ						Χ
C. Equipment Blank	Χ						Χ
4. Surrogate Recovery		Χ	Χ		Χ		
5. Laboratory control sample (LCS) (%R)		X	Х		X		
6. LCSD (% R)	Х						Χ
7. LCS/LCSD (RPD)	X						Χ
8. Matrix spike (MS) (%R)	Χ						Χ
9. MSD (%R)	Χ						Χ
10. MS/MSD (RPD)	X						Χ
11. Field Duplicate (RPD)	X						Χ

 ${\tt COMMENTS:}\ \ {\tt The\ samples\ were\ analyzed\ for\ SVOCs\ by\ Method\ 8270.}\ \ {\tt Performance\ was\ acceptable,\ with\ the\ following\ exceptions\ and\ notes.}$

IV. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPO REVIE	EXCEP NOT		GENERAL C	ITEM NOT REQUIRED		
	NO	YES	NO	YES	NO	YES	
1. Holding times		Χ	Х		X		
2. Reporting limits		Χ	X		X		
3. Blanks							
A. Method Blanks		Χ	Χ		X		
B. Field Blanks	X						Χ
C. Equipment Blank	X						Χ
4. Surrogate Recovery		Χ	Χ		X		
5. Laboratory control sample (LCS) (%R)		X	Х		X		
6. LCSD (% R)	X						Х
7. LCS/LCSD (RPD)	X						Χ
8. Matrix spike (MS) (%R)	X						Χ
9. MSD (%R)	X						Χ
10. MS/MSD (RPD)	X						Χ
11. Field Duplicate (RPD)	X						Х

 ${\tt COMMENTS:}\ \ {\tt The\ samples\ were\ analyzed\ for\ TPH\ by\ Method\ 8015.}\ \ {\tt Performance\ was\ acceptable,\ with\ the\ following\ exceptions\ and\ notes.}$

V. CYANIDE

ITEMS REVIEWED		REPORTED/ REVIEWED			GENERAL O	ITEM NOT REQUIRED	
	NO	YES	NO	YES	YES	NO	
1. Holding times		X	Х			X	
2. Reporting limits		X	Χ			X	
3. Blanks							
A. Method Blanks		Χ		Χ	X		
B. Field Blanks	X						Χ
C. Equipment Blank	Х						Х
4. Laboratory control sample (LCS) (%R)		Х	Х			Х	
5. LCSD (% R)		Χ	Х			X	
6. LCS/LCSD (RPD)		Χ	Х			Х	
7. Matrix spike (MS) (%R)		Х	Х		X		
8. MSD (%R)		X	Х			X	
9. MS/MSD (RPD)		X	Х			X	
10. Lab Duplicate (RPD)		X	Х			X	

COMMENTS: The samples were analyzed for cyanide by Method 9014. Performance was acceptable, with the following exceptions and notes.

7. Sample MW -115 (15) was used as the MS analysis for the cyanide. The recovery was acceptable.

VI. ANIONS

ITEMS REVIEWED	REPO REVIE	EXCEP NOT		GENERAL O	ITEM NOT REQUIRED		
	NO	YES	NO	YES	YES	NO	
1. Holding times		X	Х			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		Χ	Χ		
B. Field Blanks	X						X
C. Equipment Blank	Х						Х
4. Laboratory control sample (LCS) (%R)		Х		Х		X	
5. LCSD (% R)	Х						Χ
6. LCS/LCSD (RPD)	Х						Х
7. Matrix spike (MS) (%R)	Х						Х
8. MSD (%R)	X						Χ
9. MS/MSD (RPD)	X						Χ
10. Lab Duplicate (RPD)	X						Χ

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

Low lu main

VALIDATION PERFORMED BY: Lyndi Mott

SIGNATURE:

DATE: March 4, 2013

PEER REVIEW:

DATE: March 12, 2013



Appendix C

Groundwater Sampling Logs

RO Reject Discharge Fields Wells (MW-114 through MW-119)

Item	Work Plan Requirement	Initials	NRO	Sfi
1	Confirm soil-boring location is properly staked. Confirm accessibility to rig.		/	
2	Confirm utility clearance and proper dig permits have been obtained.	_		Γ
3	Confirm that PID is available and calibrated. Confirm that equipment to conduct headspace analysis of soil samples is available.			<u></u>
4	Confirm drilling/sampling equipment is decontaminated.			下
5	Collect 0-1 ft sample with hand auger.			\prod
6	Continue clearance to 5 ft bgs with hydrovac and/or hand auger.]:
7	Collect continuous samples using split spoon or core barrel. Screen each sample via PID, visual and odor. Note results on field form along with sample length, sampling tool, percent recovery. Retain samples until most impacted sample identified.			8
8	Continue sampling until 5 feet below saturated zone. If the saturated zone is not reached within 50 ft bgs, then halt sampling 5 feet below last observed soil contamination.			1
9	Screen all soil samples (PID, visual, olfactory), then select appropriate samples for laboratory analyses (see below).			$\lceil \cdot \rceil$
10	Collect soil moisture samples at 2 ft intervals throughout. Analytical suite@ 5ft intervals	vals.		
11	Gauge depth to groundwater through hollow stem auger to determine well screen interval.			\Box
12 /	Set 18- to 20-ft well screen across anticipated water table and casing to surface. Place 8/12 or			
15	10/20 sand pack around screen to 2 feet above top of scree. Transition with 2 feet of 20/40 sand. Place 2 foot bentonite seal and hydrate for 30 minutes. Place grout from bentonite to near surface.			J
13	Set protective outer casing and well pad. Install locking cap. Ensure cap and casing are secured.			匚
14	Develop well by purging until parameters stabilize (<10% variability between readings). All fluids to be contained and disposed of in process wastewater system upstream of API separator.			
15	Collect groundwater sample.			
16	Confirm that GPS coordinates have been collected for this well			

Analytical Suite as per attached Table 3 of Work Plan PLUS moisture content for soil at every 2 ft interval.

Install soil boring RO-SB01 in northwest corner of North RO Reject Discharge Field and collect soil samples at same rate as for wells.

	ARCADIS U	U .S.		
	WATER SAMPLE FIELI	* '		
PROJECT#:	PURGED BY: 4ffn		WELL I.D.: <u>Mん・//り</u>	
CLIENT NAME: //aveja	SAMPLED BY:	2	SAMPLE I.D.:	
LOCATION: Artesia	· NM		QA SAMPLES:	
DATE PURGED 2-3-13 DATE SAMPLED 2-3-13		1130	END (2400hr) // (5	
	SAMPLE TIME (2400hr)			
SAMPLE TYPE: Groundwater x	Surface Water	Treatment Effluent	Other	·····
CASING DIAMETER: 2" X (0.17)	3" 4" (0.67)	5" (1.02) 6"	(1.50) 8" (2.60) Othe	r ()
DEPTH TO BOTTOM (feet) = 3	8.20	CASING VOLUME	E(gal)= 5.03_	
	59	CALCULATED PU		
WATER COLUMN HEIGHT (feet) =	29.61	ACTUAL PURGE (
WATER CODONA TELEVIT (1995)	21.01			
	FIELD MEASUREM	MENTS		
DATE TIME (2400hr) (gal) 2(3/13 0.50 (gal) 10.56 (l. 00 (l. 05 (l. 10 (l. 1	1264 Mr 13.60 4 18.66 4 18.73 4 18.81 4 18.82 4 18.88 4	Sos/cm) (units) 4.16 6.5 1.17 6.4 1.14 6.4 1.14 6.4 1.14 6.4	(visual) 8	RBIDITY (NTU) 38.7 22.6 28.7 31.7 33.4 35.1
SAMPLE DEPTH TO WATER:	Salvii EE II ii Okida		ETURBIDITY:	
80% RECHARGE: YES NO	ANALYSES:	See Ce)C	
ODOR: SAMPLE	VESSEL / PRESERVATIVE;	Multiple		
PURGING EQUIPMENT	7 100 100 100 100 100 100 100 100 100 10	-	NG EQUIPMENT	
Bladder Pump Bailer Centrifugal Pump Bailer	(PVC) (Stainless Steel)	Bladder Pump Centrifugal Pump Submersible Pump Peristalic Pump	Bailer (Teflon) Bailer (PVC or Bailer (Stainless Steel) Dedicated	disposable)
WELL INTEGRITY: 1	Vew	LOCK	#:	
REMARKS:				
			<u>,</u>	
SIGNATURE:			Page .	of

v	<i>ARCAL</i> VATER SAMPLE I		CET	
PROJECT#: CLIENT NAME: Navayo LOCATION: Artesia No	PURGED BY:	My EB	WELL I.D.:	
DATE PURGED Z/3/13 DATE SAMPLED Z/3/17 SAMPLE TYPE: Groundwater x	START (2400hr) SAMPLE TIME (2400 Surface Water		····	
CASING DIAMETER: 2" (0.17)	_ 3"	(0.67) 5" (1.02)	6" (1.50) 8" (2.60)	Other ()
•	7.54 49 20.05	CALCULA	OLUME (gal) = 3 TED PURGE (gal) = PURGE (gal) =	9.41
	FIELD MEA	SUREMENTS		
DATE TIME (2400hr) (gal) 2/3/18 //145 // // // // // // // // // // // // //	(degrees FY 17.66 17.41 17.19 17.11 16.95 16.87	ONDUCTIVITY (15-16-5/cm) (15-16	pH (units) (visual) 7:13 (lean) 7:02 (i) 6:93 (i) 6:36 (i) 6:34 (i) 6:33 (i)	TURBIDITY (NTU) 85. 6 76.3 71.2 65.6 61.8 58.1
SAMPLE DEPTH TO WATER: 7. 49			SAMPLE TURBIDITY:	
80% RECHARGE: YES NO ODOR: SAMPLE V	ANALYS			
PURGING EQUIPMENT	VESSEE) TRESERVATIV		SAMPLING EQUIPMENT	
Bladder Pump Bailer (Centrifugal Pump Bailer (Submersible Pump Bailer ((Teflon) (PVC) (Stainless Steel) ted	Bladder Pump Centrifugal Pump Submersible Pum Peristalic Pump Other:	Bailer (Teflon)Bailer (F	
WELL INTEGRITY: 1500 No.		_	LOCK#:	
SIGNATURE:				Pageof

	ARCA	ADIS U.S.				
W.	ATER SAMPLE	E FIELD DATA S	неет	·,		
PROJECT#: CLIENT NAME: Navyo LOCATION: Artesia Na	PURGED BY: SAMPLED BY:	JM EB	SAMPL	IL I.D.:		
DATE PURGED 2-3-13 DATE SAMPLED 2-3-13 SAMPLE TYPE: Groundwater x	START (2400hr) _ SAMPLE TIME (24 Surface Water	•	END (24	400hr)	5	
CASING DIAMETER: 2" X (0.17)	3" (0.38)	5" (0.67) (1.02	6" (1.50)	8" (2.60)	Other ()	
DEPTH TO WATER (feet) =	7.29 .91 17.88	CALCU	G VOLUME (gal) = JLATED PURGE (g AL PURGE (gal) =		o 4	
	FIELD ME	EASUREMENTS				
DATE TIME (2400hr) (gal) 2-3-/3 /236 /1240 /1245 /1250 /1365	TEMP. C (degrees \$\) 14.68 13.98 13.94 14.00 14.01 14.03	CONDUCTIVITY (www.hos/cm) # 4.90 4.90 4.89 4.88 4.88	pH (units) 6.79 6.73 6.71 6.74 6.69	COLOR (visual)	TURBIDITY (NTU) 67.1 67.1 76.0 75.8 75.2	
SAMPLE DEPTH TO WATER: 993	SAMPLE I	NFORMATION				
80% RECHARGE:YESNO		YSES: <u>Sec</u> IVE: M.	COC 14pk			
PURGING EQUIPMENT			SAMPLING EQU	JIPMENT		
Bladder Pump Bailer (Te Centrifugal Pump Submersible Pump Peristalic Pump Other: Pump Depth: \$\sumeq 25\$	VC) ainless Steel)	Bladder Pump Centrifugal Pu Submersible F Peristalic Pum Other:	ump Bai Pump Bai np Dec	ler (Teflon) ler (PVC ler (Stainless Steel licated	ordisposable)	
WELL INTEGRITY: <u>Brand Ne</u> REMARKS:	نه		LOCK#:			
SIGNATURE:			.5	F	Pageof	

	ARCADIS		,			
PROJECT #: CLIENT NAME: Novayo LOCATION: Arteria, NM	PURGED BY: SAMPLED BY:	WELI SAMI	WELL I.D.: Mp-117 SAMPLE I.D.: QA SAMPLES:			
DATE PURGED 2.3.13 DATE SAMPLED 2.3.13 SAMPLE TYPE: Groundwater x	START (2400hr) O 9 SAMPLE TIME (2400hr) Surface Water	END //OO Treatment Effluent	(2400hr)			
CASING DIAMETER: 2" (0.17)	3" (0.38) 4" (0.67)	5" (1.02) 6" (1.50)	8" (2.60) Other ()			
DEPTH TO BOTTOM (feet) = 27. DEPTH TO WATER (feet) = 7.0 WATER COLUMN HEIGHT (feet) = 20		CASING VOLUME (gal) CALCULATED PURGE ACTUAL PURGE (gal) =	(gal) =			
DATE TIME (2400hr) (gal) 2/3/3 0926 0930 0930 2.75 0936 2.75 6938 0740 SAMPLE DEPTH TO WATER:	(degrees (un) 11.97 18.51 13.71 18.23 18.83	CTIVITY pH (units) 4.48 6.34 30 6.34 22 6.36 22 6.36 22 6.36	COLOR TURBIDITY (visual) (NTU) (lear 123 123 11			
80% RECHARGE: X YES NO ODOR: SAMPLE VE	ANALYSES:	Sec COC Multiple				
Peristalic Pump Other: Pump Depth: WELL INTEGRITY: Brand Meto	VC) tainless Steel) d Othe	Centrifugal Pump F Submersible Pump F Peristalic Pump I	QUIPMENT Bailer (Teflon) Bailer (PVC or disposable) Bailer (Stainless Steel) Dedicated			
SIGNATURE:			Pageof			

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PROJECT #: PURGED BY: R. McKenus WELL I.D.: MW-1/8 CLIENT NAME: Navayo SAMPLED BY: D. McKenna SAMPLE I.D.:
CLIENT NAME: Navayo SAMPLED BY: P. McKenna SAMPLE I.D.:
LOCATION: Antesia, NM QA SAMPLES:
DATE PURGED 2-5-13 START (2400hr) 1345 END (2400hr) 1415
DATE SAMPLED 2-5-13 SAMPLE TIME (2400hr) 1425
SAMPLE TYPE: Groundwater x Surface Water Treatment Effluent Other
CASING DIAMETER: 2"
DEPTH TO BOTTOM (feet) = 28. 51 CASING VOLUME (gal) = 4.22
DEPTH TO WATER (feet) = / 3. 7. CALCULATED PURGE (gal) =
WATER COLUMN HEIGHT (feet) = 24.80 ACTUAL PURGE (gal) = 24.5 3.4
FIELD MEASUREMENTS
DATE TIME (2400hr) (gal) (degrees \$\frac{\text{M}}{\text{M}}\$ (units) (visual) (visual) (NTU) 2 \$\frac{1}{2}\$ 13 1245
PURGING EQUIPMENT SAMPLING EQUIPMENT
Bladder Pump Centrifugal Pump Bailer (Teflon) Bailer (PVC) Submersible Pump Peristalic Pump Other: Pump Depth: \$\sigma 20^{\sigma}\$
WELL INTEGRITY: Usond New LOCK#: REMARKS:
SIGNATURE: Page of

ARCADIS U.S.									
PROJECT #: CLIENT NAME: Navayo LOCATION: Astesia; NM	PURGED BY: D. Mck SAMPLED BY: B. Mck		· · · ·						
DATE PURGED 2-5-/3 DATE SAMPLED 2-5-/3 SAMPLE TYPE: Groundwater x	START (2400hr)	END (2 ² 1315 Treatment Effluent	100hr) <u>/305</u> Other						
CASING DIAMETER: Casing Volume: (gallons per foot) 2" (0.17)	3" (0.38) 4" (0.67)	5" (1.02) 6" (1.50)	8" (2.60) Other ()						
DEPTH TO BOTTOM (feet) = 28. DEPTH TO WATER (feet) = 6.6 WATER COLUMN HEIGHT (feet) = 2		CASING VOLUME (gal) = CALCULATED PURGE (g ACTUAL PURGE (gal) =							
	FIELD MEASUREMEN	TS							
DATE TIME (2400hr) (gal) 2 5 13 240	TEMP. © CONDUCTIVE (degrees K) 76 (umhos/c) 16.98 3.2 16.54 3.2 9.14 4.00 9.02 4.00 9.09 4.00 9.26 4.0	m) (units) 7. 20 7. 03 2. 6.97 2. 6.97 2. 6.97 1. 6.97 0. 6.37	COLOR TURBIDITY (visual) (lear 139 11 208 11 173 11 152 11 152 11 144						
SAMPLE DEPTH TO WATER: 6.63	SAMPLE INFORMATIO	ON SAMPLE TURB	IDITY:						
80% RECHARGE: X YES NO ODOR: No SAMPLE VE	ANALYSES:								
PURGING EQUIPMENT Bladder Pump Centrifugal Pump Bailer (P Submersible Pump Peristalic Pump Dedicated Other: Pump Depth:	VC) Centainless Steel) Sub-	SAMPLING EQUIPMENT Bladder Pump Bailer (Teflon) Centrifugal Pump Bailer (PVC or disposable) Submersible Pump Bailer (Stainless Steel) Peristalic Pump Dedicated Other:							
WELL INTEGRITY: Trund New REMARKS: SIGNATURE:		LOCK#:	Pageof						

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ARCADIS Groundwater Sampling Form Project No. Well ID Date Project Name/Location Weather Measuring Pt. Screen Casing Well Material PVC Description Setting (ft-bmp) Diameter (in.) SS Static Water Water Column/ Level (ft-bmp) Total Depth (ft-bmp) Gallons in Well MP Elevation Purge Method: PEN ISTULM L Pump Intake (ft-bmp) Sample IDW SOW Centrifugal Method Pump On/Off Volumes Purged Submersible Other Sample Time: Replicate/ Sampled by MB Start Code No. End Time Minutes Rate Depth to Gallons pН Temp. Cond. Turbidity Dissolved Redox Elapsed Water Appearance (gpm) Purged (µMhos) Oxygen (mL/min) (ft) (m8/cm) (NTU) (°F) (mg/L) Color (mV) Odor 1212 5 4059 ムト 23.29 70.₽ 22 12.15 3 v 18 14 1224 10 5 6.43 4,025 a 0.83 20.44 5.2 (lear ୫ 6.50 0.86 19.93 15.6 6.49 IJ 4.028 0.31 19.94 319 14 4 030 .73 494126.5 ~ 1 Va 17 74 650 4 n 32 70.06 18 6 1332 20 0.5 4.0210 3 *38* le.5 4:026 20.04 Constituents Sampled Container Number Preservative Dissolved Metal 500 ML 171/03 plasnic VDC. AMBER -GRO 40 ML VOA 3 HZI proforo 40 AMBER (Chional Myona) surum blashc 10171 P14871 NOOH PLASM **Well Casing Volumes** Gallons/Foot 1" = 0.04 1.5" = 0.09 $2.5^{\circ} = 0.26$ $3.5^{\circ} = 0.50$ 6" = 1.47 1.25" = 0.062* = 0.163" = 0.374" = 0.65Well Information Well Location; Well Locked at Arrival: No

(Jack-) Condition of Well: Well Locked at Departure: No Well Completion: Stick Flush Mount Key Number To Well: .

ARCADIS Groundwater Sampling Form Project No. Well ID Date Project Name/Location MA Weather Measuring Pt. Screen Casing 15 150Well Material Description Setting (ft-bmp) Diameter (in.) Static Water Water Column/ Total Depth (tt-bmp) 27.85 Level (ft-bmp) Gallons in Well MP Elevation Pump Intake (ft-bmp) Purge Method: PUTISHUN C Sample Method Pump On/Off Volumes Purged C Submersible 1550 Sample Time: Label Other Replicate/ Start Code No. Sampled by Mc/ End Time Minutes Rate Depth to Gallons Cond. Turbidity Dissolved Redox Elapsed (gpm) Water Purged (µMhos) Appearance Oxygen (mL/min) (ft) (mS/cm) (NTU) (mg/L) (mV) Color Odor 5-11 411 643 1-19 5.300 98 Z None 1.15 5.315 1.5 10 97.3 15: [7 17 15 50 5.791 2.47 19.25 07 **460** 15:20 20 <u> 8:15</u> 5679 .75 5. 295 2.70 ole 19.57 79,Z <u>15.23</u> <u> 23</u> 4.14 45 5.290 1.12 19-79 105 748 15-00 26 4.64 1445 15.20 W 4.10 4ء٤٤٤ 5:248 1-5% 05 20.05 624 15.29 29 8.15 1.25 4.65 J. 293 2.71 <u>, 63</u> 20.17 63.L Constituents Sampled

DISSOIVED METALL	Container	Number	Preservative
	500 ML PLASTI	1	HN,3
SVOC	16 Ambap		
17H-6RO	4º MC VOA	- 2	· · · · · · · · · · · · · · · · · · ·
1PH - DROS DRO	40 MI AMBER	-2	<u> 144</u>
ANIONS TOS (CHIORIDETSUPAR)	- IL PLASTIC		
CYANIDE COTAL	200 ML PLASTIC	- '-	NaOH
Kallum zue/223	16 PLASHC	-1	- (4.1)
ANIONS (NITRATE) NITRITES	IL PLANT		HNO ₃
VOCS	40 MA 1/h A		115 34 A
Walto	750 00/1		<u> H61</u>
Well Casing Volumes Gallons/Foot 1" = 0.04 1.5" = 0.09 2.5" - 0.09		<u> </u>	-

 $1.25^* = 0.06$

2" = 0.16

2.5" = 0.263" = 0.37

3.5" = 0.50**4"** ≈ 0.65

6" = 1.47

Well Information

Well Location: Well Locked at Arrival: Yes) Νo Condition of Well: (J 201) Well Locked at Departure: No Well Completion: Flush Mount Key Number To Well:

ARCADIS Groundwater Sampling Form

Project No.		<u> </u>			Well ID	MW-	11.0			5	Page	_ of
Project Name	/Location	MAV	AJO/REI	TEU	FIE	1)(Date	5/16	
Measuring Pt. Description			Screen Setting (ft-bmp)			Casing				Weather Well Mat	Scn-	PVC
Static Water Level (ft-bmp)	10	2.25				Diameter (in. Water Colum		_				_ss
MP Elevation		1. 25	Total Depth (ft-b		1.50	Gallons in W						
	G; 5	سي ه	Pump Intake (ft-			Purge Metho	od: VVV) Centrifug	ruffic		Sample	1-1-1	71
Pump On/Off			Volumes Purge	$a \sim 1.6$	<u> </u>		Submersi	ib <u>le</u>		Method	[Way	<u> </u>
Sample Time:	Label Start End	10:15 10:15	Replicate/ Code No.		 _	_	Other			Sampled	by M	<u></u>
Time	Minutes	Rate	Depth to	Gallons	T pH	Cond.	Total tare	Tat y				
	Elapsed	(gpm) (mL/min)	Water (ft)	Purged] "	(µMhos)	Turbidity	Dissolved Oxygen	Temp. (°C)	Redox	Appea	эгапсе
9:30	5		10.25	.15	6.14	(mS/cm) 5.289	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
9:33	8		10.25	125	(0.35	5.302	643	4.00		68.3	arey	None
9:36	_11_		10.25	-50	6.39	5.330	643	5.99	17.660	909	Eassy	├}-
9:39	14		6.15	165	6.38	5,355	456	4.53	17.76	976	Radish	
9:42	17		10,24	175	6.40	5.355	364	3.91	17.94	99.3	Lasy	
8	21		10.25	1 /	5.38	5.350	312	3.65	19.93			
9:48	23		10,24	1.25	6.3.7	5.3 LO	300	3,64	18.0	101.3	7	V
9:54	28		10.25	1.50	6.38	5-362	irce	2.65	17.90	(02, 3		
9:57	31		10.75	1.75	0.37	5.364	212	2.66	17.94	102-6	V	
10:00	34		10-24	225	6.36	5-363	183	2,64	18-05	103.4		
10 13			10:63	600	6.35	5.364	147	`	16.09	1035		
				 								
							+					
		$ \overline{}$										
												
										 +		
Constituents Sa	mpled				ontainer							
NO SOLVE	d Med	ruls		•		ML Pla	eri	V	lumber	F	reservativ	е
51000				-		MPER	31 ac	-		_	HNO,	
19th -61	RO.	-0		_		LVUA		-	3	_	 _	
17[T -])	<u> </u>	Jeo	\	\ _	4D V	1L Am	ver	_	3	_	174	
WIGHT	11/3		iDE7541fa	re) _	161	lastic		-		_		
CAANIO	5 (1)	2178U)			250	mi Pla	mi	_	$\frac{}{1}$	_	Naor	
ANIÓNSC	LU	0/728	(F. 5. 5. 5.)	_	111	Magni			2	_	HNO)-
VUC /	N(I)	VIEV	JITPITÉ)		<u> </u>	plasni		_	1	_	13780	
				_	40 n	1 VOA			3		1021	7
Vell Casing Volu	mes 0.04	4.50										
	5" = 0.06	1.5" = 2" = 0		5" = 0.26 ' = 0.37	3.5° : 4° = 1	= 0.50 6 " 0.65	= 1.47			, -		
/ell information												
Well Location		bum	Re JUI	F	eu		Walls	cked at A		-		
Condition of W		900()			<u> </u>	_v	Veil Locke			(Yes)		10
Well Completion	n:	<u>Fl</u> ust	n Mount /	Stick U	3	·		umber To		(Les	GW Samp Fo	m

A A	RC/	ADIS	Groundwate	er Sam	pling Fo	rm					ţ	ì
Project No.		VATO	10.5	.	Well ID	MW -1	17	_		Date	Page 1 5/15	113
Project Name	/Location	MAVE	400/RO R	CUEC	TFIE	LDS		·-··		Weather	SMUL	14/MING
Measuring Pt. Description			Screen Setting (ft-bmp)			Casing Diameter (in.)	2"			Well Mate	erial <u>X</u>	PVC SS
Static Water	00		-			Water Colum		-		•		_00
Level (ft-bmp)	0.5	2	Total Depth (ft-br		-6D	Gallons in W		14.				
MP Elevation	DA	2/1052	Pump Intake (ft-b	•	71/711.	Purge Metho	Centilluga	1		Sample Method	LOWN	رسر ده
Pump On/Off			Volumes Purged	7 1	15 M	•	Submersil Other	ble				
Sample Time:	Label Start End	1036	Replicate/ Code No.			-				Sampled	by M	<u>B</u>
Time	Minutes Elapsed		Depth to Water	Gallons Purged	рН	Cond. (µMhos)	Turbidity	Dissolved	Temp.	Redox	Appea	rance
0.00		(mL/min)	(ft)		ļ ,	(nS/cpl)	(NTU)	Oxygen (mg/L)		(mV)	Color	Odor
947	5		13.63	~1/4	641	4,232	23.0	0.35	19.77	156.1	Clear	
953	11	 	8.52 8.53	~ <i>'</i> /4	6.40	4.232	4.28	0.33	19.69	154.7	├-}-	
956	14		16.52	13/A	6.5	4.225	3.39	0.29	19.72	13627	 	
959	17		8.52	-1	6.50	4. 223	241	0.28	19.30	135.6	1 1	
1002	20		3.50	-1/4	6.51	4,220	2.52	0.27	19.79	133.4		
1005	23	<u> </u>	852	~1'/2	6.51	4.228	2.35	0.25	19.83	132,5		
		 		<u> </u>		<u> </u>				-	 	
										 		
								_		 		
						<u> </u>						
			,									
Constituents :	Sampled	<u> </u>			Container				Number		Preservati	VA
	edM	ETALL		_	500	mepy	Knic		-		14203	-
SVDUS				- .		KMBER	`		2			
	ppod opod	Diko		. .	40	Mr NO)			_3		1701	
11/1-10 11/11-10	1 +0/		PIDE/FLUOV	0.05	4,0	MM A			3			
CYANDO	E (1	PIAL	PIDO/ PLOUP	ا رحال	250	YVASTU	Asnc				NAOI	1
PRADIUN		26/2 2	3)		16	PLASTIC	/ 18) /C		1		1700	
ANION	s Mi	TRATE	/MRite		16	PUAST	V		1		H250	<u>-3</u>
NA.C.					46 n	ht voi	4		7		Hel	
	1" = 0.04 1.25" = 0.00			2.5" = 0.26 3" = 0.37		5" = 0.50 = 0.65	6 " = 1.47		•		•	
Well Informat		MRN	n ler sc	W E	7011					۸.	<u>.</u>	
Condition of	-	(2))		<u>∽r </u>	7eld			Locked at ked at Der		Yes (Yes		No .
Well Comple	-		ush Mount /	Stick	Up			Number T	_		GW Sam	

ARCADIS Groundwater Sampling Form

Project No.		÷		7	Well ID	MW-1	18			Date	Page 15	113
Project Name	Location.	NAVA	TO KO K	EJE	TF F	iPLAS	· · ·	•		Weather	YMMI	IMNI
Measuring Pt.		4	Screen	<u> </u>		Casing				Well Mater	ial 💆	PVC
Description Static Water	4.0		Setting (ft-bmp)			Diameter (in.)		-			-	SS
Level (ft-bmp)	L.		Total Depth (ft-bn	np) Z	1.35	Water Columi Gallons in We	-					
MP Elevation			Pump Intake (ft-b			Purge Method	: Fen (r	uuni		Sample	- שכן	6-
Pump On/Off			Volumes Purgeo	<u>~3</u>	gol		Centrifuga Submersib	le		Method	ww_	10-0-
Sample Time:	Label	MW-118	Replicate/		/		Other				à	
	Start J	10 3A	Code No.			_				Sampled b	y Mali	<u>~-</u> -
Time		3/4	input	TO 11-			- ··· · · ·	T				
Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pΗ	Cond. (µMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp (F)	Redox (mV)	Appea Color	rance Odor
13:35	5	(4.60	.25	6.71	4.851	3.48	285	17.59	167.5	Cuar	
17:33	8		4.60	150	6.09	4.913	1.65	5.05	17.84	1043	1	
17:36	11		61.61	.75	6.70	4.965	97	5.95	17.70	101.1		
13.39	14		4.59	1/2/5	6.72	4982	189	5.39	17,64	961	- -	$\vdash \vdash \vdash$
13.45	17		4.60	1.50	6.74	4.945	1,03	6.60	16.41	92.4		
12.44	23		4.00	1.75	6.72	4.974	193	5,50	18.46	51.5	-	
12:51	25		4.60	7	4.73	4.903	.911	5,35	19.18	91.6		
17:54	29		4:61	eis	4.43	4.973	75	5.50	13.91	91.6		
17:57	32		4.61	2.50	6.75	4955	194	5116	19.32	57.3		
18:00	35		4.60	2.75	6,74	4,954	.95	5.17	19.60	89,7		
18 63	38		4.01	3.0	6.73	4.954	1.41	2.12	4.15	90,6	-	
				 						· · · · · ·		
				<u> </u>		<u> </u>				:		
Constituents					Container				Number		Preservati	ive
Dissolve	1 M	<u>erals</u>		_	500	MI PL	ASD C		<u> </u>		ITNO	3
SYDCs	7/0			_	14	AMBER						
TPH-6		ORO		-		12 VDA	Nar-R		3		HU	 .
MION			RIDE/ FLUG	Rana			MER			-		
CYANID		177L)	MI08/ 1 000	יטעןיי	250	PLASTIC ML P	VASIC	-		<u>.</u>	Naol	1+
KA DIU		4/24	3	-	$\frac{-10}{11}$		<u> </u>	•	a		1171	
ANIONS		PATE,	NITRITE)	-	ILP	LASHIL		•	_ 		H250	4
Vocs				- -	40 m	L VOA			_3_		HC	
Well Casing V			<u> </u>									
Gallons/Foot	1" = 0.04 1.25" = 0.06		5" = 0.09 = 0.16	2.5° = 0.26 3° = 0.37		.5" = 0.50 " = 0.65	6" = 1.47					
Well Informa	tion											
Well Loca	-	norr		s F	7era_			Locked a	_	(Yes)		No
Condition of	-	6001		-/-				ked at De	_		/ GW Se	NO
Well Compl	etion:	F!	ush Mount /	Stick	Up		Key	Number 1	⊺o Well:	_		

HA A	KCA	MI2	Groundwate	er Sam	pling Fo	rm					Dans)	. 1
Project No.					Well ID	WW -	19			Date	Page 1	-» //3
/ Project Name	/Location	NAV	ATO/RO	REJ	EU	5tap	<i>\$</i>	-			SUNN	TIWIN
Measuring Pt. Description			Screen Setting (ft-bmp)			Casing Diameter (in.)	2-		<u>.</u>	Well Mate		PVC SS
Static Water Level (ft-bmp)	8.	7	Total Depth (ft-bm	19)28	.32	Water Colum Gallons in W	n/					_
MP Elevation Pump On/Off	173	9/1945	Pump Intake (ft-b Volumes Purged			Purge Metho	d: PUS Centrifuga Submersib			Sample Method	uw-f	202
Sample Time:	Label Start End	1810 1806 1840	Replicate/ Code No.			-	Other			Sampled	by / //	<u>5</u>
ime	Minutes Elapsed	1	Depth to Water (ft)	Gallons Purged	pН	Cond. (µMhos) (m8/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (20) (°F)	Redox (mV)	Appea Color	arance Odor
744	5		7.72	~14	6.05	4.441	8.73	7.13	13.71	80.5	Clear	
1747	0		7.44	~ 1/2	(0 H	4.431	2.54	7.37	14:54	B1.5		
1750	14	<u> </u>	7.69	~3/4	6.46	4.440	1.47	7.24	15,6	908	 	
1756	177		7.63	~1	6.49	4.434	\$55	7.50	15.42	93.6		
1759	30		7.69	~172	6.47	4,444	0.46	7.64	15.00	85.7	 	1
1502	23		7.68	~ 34	6.50	4.4.33	1.41	7.52	15.24			
1805	2ee		768	~2_	6.50	4.436	-2.77	7.65	15-15	08-4		
												i
			· _							<u>. </u>	ļ	
	_	<u></u>		ļ		-						
				_		 						
						 						
											 	
	†							_				
onstituents	Sampled				Container				Number		D	
		WETA	S		50		LASTIC		{		Preservat	
5VDC5	•	-		-	12	AMB	<u> </u>		2	-		
TPH.	-6R			_	40	MLV	OA		3	-	HU	
TPH	- DK	~	Po		40	ml P	MBEX	2	3	_		
ANION	12/1			-wokid		PLASTIC			1	_		
CYAN.	INE	(to 17		. .	750		PLASDU	~ .		_	Nac	
ANIL	NS 7	νν/ν ΜποΔ	DI MITOA	- \		PLAST	l C		v	-	H_V	<u> </u>
M	14,	1116	14/11/1K(1	.5)	43	MI -	<u> </u>			-	6125	7
100)					70	mi U	N/T			-	PC	
/ell Casing V allons/Foot	olumes 1" = 0.04 1.25" = 0.0		5* = 0.09 = 0.16	2.5" = 0.26 3" = 0.37	-	5" = 0.50 '= 0.65	6* = 1.47					
/ell Informa	tion	<u>. </u>			_							
Well Loca	tion:	NORY	n REDER	7 1	20	<u> </u>	Well	Locked at	Arrival:	(re)		No
Condition of	f Well:	[706])				Well Lock	ked at De _l	parture: _	Уeз	1	No
Well Compl	letion:	FI	ush Mount /	Stick	ν _p		Kev	Number T	o Well:		GW Sa	mp Form

roject No.	Location	NAV	AJO IRO	REJI	Well ID	MW- TELOS	117	_		Date Weather	9/4) Sunv	1 of / 1)2 W/161
Measuring Pt. Description			Screen Setting (ft-bmp)			Casing Diameter (in.)	2"			Well Mate	erial Z	PVC SS
tatic Water evel (ft-bmp)	6.0	9	Total Depth (ft-b		.49	Water Colum Gallons in W	e <u>ll</u>	7115			-	
IP Elevation ump On/Off	093	5/1011	Pump Intake (ft- Volumes Purge	-	dal	Purge Metho	Centrifuga			Sample Method	low	Frow
ample Time:	Label Start	6950	Replicate/ Code No.	NA	t year		Submersib Other	ile		Sampled I	by M	В
ime	End Minutes Elapsed		Depth to Water	Gallons	рН	Cond.	Turbidity	Dissolved	Temp.	Redox	Арр	earance
\(\lambda_1 = -		(mL/min)	(ft)	Purged		(mS/cm)	(NTU)	Oxygen (mg/L)	(°C)	(mV)	Color	Odor
1945	14	~400	10-13	~1/2	6.80	3.687	0.20	1.29	24.91	468	Clear	none
0856	18	~ 250	6.11	~3/4	10-12	3.605	0.14	0.88	24 0	47.0	-	++-
1856	30	~ 256	6.10	4	6-69	3.644	0.35	0.80	24.63	45.0	-	++-
)95a	24	~256	6.10		6.67	3.625	0.15	0.57	24.90	44.1		+I
904	29	~250	6.10	-1/4	6.65	3.589	0.20	0.53	24.90	42,8		11
907	32	~250	6.10	10/2	0.64	3.562	0.30	0.47	24.78	41-2		
910	35	~250	6-10	-13/4	6.63	3.533	0.16	0.43	24.65	40.1		
1913	38	~520	6-10	~2	6.62	3.504	0.01	0.40	29.54	38.5		1
916	41	~256	6.10	NLA	6.61	3.489	-	0.41	24.39	38.0		
922	47	250	6.10	6~21/2	6-61	3.470	0.06	D.39	24.55	37.2	1	-
925	50	~250	6	~2/4	6.60	3.4.55	0.02	0.42	24.43	35.9		+
928	53	~250	6.10	3)3	6.60	3.435	0.23	0.43	24.41	33.1		1
nstituents \$					Container	0			Number		Preserva	
RADIU DAL D	SJOW	to soli	DSIAMONS	DH .	11	PLASTIC			2		AM	. 3
EMIVOL	AMI	ES			il	AMBE	2		2		_	-
YANIDI					250	MLP	MSTIL		1		Nao	H
PH DR	0/0	Ro				m VUF	TUAL		3		_	-
ORO	VI				-1	M VOA	VIM	0	3		itc	
KOLAD	ES	ETAUS			40 N	M PLA	VIAL	0	3		HC	
13501001) 1º41	21110)		-	500 1	ive pun	3710	14	1		ITT	Np3
	olumes 1" = 0.04 1.25" = 0.0		5" = 0.09 = 0.16	2.5" = 0.26 3" = 0.37		5" = 0.50 = 0.65	6" = 1.47					

Stick Up

Key Number To Well:

Flush Mount

Well Completion:



MP Elevation	Project No. Project Name/Loc Measuring Pt. Description Static Water Level (ft-bmp)	cation NA	Screen Setting (ft-bmp)		Well ID ZEJEC	Casing Diameter (i	ELOS	-		Date Weather Well Mat		1 of 1 /13 /14/1 PVC SS
	MP Elevation Pump On/Off Sample Time: Late Sta	117/1220 pel 1200 prt 1150	Pump Intake (i Volumes Purgi Replicate/	ft-bm <u>p)</u> ed ~2	.5 que		Centrifuga Submersi	al		Method		tou
1125	Elaj	psed (gpm) (mE/min)	Water (ft)	Purgeo	4	(uMhos)		Oxygen	(C)		1-3-1-23-1	
Container Number Preservative The property Preservative 1125 8 1128 11 1131 14 1134 17 1137 20 1140 23 1143 20 1144 29	~ 150 ~100 ~100 1 ~100) ~100) ~100) ~100	4.65 4.62 4.60 4.60 4.60 4.60	<1 1 ~1/4 41/2 ~13/4 2000 ~2 ~2	6.93 6.89 6.83 6.81 6.80 6.80	3.723 3.740 3.846 3.846 3.834 3.808 3.832 3.832	5.40 4.22 4.32 0.80 0.49 0.16 0.55	6.00 4.63 4.26 4.05 3.74 3.76 3.56 3.46 3.41	21.76 21.52 21.72 22.50 23.15 22.94 22.78 23.08 23.02	49.3 42.6 48.3 47.9 46.1 46.9 45.8 45.9 44.6		Odor	
1" = 0.04	RADIMM TAL DISTOLUTE EMILIO VATILI YANI DE PH DRO / DI PO PLATILES SSOIVED M.	ES SOUL)5/ ANIONS/	/p#	1 L P 1 L P 1 L P 250 M 40 M	LASTIC MBER M PLAS L AMB L VOA L VOA	ON C ER VIAL VIAL 3NL	-	2 1 2 1 3	Pr	Hall Hu	<i>t</i>
ndition of Well: Well Locked at Arrival: Yes / No	1" = 0.04 1.25" = 0.0 Information Vell Location:	2" = 0.						JJ1.A				

Time ME 1257 M 1300	10-	72	Screen Setting (ft-bmp) Total Depth (ft-br Pump Intake (ft-br Volumes Purgeo Replicate/ Code No. Depth to Water (ft)	omp)		Casing Diameter (in.) Water Colum Gallons in Wi	ell			Weather Well Mate	_	_PVC _SS
Description Static Water Level (ft-bmp) MP Elevation Pump On/Off Sample Time: Li S E Time ME 1257 ME	24 / abel Start and Minutes Elapsed	1330 1330 1351 Rate (gpm)	Setting (ft-bmp) Total Depth (ft-br Pump Intake (ft-br Volumes Purgeo Replicate/ Code No. Depth to Water (ft)	omp) d	jal A	Diameter (in.) Water Colum Gallons in Wi Purge Method	d: Den S Centrifuga Submersib			Sample Method	_	_ss
Level (ft-bmp) MP Elevation Pump On/Off Sample Time: Li S E Time ME 1257 ME 1300	24 / abel Start and Minutes Elapsed	1330 1330 1351 Rate (gpm)	Pump Intake (ft-bt Volumes Purgeo Replicate/ Code No. Depth to Water (ft)	omp) d	jal A	Gallons in We	d: Den S Centrifuga Submersib		=	Method	Vom-	Flor
MP Elevation Pump On/Off Sample Time: Li S E Time ME 1257 ME	Minutes Elapsed	1330 1330 13510 Rate (gpm) (mt/mj/m)	Pump Intake (ft-bt Volumes Purgeo Replicate/ Code No. Depth to Water (ft)	omp) d	jal A	Purge Method	d: pen 5 Centrifuga Submersib		=	Method	low-	- Fr
Sample Time: Li S E	Minutes Elapsed	1330 1330 13510 Rate (gpm) (mt/mj/m)	Replicate/ Code No. Depth to Water (ft)	N/	A pH		Centrifuga Submersib				lom	rub
Time ME 1257 M 1300	Minutes Elapsed	330 350 3510 Rate (gpm) (mt/mjn)	Replicate/ Code No. Depth to Water (ft)	N/	А	- Cond	Other		-			
1252 1257 M	Elapsed	(gpm) (mL/min)	Water (ft)		рН	Cond				Sampled	by M	B
1252 1257 M	5	(mt/min)	(ft)	Purged		Cond.	Turbidity	Dissolved	Temp.	Redox	Appe	arance
1300 M	_	~100				(µMhos) (mS/cm)	(NTU)	Oxygen (mg/L)	(°C) (°F)	(mV)	Color	Odor
1300	_		10.73	CV4	7.04	3-192	0.83	1-71	19.09	26.5	Clear	None
	1 2	~100	10.74	~1/2	7.12	3.193	0-53	2.03	18.69	12.0		
1761	-	~100	10.73	13/4	7.05	3.171	0.48	1.98	18.94	10.9		
1303	16	~100	10.73	2	7.02	3.210	0.78	1.96	19.54	12.1		+
1200	19	-100	10.73	0129	0.99	3.244	0.01	2.01	19.96	11.9	\vdash	-
	22	~ 00	1 12	~14	6.96	3247	0.99	1.98	19.96	169		-
1315	/ -	~100	10.73	41/2	6.95	3.247	0.90	1.77	19.96	11.4		++-
	31	~100	10.73	11/2	6.10	3.248	0.18	196	1998	11. 1	+	+
Constituents Sar	mpled				Container	PLASTIC			Number 2		Preservat	
Da A	POINT	D sol	1101/AM-n,	/ YH	1 4	nusni			1		_=	
SEMININ	11116	5)			11	Muso	K -		7			
THE DRA	21 1210			÷ .	0350	ml P	USTIC		1		Nuo	П
GRO GRO	of ok	٥			40 1	1 (1)	ALGIA		3			
- t = 1	1				AD I	me vo	ALAD		3		Her	
VOLATILE		1-DAT	1			ul b	1000		3		HC	0-
0133-100	U	WITH	3				MS) LL					- 3
	umes = 0.04 25" = 0.06		5" = 0.09 = 0.16	2.5" = 0.26 3" = 0.37		5" = 0.50 ' = 0.65	6" = 1.47					

Stick Up

Flush Mount

Key Number To Well:

GW Samp Form

Well Completion:

Project No.					Well ID	MW-	110			Date	491	3
roject Name/	Location	NAI	IAJUI R	O RE	JEU	ME	LDS			Weather	sunn	yllowa
easuring Pt. escription			Screen Setting (ft-bmp)			Casing Diameter (in.)	24			Well Mater	rial 📐	_PVC _SS
tatic Water evel (ft-bmp)	122	1	Total Depth (ft-br	np) 27.	39	Water Colum Gallons in W						
P Elevation			Pump Intake (ft-t	mp)		Purge Metho	d: peris	talho		Sample	LOVT	Low
ump On/Off	1426	1609	Volumes Purgeo	2 ge	el		Centrifuga Submersib			Method	V- 1	
ample Time:	Label Start End	15/0	Replicate/ Code No.	_	0-01	_	Other			Sampled b	y MB	
me	Minutes	Rate	Depth to	Gallons	рН	Cond.	Turbidity	Dissolved	Temp.	Redox		DAY AT
	Elapsed	(gpm) (mL/mip)	Water (ft)	Purged		(µMhos) (mS/em)	(NTU)	Oxygen (mg/L)	(°F)	(mV)	Color	Odor
430	4	~100	12.27	~1/4	7.10	3.767	8.53	6.85	20-43	32.6	Clear	nope
1433	7	~95	12.21	21/2	7.06	3.812	(0.50)	3.60	21-03	29.7		
4.36	10	~95	12.21	(3/4	7.04	3.857	4.15	1.45	21.68	25.7	H) ZS	
437	13	~95	12.22	3/4	7.01	3-963	4.91	0-71	22.76	215		
442	16	~95	12.22	41	6-99	3.883	3.36	0.67	21.19	22.7		
445	19	~95	12.21)	698	3-745	1-83	0.48	2015	23.0		
448	22	~95	12,21	11/4	6.92	3.737	2.30	0.36	20.16	24.3		
A51	25	~95	12.71	1/4	6.92	3.759	2.29	030	2054	212		
1454	28	~95	12.61	41/2	6.93	3.748	0-38	029	20.16	203		
1457	31	~95	12.21	1/2	6.93	3.764	1.92	0,26	20.46	18.4		
500	3A	~95	12.21	134	6 44	3.801	6.68	0.25	21.04	17.5		
503	37	~95	12.21	4	6.93	3.933	1.08 0.46	0.25	21.27	17.4	_	-
200	10	10	10.01	8	0.77	5.097	7.0			17-1		
nstituents	Sampled				Container			~	Number		Preservati	
MINITA	1	111-1	Col 10 (104	n atl	11	PLASTIC			2	A 14	HM	>3
DALIA	11350	MED	SOLIDSIAN	AIGN)	10	MIN O)		1			
AVAUD	-	100			20	MLPLA	TSD C	2 1 1	4		Naok	4
YAMP	20108	2 6		-	40	10	UBUR		3		10000	
2Ro	-			-	110	ML VOT	TUA		3	10.	itu	
DLANI	ES			-	40	MLIDE	TVIM.		3		HUL	
ISJOIVE	0.0	ETALS		_	-	me pe	ASTIC		1		HNO)3
				-								
	olumes 1" = 0.04 1.25" = 0.00		.5" = 0.09 " = 0.16	2.5" = 0.26 3" = 0.37		.5" = 0.50 " = 0.65	6" = 1.47					
ell Informa		Sour	n Ro	Field	S		Mall	Locked at	Arrival	(Yes)	1	No

Replicate/

Code No.

Time	Minutes Elapsed	Rate (gpm)	Depth to Water	Gallons Purged	pН	Cond. (μMhos)	Turbidity	Dissolved Oxygen	Temp. (°C)	Redox	Appea	ırance
1073		(mL/min)	(ft)		. /9 /	(mS/cm)	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
1633	5	~200	9.22	14	6.94	4.367	0-43	1.55	20-71	68	War	non
1036	8	~150	8-22	14/2	6-91	1.443	0.25	0.92	20.61	2.9	1	1
1639	11	~100	8.21	41/2	6.89	4.535	0.02	0.58	20-68	-0.5	Ca.	
1642	14	-100	3-22	27/4	6.91	4.579	0-61	0-37	20.84	-5.3		
1445	17	~100	3.12	41	6.89	4.650	0-91	0.31	21.23	-0.7		
1649	20	~100	8.22	~179	6.09	4.732	16	0.28	21.18	2.9		
1657	23	~100	8.22	6/42	6.98	4.926	0.09	0.24	21.63	4.7		
1654	26	200	8.22	4142	4.99	4-877	1-13	0.22	21.25	6.7		
1657	29	~100	8.22	134	6.38	4.915	10,07	0.19	21.49	8.3		
1700	32	100	8.22	12	6.98	4.961	0,03	6.19	21.31	8.6		
1703	35	~100	8,22	£24	6.08	4-954	0:67	0.19	21.33	8.4	,	1
-												

Other

Number Preservative	Container	Constituents Sampled
2 HNO3	1 L'PLASTIC	RADIUM
	IL PLASTIC	TOTAL DISSOLVED SOLIDS
2 -	IL MUBER	SEMIVOLATILES
Nach	250 ML Plastic	CYANIDE.
3	40 ml Amber	TPH DROLORO
. <u>3</u> Ha	40 ML VOA VIAZ	GRO 1
2 Ital	40 ML VOA VIAL	VOLATUES
I HNO3	500 ML PLASTIC	DISSOLUED METALS
HNO	500 MI PLASTIC	DISSOLUED METALS

Well	Casing	۷o	lumes
- 11	-		

Sample Time: Label

Start

Gallons/Foot 1" = 0.04 1.25" = 0.06 1.5" = 0.09 2" = 0.16 2.5" = 0.26 3" = 0.37

3.5" = 0.50 4" = 0.65 6" = 1.47

Well Information

Well Location:
Condition of Well:
Well Completion:

OU	m	10	F	relas
9/01	00			
1	Flush Mo	unt	1	Stick Up

Well Locked at Arrival: _ Well Locked at Departure: _ Key Number To Well:

Yes	1	No
Yes	1	No
JIN		GW Samp Form

Date

Weather

Sample Method

Sampled by

Well Material

PVC

SS

Project No.					Well ID	MW-1	14			Date	Page	_ of
Project Name/	Location	NAV	AJOIR	O RE	EJEG	FIE	05			Weather	sunv	41600
Measuring Pt Description	TOC		Screen Setting (ft-bmp)	(market)		Casing Diameter (in.)	2"		· · · · · · · · · · · · · · · · · · ·	Well Mate	erial ×	PVC SS
Static Water Level (ft-bmp)	9.44	t	Total Depth (ft-br	mp) 37.	94	Water Colum Gallons in W	ell					
MP Elevation		L	Pump Intake (ft-	omp)		Purge Metho	d: PW/S1 Centrifuga	altic		Sample Method	Low.	Flow
Pump On/Off	821	0450	Volumes Purge	-2.	25		Submersib	ole		Method		
Sample Time:		0930 0915 090	Replicate/ Code No.	M	A		Other			Sampled	by M	3
ime	Minutes	Rate	Depth to	Gallons	рН	Cond.	Turbidity	Dissolved		Redox	Anne	arance
	Elapsed	(gpm)	Water (ft)	Purged		(µMhos)	(NTU)	Oxygen (mg/L)	(°F)	(mV)	Color	Odor
0822	5	~200	9.48	41/4	6.96	3.157	0.12	1.23	22.73	76.2	aler	none
0835	8	~150	9.46	442	6.09	3.164	0-05	0.98	23.10	66.9		
1840	13	150	9.46	~1/2	6.21	3.165	0.39	0.79	23.12	54.1		
0843	16	~150	9.46	13/4	10.79	3.161	1.55	0.78	23.06	520		
0846	19	-150	947	41	1,70	3.161	0.96	0.74	23.06	48.6		
1849	22	~150	9.46	~14	6.77	3.154	0.35	0.68	22.90	46.1		
1852	25	~150	9.45	41/2	6.76	3.156	0.54	0.59	22.96	44.2		
1955	28	~150	9.45	446	6.75	3.165	0.36	0.43	23.05	42.5		
1859	31	~150	9.45	1/2	10.75	3.168	0-34	0.37	22.95	41.2		
1090	34	~150	1.48	4134	6.73	3.337	1.25	0.31	23.01	10.4		
904	37	~150	9.45	4 364	6.74	3.400	0.41	0.29	23.17	40.7		
907	40	~15°	9.45	9 3/4	6.74	3.422	1.96	0.28	23.09	41.2		
1910	43	~150	9.45	4	6.74	3.426	1.94	0.25	23.05	419		
)413	46	Noo	9.46	224	6.74	3,432	2.41	0.25	23.25	42.5	1	1
							-					
Onstituents S	M	ED SOLI	DS JAMONS	olt.	Container	astic			Number 2		Preservat	
FMINA	LATI	1 F(os privilege	+ "	IL A	MARTR		-	7 -	-		
VANIE)F.	003		-	750	MLPLF	SDC	•	1		Nao	H
PHOR	6/BRI)		= -	40 M	1- Amp	ER		3	po i		
GRO	1010			-	40 n	11 ASV	A VIA		3		HO	ı
IDLATI	LES			6	-	1 VOA	VIAL		3		HCL	
71556 VE	DI	VETAL	ζ	-	500 V	101	STIC		1_		HM) 3
71000		001710		-		10		•	TO			
				-				•				
	olumes 1" = 0.04 1.25" = 0.06		5" = 0.09 ' = 0.16	2.5" = 0.26 3" = 0.37		5" = 0.50 = 0.65	6" = 1.47					
lell Informa		cal Ah.	00 (a)	110			352.00					
Well Loca	tion:	50VIty	RO He	ds			Well	Locked a	t Arrival: _	Yes	1	(No)
Condition of		9000	7.				147	ked at De	maul.	Yes	1	No

Project No.	Rr	10.	jert		Mallin	MW	-111				The Land	1 of [
Project Name			lect VI	وزهد		1100	114	_		Date		1/13
Measuring Pt. Description			Screen Setting (ft-bmp)	J		Casing Diameter (in.)				Weather Well Mate		PVC SS
Static Water Level (ft-bmp)	5.4	8	Total Depth (ft-bm	p)		Water Colum Gallons in W	in/	-0			-	00
MP Elevation			Pump Intake (ft-b	mp)		Purge Metho	d: Pe	ristal	tic	Sample		_
Pump On/Off	09	00	Volumes Purged	1	2941		Centrifuga Submersi	al ble		Method	Lou	2 1-10
Sample Time:	Label Start End		Replicate/ Code No.		0		Other			Sampled	by E.	Berge
Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water	Gallons Purged	pН	Cond.	Turbidity	Dissolved Oxygen	(0)	-Redox ORP	Арр	earance
0915	5	(mc/min)	(ft)	1.8	6.27	(mS/cm)	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
0920	5			1.9	6.22	3399		3.87	15.69	177,1		
0925	5			1.9	6.17	3392		3.85	15.63	179.8		
0930	5			20	6.11	3390		3.80	15.61	170.6		
Constituents S or bidity		er B	roken	-	Container				Number	-	Preserva	tive
				-				-				
Vell Casing Vo	lumes " = 0.04 .25" = 0.06			.5" = 0.26 " = 0.37		' = 0.50 6' = 0.65	' = 1.47					
1.												
ell Information	on											
	on on:						Well L Well Lock	ocked at	100000000	Yes Yes	1	No

Project No.	2	OK	e ient		Well ID	Mi	1-115			Detr		of
Project Name	/Location	V 1 16	eject Maraji		vveii iD		1-113	-		Date		113
Measuring Pt. Description			Screen Setting (ft-bmp)	3		Casing Diameter (in.)				Weather Well Ma		PVC SS
Static Water Level (ft-bmp)	5.1	6	Total Depth (ft-bri	1p) Z	7.99	Water Colum Gallons in W	nn/					
MP Elevation			Pump Intake (ft-b		-	Purge Metho	d: Per Centrifuga	stalt	ic	Sample	Low	C
Pump On/Off	07	47	Volumes Purged	1	Zgal		Submersi	ble		Method	Low	1-104
Sample Time:	Label Start End	=	Replicate/ Code No.		0	_	Other			Sampled	by E	Berg
ime	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pН	Cond (µMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp.	-Redox ORP (mV)	Appe	earance
5080	5			1.59	6.48	3245		3.13	154	142.c		Outi
2817	5			1.69	6.38	3239		3.28	15.39	146.1		
0850 SISC	5			1.77	6.34	3239			15.42	147.3		
Cow	-				6.27	2279		3.45	15H3	151.0		+
nstituents Sa	ampled				Container				Number		Preservati	
	Not.	Taker	1. Battery		Unit Unit		king	-				
pidity 1 y actid	4 1	res t		- - - - -				-		-		
Casing Volumes/Foot 1": 1.2	umes = 0.04 '55" = 0.06		= 0.09 2.3	5° = 0.26 = 0.37		= 0.50 6° 0.65	= 1.47	-		-		
Casing Volums/Foot 1":	umes = 0.04 55" = 0.06	1.5":	= 0.09 2.3					ocked at A	urrival:	Yes		No

To bath

Continue Continue	Date	Page 1 of 1
Static Water 9 9 Total Depth (thomp) Pump Intake (thomp)	Weather Well Mar	
Pump Intake (n-omp)		
Centrifuga Submersible Code No. End Code No. End Code No. Cod		
ample Time: Label Replicate/ Code No	Sample Method	Low Ho
Replicate Code No. Start Code No. Elapseed (spm) Water (mUmin) Water (mUmin) (ft)		
Elapsed (gpm) Water (mL/min) Water (mS/min) Water	Sampled	d by E. Bog
Casing Volumes Container Number	Redex	Appearance
15 6.31 2783 7.31 4.58 14.53 610 5	ORP (mV)	Color Odor
Casing Volumes Fool 1'= 0.04 1.5'= 0.09 2.5'= 0.26 3.5'= 0.50 6'= 1.47 1.25'= 0.06 2'= 0.16 3'= 0.37 4'= 0.65	168.0	
Sating Volumes Foot 1'=0.04 1.5'=0.09 2.5'=0.26 3.5'=0.50 6'=1.47 1.25'=0.06 2'=0.16 3'=0.37 4'=0.65	171.3	
Casing Volumes Foot 1" = 0.04	174.2	
Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		1
Casing Volumes Foot 1" = 0.04		
Casing Volumes (Foot 1" = 0.04		
Casing Volumes Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		
Casing Volumes Foot 1" = 0.04		
Casing Volumes Foot 1" = 0.04		
Casing Volumes (Foot 1" = 0.04		
Casing Volumes Foot 1" = 0.04	-	
Casing Volumes (Foot 1" = 0.04	-	
Casing Volumes Foot 1" = 0.04	-+	
Casing Volumes Foot 1" = 0.04		
Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		
asing Volumes Foot 1" = 0.04	P	Preservative
Casing Volumes /Foot 1" = 0.04	-	
(Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65	=	
(Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		
/Foot 1" = 0.04		
/Foot 1" = 0.04 1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 6" = 1.47 1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		
1.25" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65		
nformation		
Il Location: Well Locked at Arrival:	Yes	/ No
ition of Well: Well Locked at Departure:	Yes	/ No

Project No.		_	Groundwa)-117			Date		e_i of
Project Name			Mar		Well ID		2 11 1	_				12011
Measuring Pt			Screen Setting (ft-bmp)	13		Casing Diameter (in	1.)			Weathe Well Ma	2 500	PVI SS
Static Water Level (ft-bmp)	10.	05	Total Depth (ft-t	omp) Z	7.55	Water Colu	mn/					
MP Elevation			Pump Intake (ft	-bmp)		Purge Meth	od: Pe	ccistal	tie	Sample	,	_
Pump On/Off	_13	340	Volumes Purge	d Ac	2201		Centrifug Submers	al ible		Method	10	w Flo
Sample Time:	Label Start End	1430	Replicate/ Code No.	-	0		Other			Sample	by E	Be.
Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	рH	Cond. (μMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp.	Redox ORP (mV)		Appearance
1350	5	(1.17	1.75	6.00	2802	23.3	1.57	19.31	181.0	Co	or Od
1365	5			180	5.94	2782	26.5	1.55	19.79			
1400	5			1.80	5.90	2772	29.6	1.49	19.Z8			
					1							
									- 1			
												+
nstituents Sa	mpled			C	ontainer			N	lumber		Preserv	ative
				-				_				
				-				-	_	-		
				_				-		_		
				-				-		-		
	mes 0.04 5" = 0.06	1.5" = 2" = 0		5" = 0.26 = 0.37	3.5" = 4" = 0.		= 1.47					
I Information					., - 0.							
Well Location							WellIn	cked at Ar	rival·	Yes	1	No
ondition of We							Vell Locked			Yes	1	No
ell Completio	n:	Flush	Mount /	Stick Up				mber To \				GW Samp F

Project No.	K) Ke	ject		Well ID	Mu	811-1			Date		of 1
Project Name			1							Weather	-	unny
Measuring Pt. Description			Screen Setting (ft-bmp)			Casing Diameter (in.	.)			Well Mate		PVC
Static Water Level (ft-bmp)	12.0	2.0	Total Depth (ft-b	mp) 28	95	Water Colur Gallons in W	mn/					
MP Elevation			Pump Intake (ft-	-bmp)		Purge Metho	od: D	والمناعة	Itic	Sample	,	
Pump On/Off	12	18	Volumes Purge	o N	2gal		Centrifug Submersi	al		Method	Law	Flow
Sample Time:	Label Start End	1300	Replicate/ Code No.		V	_	Other			Sampled I	by E.	Bere
ime	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pН	Cond (µMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox ORP (mV)	Appe	arance
44233				1.7	5.99	2933	10.3	5.71	17.73	136.0	Color	Odor
238				1.7	5.95	2924	6.95	5.56		118.7	IL	
1243				1.8	5.93	2911	5.84	5.51	17.52	115.2		
1548				1.9	591	2906	4.71	5.49	17.50	113.0		
-	-											
									-			
	-											
	- 1											
nstituents Sa	mpled			_	Container			_	lumber	P	reservativ	'e
				-				_	_	- 7		_
				_				=		-		
								_				
Casing Volu				P				-		_		_
	= 0.04 5" = 0.06	1.5" = 2" = (1.5" = 0.26 " = 0.37		= 0.50 6" 0.65	= 1.47					
I Informatio	n											
imormatio												
Well Location							Well Lo	ocked at A	rrival:	Yes	/ 1	No

Project No.	M	W-				Ro R	eject			Date	11/	e 1 of _ /20/13
Project Name			Mava	10			1			Weathe	er <u>S</u>	PVC
Measuring Pt Description			Screen Setting (ft-bm	p)		Casing Diameter (in	1.)			Well Ma	aterial	- PVC SS
	10.9	6		7	0	Water Celu						
Level (ft-bmp)		ES	Total Depth				-					
MP Elevation	-		Pump Intake			Purge Meth	od: Per	istalli	c	Sample Method	1 -	F
Pump On/Off	0	70	Volumes Pur	ged A	-gal		Submersi	ble		Wictiod	- Ac	100
Sample Time:	Label I Start End	024	Replicate/ Code No.		0		Other			Sampleo	by E	Be
Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water	Gallon		Cond.	Turbidity	Dissolved Oxygen	(°C)	"Redox		Appearance
0935	5	(mumin)	(ft)	1.8	6.03	(ms/cm) 2899	3.27	(mg/L)	(°F)	(mV)	Col	lor Odor
0940				1.8	5.81	2805	5.77	7.12	5.89	153.0		_
0945				1.9	5.88	2796	5.66	6.95	5.88	177.9		
0950				2.0	5.86	2777	4.77	7.06	5.86			
					1,500							
	\rightarrow											
	-	-		+								
	-			1								
												-
				1								
	-											14
		-			-							
		\rightarrow										
					-	-						
										1	-	
nstituents Sa	mpled			-	Container			-	lumber		Preserv	ative
								-				
								-		-		
				-				-		_		
	0.04	1.5" =		2.5* = 0.26	3.5" =	= 0.50 6"	= 1.47					
	" = 0.06	2" = 0.	16	3" = 0.37	4" = 0							
Information												
Well Location:			Well Locked at Arrival: Yes / No Well Locked at Departure: Yes / No									
Vell Location ndition of We										Yes Yes	1	No No



Appendix D

Groundwater Analytical Data



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: 1302138

Dear Robert,

ALS Environmental received 6 samples on 05-Feb-2013 09:15 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 47.

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

Sincerely,

Electronically approved by: Luke F. Hernandez

Sonia West

Sonia West Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302138

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
1302138-01	RO Discharge	Water		2/3/2013 09:30	2/5/2013 09:15	
1302138-02	MW-117	Water		2/3/2013 10:00	2/5/2013 09:15	
1302138-03	MW-114	Water		2/3/2013 11:30	2/5/2013 09:15	
1302138-04	MW-115	Water		2/3/2013 12:30	2/5/2013 09:15	
1302138-05	Trip Blank 011813-74	Water		2/3/2013	2/5/2013 09:15	
1302138-06	Trip Blank 011813-50	Water		2/3/2013	2/5/2013 09:15	

ALS Environmental

Date: 18-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling Case Narrative

Work Order: 1302138

Sample received outside method holding time for Nitrate & Nitrite. Nitrate & Nitrite has a 48 hour holding time. The samples were received as the holding timies expired. Sample results are flagged with an "H" qualifier.

Your samples received for Radium 226 and Radium 228 are reported on ALS workorder 1302192.

Batch 67619, Dissolved Metals 6020, Sample RO Discharge (1302138-01E: The MS/MSD recoveries were above the control limits for Calcium and Sodium due to high concentration to the background sample. Results are flagged with an O. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Batch 67639, Dissolved Metals 6020, Sample 1302162-02D: MS/MSD is for an unrelated sample.

Batch R142615, Anions 300.0, Sample 1302189-01G: MS/MSD is for an unrelated sample.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO Discharge **Collection Date:** 2/3/2013 09:30 AM

Work Order: 1302138

Lab ID: 1302138-01 **Matrix:** WATER

Date: 18-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	ethod: SW8015N	1	Prep: SW:	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	2/11/2013 15:36
TPH (Oil Range)	0.17		0.042	0.10	mg/L	1	2/11/2013 15:36
Surr: 2-Fluorobiphenyl	107			60-135	%REC	1	2/11/2013 15:36
GASOLINE RANGE ORGANICS - SW8	015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	2/7/2013 18:47
Surr: 4-Bromofluorobenzene	105			70-130	%REC	1	2/7/2013 18:47
DISSOLVED MERCURY		Ме	thod: SW7470		Prep: SW	7470 / 2/7/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	2/7/2013 18:08
DISSOLVED METALS		Me	thod: SW6020		Prep: SW:	3010A / 2/6/13	Analyst: ALR
Aluminum	0.00668	J	0.0040	0.0100	mg/L	1	2/8/2013 00:48
Arsenic	0.00494	J	0.0013	0.00500	mg/L	1	2/8/2013 00:48
Barium	0.0628		0.00090	0.00500	mg/L	1	2/8/2013 00:48
Boron	0.143		0.040	0.100	mg/L	2	2/12/2013 14:09
Cadmium	U		0.00080	0.00200	mg/L	1	2/8/2013 00:48
Calcium	625		4.3	25.0	mg/L	50	2/8/2013 13:17
Chromium	U		0.0012	0.00500	mg/L	1	2/8/2013 00:48
Cobalt	U		0.00080	0.00500	mg/L	1	2/8/2013 00:48
Copper	0.00177	J	0.0015	0.00500	mg/L	1	2/8/2013 00:48
Iron	U		0.078	0.200	mg/L	1	2/8/2013 00:48
Lead	U		0.00070	0.00500	mg/L	1	2/8/2013 00:48
Manganese	U		0.0025	0.00500	mg/L	1	2/8/2013 00:48
Molybdenum	0.0125		0.0015	0.00500	mg/L	1	2/8/2013 00:48
Nickel	0.00264	J	0.0012	0.00500	mg/L	1	2/8/2013 00:48
Potassium	4.41		0.084	0.200	mg/L	1	2/8/2013 00:48
Selenium	0.0130		0.0010	0.00500	mg/L	1	2/8/2013 00:48
Silver	U		0.00080	0.00500	mg/L	1	2/8/2013 00:48
Sodium	65.4		0.085	0.200	mg/L	1	2/8/2013 00:48
Uranium	0.00601		0.0050	0.00500	mg/L	1	2/8/2013 00:48
Zinc	0.0132		0.0025	0.00500	mg/L	1	2/8/2013 00:48
LOW-LEVEL SEMIVOLATILES		Мє	thod: SW8270		Prep: SW3	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:33
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:33
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:33
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:33
Surr: 2,4,6-Tribromophenol	69.5			34-129	%REC	1	2/8/2013 15:33
Surr: 2-Fluorobiphenyl	69.7			40-125	%REC	1	2/8/2013 15:33

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO Discharge **Collection Date:** 2/3/2013 09:30 AM

Work Order: 1302138

Lab ID: 1302138-01 **Matrix:** WATER

Date: 18-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	64.5			20-120	%REC	1	2/8/2013 15:33
Surr: 4-Terphenyl-d14	102			40-135	%REC	1	2/8/2013 15:33
Surr: Nitrobenzene-d5	69.1			41-120	%REC	1	2/8/2013 15:33
Surr: Phenol-d6	65.7			20-120	%REC	1	2/8/2013 15:33
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/6/2013 15:50
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/6/2013 15:50
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Benzene	U		0.00020	0.0010	mg/L	1	2/6/2013 15:50
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Chloroform	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/6/2013 15:50
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/6/2013 15:50
Toluene	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/6/2013 15:50
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/6/2013 15:50
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/6/2013 15:50
Surr: 1,2-Dichloroethane-d4	88.0			71-125	%REC	1	2/6/2013 15:50
Surr: 4-Bromofluorobenzene	94.6			70-125	%REC	1	2/6/2013 15:50
Surr: Dibromofluoromethane	96.7			74-125	%REC	1	2/6/2013 15:50
Surr: Toluene-d8	97.9			78-123	%REC	1	2/6/2013 15:50
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	67.5		0.20	0.500	mg/L	1	2/6/2013 15:36
Fluoride	3.32		0.050	0.100	mg/L	1	2/6/2013 15:36
Nitrogen, Nitrate (As N)	3.22	Н	0.030	0.100	mg/L	1	2/6/2013 15:36
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	2/6/2013 15:36
Sulfate	1,690		10	25.0	mg/L	50	2/12/2013 19:01
Surr: Selenate (surr)	89.0			85-115	%REC	1	2/6/2013 15:36
Surr: Selenate (surr)	91.7			85-115	%REC	50	2/12/2013 19:01
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/11/2013 10:05
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO Discharge **Collection Date:** 2/3/2013 09:30 AM

Work Order: 1302138

Lab ID: 1302138-01 **Matrix:** WATER

Date: 18-Feb-13

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	3,150	5.0	10.0	mg/L	1	2/7/2013 10:10

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 2/3/2013 10:00 AM

Work Order: 1302138

Lab ID: 1302138-02

Date: 18-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Met	:hod: SW8015	1	Prep: SW	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	2/11/2013 15:57
TPH (Oil Range)	U		0.042	0.10	mg/L	1	2/11/2013 15:57
Surr: 2-Fluorobiphenyl	113			60-135	%REC	1	2/11/2013 15:57
GASOLINE RANGE ORGANICS - SW80	15C	Met	:hod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	2/7/2013 19:05
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	2/7/2013 19:05
DISSOLVED MERCURY		Met	:hod: SW7470		Prep: SW	7470 / 2/7/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	2/7/2013 18:10
DISSOLVED METALS		Met	:hod: SW6020		Prep: SW	3010A / 2/6/13	Analyst: ALR
Aluminum	0.0289		0.0040	0.0100	mg/L	1	2/8/2013 01:59
Arsenic	0.00498	J	0.0013	0.00500	mg/L	1	2/8/2013 16:25
Barium	0.0235		0.00090	0.00500	mg/L	1	2/8/2013 01:59
Boron	0.207		0.040	0.100	mg/L	2	2/12/2013 14:11
Cadmium	U		0.00080	0.00200	mg/L	1	2/8/2013 01:59
Calcium	568		0.86	5.00	mg/L	10	2/8/2013 16:45
Chromium	U		0.0012	0.00500	mg/L	1	2/8/2013 16:25
Cobalt	0.00256	J	0.00080	0.00500	mg/L	1	2/8/2013 16:25
Copper	0.0141		0.0015	0.00500	mg/L	1	2/8/2013 16:25
Iron	U		0.078	0.200	mg/L	1	2/8/2013 16:25
Lead	U		0.00070	0.00500	mg/L	1	2/8/2013 16:25
Manganese	0.108		0.0025	0.00500	mg/L	1	2/8/2013 16:25
Molybdenum	0.0112		0.0015	0.00500	mg/L	1	2/8/2013 01:59
Nickel	0.00413	J	0.0012	0.00500	mg/L	1	2/8/2013 16:25
Potassium	6.92		0.084	0.200	mg/L	1	2/8/2013 01:59
Selenium	0.00427	J	0.0010	0.00500	mg/L	1	2/8/2013 16:25
Silver	U		0.00080	0.00500	mg/L	1	2/8/2013 01:59
Sodium	176		0.085	0.200	mg/L	1	2/8/2013 01:59
Uranium	0.0263		0.0050	0.00500	mg/L	1	2/8/2013 01:59
Zinc	0.0123		0.0025	0.00500	mg/L	1	2/8/2013 16:25
LOW-LEVEL SEMIVOLATILES		Met	:hod: SW8270		Prep: SW	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:53
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:53
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:53
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 15:53
Surr: 2,4,6-Tribromophenol	71.7			34-129	%REC	1	2/8/2013 15:53
Surr: 2-Fluorobiphenyl	67.2			40-125	%REC	1	2/8/2013 15:53

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 2/3/2013 10:00 AM

Work Order: 1302138

Lab ID: 1302138-02

Date: 18-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	51.4			20-120	%REC	1	2/8/2013 15:53
Surr: 4-Terphenyl-d14	102			40-135	%REC	1	2/8/2013 15:53
Surr: Nitrobenzene-d5	70.1			41-120	%REC	1	2/8/2013 15:53
Surr: Phenol-d6	55.3			20-120	%REC	1	2/8/2013 15:53
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/6/2013 16:14
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/6/2013 16:14
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Benzene	U		0.00020	0.0010	mg/L	1	2/6/2013 16:14
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Chloroform	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/6/2013 16:14
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/6/2013 16:14
Toluene	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/6/2013 16:14
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/6/2013 16:14
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/6/2013 16:14
Surr: 1,2-Dichloroethane-d4	89.3			71-125	%REC	1	2/6/2013 16:14
Surr: 4-Bromofluorobenzene	97.7			70-125	%REC	1	2/6/2013 16:14
Surr: Dibromofluoromethane	95.1			74-125	%REC	1	2/6/2013 16:14
Surr: Toluene-d8	99.5			78-123	%REC	1	2/6/2013 16:14
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	154		10	25.0	mg/L	50	2/12/2013 19:15
Fluoride	2.73		0.050	0.100	mg/L	1	2/6/2013 15:50
Nitrogen, Nitrate (As N)	U	Н	0.030	0.100	mg/L	1	2/6/2013 15:50
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	2/6/2013 15:50
Sulfate	2,310		10	25.0	mg/L	50	2/12/2013 19:15
Surr: Selenate (surr)	90.6			85-115	%REC	1	2/6/2013 15:50
Surr: Selenate (surr)	99.0			85-115	%REC	50	2/12/2013 19:15
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/11/2013 10:05
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 2/3/2013 10:00 AM

Date: 18-Feb-13

Work Order: 1302138

Lab ID: 1302138-02

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	3,910	5.0	10.0	mg/L	1	2/7/2013 10:10

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 2/3/2013 11:30 AM

Date: 18-Feb-13

Work Order: 1302138

Lab ID: 1302138-03

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Ме	thod: SW8015 N	1	Prep: SW3	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	2/11/2013 16:19
TPH (Oil Range)	U		0.042	0.10	mg/L	1	2/11/2013 16:19
Surr: 2-Fluorobiphenyl	90.9			60-135	%REC	1	2/11/2013 16:19
GASOLINE RANGE ORGANICS - SW	8015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	2/7/2013 19:23
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	2/7/2013 19:23
DISSOLVED MERCURY		Me	thod: SW7470		Prep: SW7	7470 / 2/7/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	2/7/2013 18:12
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 2/6/13	Analyst: ALR
Aluminum	0.0265		0.0040	0.0100	mg/L	1	2/8/2013 02:04
Arsenic	0.00561		0.0013	0.00500	mg/L	1	2/8/2013 16:30
Barium	0.0204		0.00090	0.00500	mg/L	1	2/8/2013 02:04
Boron	0.139		0.040	0.100	mg/L	2	2/12/2013 14:13
Cadmium	U		0.00080	0.00200	mg/L	1	2/8/2013 02:04
Calcium	600		0.86	5.00	mg/L	10	2/8/2013 16:50
Chromium	U		0.0012	0.00500	mg/L	1	2/8/2013 16:30
Cobalt	0.00738		0.00080	0.00500	mg/L	1	2/8/2013 16:30
Copper	U		0.0015	0.00500	mg/L	1	2/8/2013 16:30
Iron	U		0.078	0.200	mg/L	1	2/8/2013 16:30
Lead	U		0.00070	0.00500	mg/L	1	2/8/2013 16:30
Manganese	1.51		0.0025	0.00500	mg/L	1	2/8/2013 16:30
Molybdenum	0.0103		0.0015	0.00500	mg/L	1	2/8/2013 02:04
Nickel	0.00651		0.0012	0.00500	mg/L	1	2/8/2013 16:30
Potassium	2.86		0.084	0.200	mg/L	1	2/8/2013 02:04
Selenium	0.00222	J	0.0010	0.00500	mg/L	1	2/8/2013 16:30
Silver	U		0.00080	0.00500	mg/L	1	2/8/2013 02:04
Sodium	146		0.085	0.200	mg/L	1	2/8/2013 02:04
Uranium	0.0156		0.0050	0.00500	mg/L	1	2/8/2013 02:04
Zinc	0.00343	J	0.0025	0.00500	mg/L	1	2/8/2013 16:30
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:13
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:13
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:13
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:13
Surr: 2,4,6-Tribromophenol	58.9			34-129	%REC	1	2/8/2013 16:13
Surr: 2-Fluorobiphenyl	63.3			40-125	%REC	1	2/8/2013 16:13

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 2/3/2013 11:30 AM

Work Order: 1302138

Lab ID: 1302138-03

Date: 18-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	60.4			20-120	%REC	1	2/8/2013 16:13
Surr: 4-Terphenyl-d14	92.1			40-135	%REC	1	2/8/2013 16:13
Surr: Nitrobenzene-d5	67.1			41-120	%REC	1	2/8/2013 16:13
Surr: Phenol-d6	61.6			20-120	%REC	1	2/8/2013 16:13
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/6/2013 16:38
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/6/2013 16:38
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Benzene	U		0.00020	0.0010	mg/L	1	2/6/2013 16:38
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Chloroform	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/6/2013 16:38
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/6/2013 16:38
Toluene	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/6/2013 16:38
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/6/2013 16:38
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/6/2013 16:38
Surr: 1,2-Dichloroethane-d4	87.5			71-125	%REC	1	2/6/2013 16:38
Surr: 4-Bromofluorobenzene	95.7			70-125	%REC	1	2/6/2013 16:38
Surr: Dibromofluoromethane	95.2			74-125	%REC	1	2/6/2013 16:38
Surr: Toluene-d8	97.5			78-123	%REC	1	2/6/2013 16:38
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	158		10	25.0	mg/L	50	2/12/2013 19:30
Fluoride	1.76		0.050	0.100	mg/L	1	2/6/2013 16:05
Nitrogen, Nitrate (As N)	1.43	Н	0.030	0.100	mg/L	1	2/6/2013 16:05
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	2/6/2013 16:05
Sulfate	2,200		10	25.0	mg/L	50	2/12/2013 19:30
Surr: Selenate (surr)	89.1			85-115	%REC	1	2/6/2013 16:05
Surr: Selenate (surr)	91.3			85-115	%REC	50	2/12/2013 19:30
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/11/2013 10:05
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 2/3/2013 11:30 AM

Date: 18-Feb-13

Work Order: 1302138

Lab ID: 1302138-03

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit U	Dilution nits Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	3,760	5.0	10.0 mg	g/L 1	2/7/2013 10:10

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 2/3/2013 12:30 PM

Date: 18-Feb-13

Work Order: 1302138

Lab ID: 1302138-04

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Ме	thod: SW8015N	1	Prep: SW3	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.051	mg/L	1	2/11/2013 16:41
TPH (Oil Range)	U		0.041	0.10	mg/L	1	2/11/2013 16:41
Surr: 2-Fluorobiphenyl	114			60-135	%REC	1	2/11/2013 16:41
GASOLINE RANGE ORGANICS - SW8	015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	2/7/2013 19:41
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	2/7/2013 19:41
DISSOLVED MERCURY		Me	thod: SW7470		Prep: SW7	7470 / 2/7/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	2/7/2013 18:14
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 2/6/13	Analyst: ALR
Aluminum	0.00888	J	0.0040	0.0100	mg/L	1	2/8/2013 02:09
Arsenic	0.00499	J	0.0013	0.00500	mg/L	1	2/8/2013 19:53
Barium	0.0309		0.00090	0.00500	mg/L	1	2/8/2013 02:09
Boron	0.865		0.20	0.500	mg/L	10	2/12/2013 14:28
Cadmium	U		0.00080	0.00200	mg/L	1	2/8/2013 02:09
Calcium	518		0.86	5.00	mg/L	10	2/8/2013 16:55
Chromium	U		0.0012	0.00500	mg/L	1	2/8/2013 19:53
Cobalt	0.00290	J	0.00080	0.00500	mg/L	1	2/8/2013 19:53
Copper	0.00704		0.0015	0.00500	mg/L	1	2/8/2013 19:53
Iron	U		0.078	0.200	mg/L	1	2/8/2013 19:53
Lead	U		0.00070	0.00500	mg/L	1	2/8/2013 02:09
Manganese	0.255		0.0025	0.00500	mg/L	1	2/8/2013 19:53
Molybdenum	0.00877		0.0015	0.00500	mg/L	1	2/8/2013 02:09
Nickel	0.00483	J	0.0012	0.00500	mg/L	1	2/8/2013 19:53
Potassium	1.78		0.084	0.200	mg/L	1	2/8/2013 02:09
Selenium	0.00810		0.0010	0.00500	mg/L	1	2/8/2013 19:53
Silver	U		0.00080	0.00500	mg/L	1	2/8/2013 02:09
Sodium	199		0.85	2.00	mg/L	10	2/8/2013 16:55
Uranium	0.0843		0.0050	0.00500	mg/L	1	2/8/2013 02:09
Zinc	0.00973		0.0025	0.00500	mg/L	1	2/8/2013 19:53
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:32
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:32
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:32
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 16:32
Surr: 2,4,6-Tribromophenol	73.4			34-129	%REC	1	2/8/2013 16:32
Surr: 2-Fluorobiphenyl	67.9			40-125	%REC	1	2/8/2013 16:32

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 2/3/2013 12:30 PM

Work Order: 1302138

Lab ID: 1302138-04

Date: 18-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	59.8			20-120	%REC	1	2/8/2013 16:32
Surr: 4-Terphenyl-d14	102			40-135	%REC	1	2/8/2013 16:32
Surr: Nitrobenzene-d5	70.7			41-120	%REC	1	2/8/2013 16:32
Surr: Phenol-d6	55.2			20-120	%REC	1	2/8/2013 16:32
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/6/2013 17:02
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/6/2013 17:02
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Benzene	U		0.00020	0.0010	mg/L	1	2/6/2013 17:02
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Chloroform	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/6/2013 17:02
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/6/2013 17:02
Toluene	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/6/2013 17:02
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/6/2013 17:02
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/6/2013 17:02
Surr: 1,2-Dichloroethane-d4	89.7			71-125	%REC	1	2/6/2013 17:02
Surr: 4-Bromofluorobenzene	99.2			70-125	%REC	1	2/6/2013 17:02
Surr: Dibromofluoromethane	97.1			74-125	%REC	1	2/6/2013 17:02
Surr: Toluene-d8	101			78-123	%REC	1	2/6/2013 17:02
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	422		10	25.0	mg/L	50	2/12/2013 19:44
Fluoride	1.10		0.050	0.100	mg/L	1	2/6/2013 16:20
Nitrogen, Nitrate (As N)	0.821	Н	0.030	0.100	mg/L	1	2/6/2013 16:20
Nitrogen, Nitrite (As N)	0.141	Н	0.030	0.100	mg/L	1	2/6/2013 16:20
Sulfate	2,790		10	25.0	mg/L	50	2/12/2013 19:44
Surr: Selenate (surr)	89.1			85-115	%REC	1	2/6/2013 16:20
Surr: Selenate (surr)	93.1			85-115	%REC	50	2/12/2013 19:44
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/11/2013 10:05
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 2/3/2013 12:30 PM

Date: 18-Feb-13

Work Order: 1302138

Lab ID: 1302138-04

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit 1	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	4,960	5.0	10.0 r	mg/L	1	2/7/2013 10:10

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** Trip Blank 011813-74

Collection Date: 2/3/2013

Work Order: 1302138

Lab ID: 1302138-05

Matrix: WATER

Date: 18-Feb-13

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	2/6/2013 17:27
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	2/6/2013 17:27
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	2/6/2013 17:27
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Benzene	U	0.00020	0.0010	mg/L	1	2/6/2013 17:27
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Chloroform	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Ethylbenzene	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Methylene chloride	U	0.00040	0.0020	mg/L	1	2/6/2013 17:27
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	2/6/2013 17:27
Toluene	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Trichloroethene	U	0.00020	0.0010	mg/L	1	2/6/2013 17:27
Vinyl chloride	U	0.00040	0.0010	mg/L	1	2/6/2013 17:27
Xylenes, Total	U	0.00030	0.0010	mg/L	1	2/6/2013 17:27
Surr: 1,2-Dichloroethane-d4	88.7		71-125	%REC	1	2/6/2013 17:27
Surr: 4-Bromofluorobenzene	95.0		70-125	%REC	1	2/6/2013 17:27
Surr: Dibromofluoromethane	96.7		74-125	%REC	1	2/6/2013 17:27
Surr: Toluene-d8	97.7		78-123	%REC	1	2/6/2013 17:27

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

Note:

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** Trip Blank 011813-50

Collection Date: 2/3/2013

Work Order: 1302138

Lab ID: 1302138-06 **Matrix:** WATER

Date: 18-Feb-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Meth	od: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/6/2013 17:51
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/6/2013 17:51
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Benzene	U		0.00020	0.0010	mg/L	1	2/6/2013 17:51
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Chloroform	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/6/2013 17:51
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/6/2013 17:51
Toluene	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/6/2013 17:51
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/6/2013 17:51
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/6/2013 17:51
Surr: 1,2-Dichloroethane-d4	89.6			71-125	%REC	1	2/6/2013 17:51
Surr: 4-Bromofluorobenzene	96.6			70-125	%REC	1	2/6/2013 17:51
Surr: Dibromofluoromethane	96.1			74-125	%REC	1	2/6/2013 17:51
Surr: Toluene-d8	99.9			78-123	%REC	1	2/6/2013 17:51

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Date: 18-Feb-13

QC BATCH REPORT

Batch ID: 67710	Instrument ID FID-16		Method	d: SW801	5M						
MBLK Sample ID:	LBLKW-130208-67710				Ĺ	Jnits: mg /	L	Analysi	s Date: 2 /	11/2013 0	2:30 PM
Client ID:	Run II	D: FID-16 _	_130211B		Se	qNo: 311 0	0036	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.06355	0.0050	0.06061		0	105	60-135	0			
LCS Sample ID:	LLCSW-130208-67710				ι	Jnits: mg/	L	Analysi	s Date: 2/	11/2013 0	2:52 PM
Client ID:	Run II	D: FID-16 _	_130211B		Se	qNo: 311 0	0037	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5399	0.050	0.6061		0	89.1	70-130	0			
TPH (Oil Range)	0.5571	0.10	0.6061		0	91.9	70-130	0			
Surr: 2-Fluorobiphenyl	0.0583	0.0050	0.06061		0	96.2	60-135	0			
LCSD Sample ID:	LLCSDW-130208-67710				ι	Jnits: mg/	L	Analysi	s Date: 2 /	11/2013 0	3:14 PM
Client ID:	Run II	D: FID-16 _	_130211B		Se	qNo: 311 0	0038	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5053	0.050	0.6061		0	83.4	70-130	0.5399	6.61	20	
TPH (Oil Range)	0.494	0.10	0.6061		0	81.5	70-130	0.5571	12	20	
Surr: 2-Fluorobiphenyl	0.05676	0.0050	0.06061		0	93.7	60-135	0.0583	2.68	20	
The following samples w	vere analyzed in this batch:		302138-01C 302138-04C	13	3021	38-02C	13	02138-03C			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142594	Instrument ID FID-9		Method	: SW801	5						
MBLK Sample ID: 0	GBLKW-130207-R142594				l	Jnits: mg /	L_	Analysi	s Date: 2 /	7/2013 06	:29 PM
Client ID:	Run II	D: FID-9	_130207A		Se	qNo: 311 (0011	Prep Date:		DF: 1	
Analyte	Result	PQI	_ SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics Surr: 4-Bromofluorobenz	U ene 0.1043	0.050			0	104	70-130	0			
LCS Sample ID: 0	GLCSW-130207-R142594				ı	Jnits: mg/ l	1	Analysi	s Date: 2 /	7/2013 05	·35 PM
Client ID:		D: FID-9	_130207A			qNo: 311 (Prep Date:	o 2010. 2 /	DF: 1	
Analyte	Result	PQL	_ SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8877	0.050) 1		0	88.8	70-130	0			
Surr: 4-Bromofluorobenz	ene 0.1154	0.0050	0.1		0	115	70-130	0			
_CSD Sample ID: C	GLCSDW-130207-R142594				Ĺ	Jnits: mg/	L	Analysi	s Date: 2 /	7/2013 05	:53 PN
Client ID:	Run II	D: FID-9	_130207A		Se	qNo: 311 0	0009	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	0.8879	0.050) 1		0	88.8	70-130	0.8877	0.014	30	
Surr: 4-Bromofluorobenz	ene 0.1121	0.0050	0.1		0	112	70-130	0.1154	2.93	30	
MS Sample ID: 1	302138-04BMS				ι	Jnits: mg/	L	Analysi	s Date: 2 /	7/2013 10	:23 PM
Client ID: MW-115	Run II	D: FID-9	_130207A		Se	qNo: 311 0	0033	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	0.7588	0.050) 1		0	75.9	70-130	0			
Surr: 4-Bromofluorobenz	ene 0.1017	0.0050	0.1		0	102	70-130	0			
MSD Sample ID: 1	302138-04BMSD				ι	Jnits: mg/	L	Analysi	s Date: 2 /	7/2013 10	:41 PM
Client ID: MW-115	Run II	D: FID-9	_130207A		Se	qNo: 311 0	0034	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	0.7506	0.050) 1		0	75.1	70-130	0.7588	1.08	30	
Surr: 4-Bromofluorobenz	ene 0.1015	0.0050	0.1		0	101	70-130	0.1017	0.216	30	
The following samples we	ere analyzed in this batch:		1302138-01B 1302138-04B	13	8021	38-02B	13	02138-03B			

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICP7500		Method	SW602	0	(Dissolv	e)			
MBLK	Sample ID: MBLKW3-020613-67619				Units: mg/	L	Analy	sis Date: 2	/8/2013 12	2:38 AM
Client ID:	Ru	ın ID: ICP750	0_130207A		SeqNo: 310	6113	Prep Date: 2/0	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004993	0.010								J
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Calcium	U	0.50								
Chromium	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Lead	U	0.0050								
Manganese	U	0.0050								
Molybdenum	U	0.0050								
Nickel	U	0.0050								
Potassium	U	0.20								
Selenium	0.00238	0.0050								J
Silver	U	0.0050								
Sodium	U	0.20								
Uranium	U	0.0050								
Zinc	U	0.0050								

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 670	Instrument ID ICP7500		Method:	SW6020) (Dissolve)		e)				
LCS	Sample ID: MLCSW3-020613-67619				Units: mg/L			Analy	Analysis Date: 2/8/2013 12:43 AM			
Client ID:	Ru	un ID: ICP750	0_130207A		SeqNo: 3106114		Prep Date: 2/6	/2013	3 DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Aluminum	0.1092	0.010	0.1		0	109	80-120	()			
Arsenic	0.05204	0.0050	0.05		0	104	80-120	()			
Barium	0.05274	0.0050	0.05		0	105	80-120	()			
Cadmium	0.05136	0.0020	0.05		0	103	80-120	()			
Calcium	5.163	0.50	5		0	103	80-120	()			
Chromium	0.05159	0.0050	0.05		0	103	80-120	()			
Cobalt	0.05069	0.0050	0.05		0	101	80-120	()			
Copper	0.05284	0.0050	0.05		0	106	80-120	()			
Iron	5.018	0.20	5		0	100	80-120	()			
Lead	0.05071	0.0050	0.05		0	101	80-120	()			
Manganese	0.05048	0.0050	0.05		0	101	80-120	()			
Molybdenum	0.04933	0.0050	0.05		0	98.7	80-120	()			
Nickel	0.05065	0.0050	0.05		0	101	80-120	()			
Potassium	5.216	0.20	5		0	104	80-120	()			
Selenium	0.05348	0.0050	0.05		0	107	80-120	()			
Silver	0.05061	0.0050	0.05		0	101	80-120	()			
Sodium	5.159	0.20	5		0	103	80-120	()			
Uranium	0.1015	0.0050	0.1		0	102	80-120	()			
Zinc	0.05422	0.0050	0.05		0	108	80-120	()			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67619	Instrument ID ICP7500		Metho	d: SW6020		(Dissolve	9)			
MS Sample ID:	1302138-01EMS				Units: mg /	L	Analys	is Date: 2	/8/2013 0 [,]	1:03 AM
Client ID: RO Discharge	Run	ID: ICP750	0_130207A	S	eqNo: 310	6118	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	0.1175	0.010	0.1	0.006684	111	75-125	0			
Arsenic	0.06218	0.0050	0.05	0.004935	114	75-125	0			
Barium	0.1161	0.0050	0.05	0.06275	107	75-125	0			
Cadmium	0.05003	0.0020	0.05	0.0001626	99.7	75-125	0			
Calcium	754	0.50	5	726.2	556	75-125	0			SEO
Chromium	0.05429	0.0050	0.05	0.0009708	107	75-125	0			
Cobalt	0.05008	0.0050	0.05	0.0005107	99.1	75-125	0			
Copper	0.05121	0.0050	0.05	0.001766	98.9	75-125	0			
Iron	5.098	0.20	5	0.05082	101	75-125	0			
Lead	0.05237	0.0050	0.05	0.0006516	103	75-125	0			
Manganese	0.05229	0.0050	0.05	0.001463	102	75-125	0			
Molybdenum	0.06607	0.0050	0.05	0.01252	107	75-125	0			
Nickel	0.05158	0.0050	0.05	0.002642	97.9	75-125	0			
Potassium	10.31	0.20	5	4.407	118	75-125	0			
Selenium	0.07267	0.0050	0.05	0.01304	119	75-125	0			
Silver	0.04765	0.0050	0.05	-0.00009242	95.5	75-125	0			
Sodium	73.65	0.20	5	65.44	164	75-125	0			SO
Uranium	0.1166	0.0050	0.1	0.006008	111	75-125	0			
Zinc	0.06257	0.0050	0.05	0.01316	98.8	75-125	0			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67619	Instrument ID ICP7500		Metho	d: SW6020		(Dissolve))			
MSD Sample ID:	1302138-01EMSD				Units: mg/	L	Analysi	s Date: 2 /	8/2013 01	:08 AM
Client ID: RO Discharge	Run	ID: ICP750	0_130207A	S	SeqNo: 310	6119	Prep Date: 2/6/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1166	0.010	0.1	0.006684	110	75-125	0.1175	0.769	25	
Arsenic	0.06119	0.0050	0.05	0.004935	113	75-125	0.06218	1.6	25	
Barium	0.1173	0.0050	0.05	0.06275	109	75-125	0.1161	1.03	25	
Cadmium	0.05093	0.0020	0.05	0.0001626	102	75-125	0.05003	1.78	25	
Calcium	743.7	0.50	5	726.2	350	75-125	754	1.38	25	SEO
Chromium	0.05277	0.0050	0.05	0.0009708	104	75-125	0.05429	2.84	25	
Cobalt	0.04949	0.0050	0.05	0.0005107	98	75-125	0.05008	1.19	25	
Copper	0.04946	0.0050	0.05	0.001766	95.4	75-125	0.05121	3.48	25	
Iron	5.027	0.20	5	0.05082	99.5	75-125	5.098	1.4	25	
Lead	0.05236	0.0050	0.05	0.0006516	103	75-125	0.05237	0.0191	25	
Manganese	0.05087	0.0050	0.05	0.001463	98.8	75-125	0.05229	2.75	25	
Molybdenum	0.06545	0.0050	0.05	0.01252	106	75-125	0.06607	0.943	25	
Nickel	0.05066	0.0050	0.05	0.002642	96	75-125	0.05158	1.8	25	
Potassium	10.09	0.20	5	4.407	114	75-125	10.31	2.16	25	
Selenium	0.07481	0.0050	0.05	0.01304	124	75-125	0.07267	2.9	25	
Silver	0.04757	0.0050	0.05	-0.00009242	95.3	75-125	0.04765	0.168	25	
Sodium	72.71	0.20	5	65.44	145	75-125	73.65	1.28	25	SO
Uranium	0.1171	0.0050	0.1	0.006008	111	75-125	0.1166	0.428	25	
Zinc	0.06015	0.0050	0.05	0.01316	94	75-125	0.06257	3.94	25	

Navajo Refining Company Client:

Work Order: 1302138

RO Discharge Sampling Project:

Batch ID: 67619	Instrument ID ICP7500		Method:	SW602	20		(Dissolve	e)			
DUP Sample ID:	1302138-01EDUP				L	Jnits: mg /	L	Analysi	s Date: 2	2/8/2013 12	2:53 AM
Client ID: RO Discharge	Run II): ICP75	00_130207A		Se	qNo: 310	6116	Prep Date: 2/6/2	2013	DF: 1	
			:	SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Aluminum	0.006071	0.010	0		0	0	0-0	0.006684	() 25	J
Arsenic	0.005444	0.0050	0		0	0	0-0	0.004935	9.81	1 25	
Barium	0.06235	0.0050	0		0	0	0-0	0.06275	0.639	9 25	
Cadmium	U	0.0020	0		0	0	0-0	0.0001626	() 25	
Chromium	U	0.0050	0		0	0	0-0	0.0009708	() 25	
Cobalt	U	0.0050	0		0	0	0-0	0.0005107	(25	
Copper	0.001881	0.0050	0		0	0	0-0	0.001766	C) 25	J
Iron	U	0.20	0		0	0	0-0	0.05082	C	25	
Lead	U	0.0050	0		0	0	0-0	0.0006516	C) 25	
Manganese	U	0.0050	0		0	0	0-0	0.001463	C	25	
Molybdenum	0.01297	0.0050	0		0	0	0-0	0.01252	3.53	3 25	
Nickel	0.002802	0.0050	0		0	0	0-0	0.002642	(25	J
Potassium	4.498	0.20	0		0	0	0-0	4.407	2.04	1 25	
Selenium	0.01234	0.0050	0		0	0	0-0	0.01304	5.52	2 25	
Silver	U	0.0050	0		0	0	0-0	-0.00009242	(25	
Sodium	67.07	0.20	0		0	0	0-0	65.44	2.46	3 25	
Uranium	0.006251	0.0050	0		0	0		0.006008	3.96	3 25	
Zinc	0.01375	0.0050	0		0	0	0-0	0.01316	4.38	3 25	
DUP Sample ID:	1302138-01EDUP				L	Jnits: mg/	L	Analysi	s Date: 2	2/8/2013 01	:22 PM
Client ID: RO Discharge	Run II): ICP75	00_130208A		Se	qNo: 310	6804	Prep Date: 2/6/2	2013	DF: 50)
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	662	25	0		0	0	0-0	625	5.75	5 25	
The following samples w	vere analyzed in this batch:		1302138-01E 1302138-04E	13	021	38-02E	13	02138-03E			

1302138-04E

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67	624 Instrument ID M	ercury		Method	: SW747	0		(Dissolve	e)			
MBLK	Sample ID: GBLKW4-020713	-67624				Ur	nits: mg/	L	Analy	sis Date: 2	7/2013 04	:12 PN
Client ID:		Run	ID: MERC	URY_130207	Α	Seq	No: 310	5666	Prep Date: 2/7	7/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		U	0.00020									
LCS	Sample ID: GLCSW4-020713	-67624				Ur	nits: mg/	L	Analy	sis Date: 2	7/2013 04	l:14 PN
Client ID:		Run	ID: MERC	URY_130207	Α	Seq	No: 310	5667	Prep Date: 2/7	7/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury	0	.00534	0.00020	0.005		0	107	80-120	1	0		
MS	Sample ID: 1302162-02DMS					Ur	nits: mg/	L	Analy	sis Date: 2	7/2013 04	:20 PI
Client ID:		Run	ID: MERC	URY_130207	A	Seq	No: 310	5670	Prep Date: 2/7	7/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury	0	.00399	0.00020	0.005	-0.0000	01	80	80-120		0		
MSD	Sample ID: 1302162-02DMS E)				Ur	nits: mg/	L	Analy	sis Date: 2	7/2013 04	:22 PI
Client ID:		Run	ID: MERC	URY_130207	A	Seq	No: 310	5671	Prep Date: 2/7	7/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury	0	.00392	0.00020	0.005	-0.0000	01	78.6	80-120	0.0039	9 1.77	20	S
DUP	Sample ID: 1302162-02DDUP)				Ur	nits: mg/	L	Analy	sis Date: 2	7/2013 04	:18 PI
Client ID:		Run	ID: MERC	URY_130207	A	Seq	No: 310	5669	Prep Date: 2/7	7/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury		U	0.00020	0		0	0	0-0	-0.0000	1 0	20	
	ng samples were analyzed in t		n: 1	302138-01E 302138-04E	13		38-02E		02138-03E			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPMS05		Method	: SW602	20	(Dissolve	e)			
MBLK	Sample ID: MBLKW5-020813-67639				Units: mg/	L	Analy	sis Date: 2	/11/2013 ()5:25 PM
Client ID:	Ru	n ID: ICPMS	05_130211 <i>A</i>	Ī	SeqNo: 310	9576	Prep Date: 2/8	3/2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Aluminum	0.006192	0.010								J
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Calcium	0.2533	0.50								J
Chromium	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Lead	U	0.0050								
Manganese	U	0.0050								
Molybdenum	U	0.0050								
Nickel	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Uranium	U	0.0050								
Zinc	0.003007	0.0050								J
MBLK	Sample ID: MBLKW5-020813-67639				Units: mg/	L	Analy	sis Date: 2	/12/2013 ()2:04 PM
Client ID:	Ru	n ID: ICPMS	05_130212 <i>A</i>	Ī	SeqNo: 311	0576	Prep Date: 2/8	3/2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Boron	U	0.050								
Sodium	U	0.20								

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67639	Instrument ID ICPMS05		Method:	SW602	20	((Dissolve	e)			
LCS Sam	ple ID: MLCSW5-020813-67639				Į	Jnits: mg/	L	Analysi	s Date: 2	/11/2013 0	5:27 PN
Client ID:	Run	ID: ICPMS	05_130211A		Se	eqNo: 310 9	9577	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1117	0.010	0.1		0	112	80-120	0			
Arsenic	0.05058	0.0050	0.05		0	101	80-120	0			
Barium	0.05024	0.0050	0.05		0	100	80-120	0			
Cadmium	0.05148	0.0020	0.05		0	103	80-120	0			
Calcium	5.189	0.50	5		0	104	80-120	0			
Chromium	0.05108	0.0050	0.05		0	102	80-120	0			
Cobalt	0.05227	0.0050	0.05		0	105	80-120	0			
Copper	0.05136	0.0050	0.05		0	103	80-120	0			
Iron	5.088	0.20	5		0	102	80-120	0			
Lead	0.05288	0.0050	0.05		0	106	80-120	0			
Manganese	0.05154	0.0050	0.05		0	103	80-120	0			
Molybdenum	0.04945	0.0050	0.05		0	98.9	80-120	0			
Nickel	0.05042	0.0050	0.05		0	101	80-120	0			
Potassium	5.069	0.20	5		0	101	80-120	0			
Selenium	0.05183	0.0050	0.05		0	104	80-120	0			
Silver	0.05213	0.0050	0.05		0	104	80-120	0			
Sodium	5.221	1.0	5		0	104	80-120	0			
Uranium	0.1001	0.0050	0.1		0	100	80-120	0			
Zinc	0.05315	0.0050	0.05		0	106	80-120	0			
LCS Sam	ple ID: MLCSW5-020813-67639				Į	Jnits: mg/	L	Analysi	s Date: 2	/12/2013 0	2:06 PM
Client ID:	Run	ID: ICPMS	05_130212A		Se	eqNo: 311 0	0577	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5137	0.050	0.5		0	103	80-120	0			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 6763	9 Instrument ID ICPMS05		Method:	SW6020		(Dissolve	e)		
MS S	Sample ID: 1302162-02DMS				Units: mg/	L	Analysis Date: 2	2/11/2013 ()5:51 PM
Client ID:	Ru	n ID: ICPMS	05_130211A	S	eqNo: 310 9	9595	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	0.3754	0.010	0.1	0.08538	290	75-125	0		S
Arsenic	0.05166	0.0050	0.05	0.001764	99.8	75-125	0		
Barium	0.1245	0.0050	0.05	0.07333	102	75-125	0		
Boron	1.31	0.050	0.5	0.723	117	75-125	0		
Cadmium	0.05072	0.0020	0.05	0	101	75-125	0		
Calcium	205.4	0.50	5	195.9	189	75-125	0		SEO
Chromium	0.05017	0.0050	0.05	0	100	75-125	0		
Cobalt	0.05197	0.0050	0.05	0.00258	98.8	75-125	0		
Copper	0.05874	0.0050	0.05	0.007833	102	75-125	0		
Iron	5.244	0.20	5	0.08799	103	75-125	0		
Lead	0.05166	0.0050	0.05	0	103	75-125	0		
Manganese	1.043	0.0050	0.05	0.9886	108	75-125	0		0
Molybdenum	0.05065	0.0050	0.05	0.003301	94.7	75-125	0		
Nickel	0.05995	0.0050	0.05	0.01032	99.3	75-125	0		
Potassium	5.185	0.20	5	0.3187	97.3	75-125	0		
Selenium	0.05066	0.0050	0.05	0	101	75-125	0		
Silver	0.04846	0.0050	0.05	0	96.9	75-125	0		
Sodium	80.45	0.20	5	75.22	105	75-125	0		0
Uranium	0.1148	0.0050	0.05	0.01453	201	75-125	0		S
Zinc	0.1201	0.0050	0.05	0.111	18.2	75-125	0		S

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67639	Instrument ID ICPMS05		Method:	SW6020	ı	(Dissolve	e)			
MSD Samp	ole ID: 1302162-02DMSD				Units: mg/	L	Analysi	s Date: 2/	11/2013 0	5:54 PM
Client ID:	Run	ID: ICPMS	05_130211A	S	eqNo: 310 9	9596	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.8466	0.010	0.1	0.08538	761	75-125	0.3754	77.1	25	SR
Arsenic	0.05059	0.0050	0.05	0.001764	97.7	75-125	0.05166	2.1	25	
Barium	0.1256	0.0050	0.05	0.07333	105	75-125	0.1245	0.876	25	
Boron	1.281	0.050	0.5	0.723	112	75-125	1.31	2.24	25	
Cadmium	0.05061	0.0020	0.05	0	101	75-125	0.05072	0.231	25	
Calcium	198.7	0.50	5	195.9	54.4	75-125	205.4	3.34	25	SEO
Chromium	0.04976	0.0050	0.05	0	99.5	75-125	0.05017	0.817	25	
Cobalt	0.05119	0.0050	0.05	0.00258	97.2	75-125	0.05197	1.53	25	
Copper	0.06255	0.0050	0.05	0.007833	109	75-125	0.05874	6.3	25	
Iron	5.64	0.20	5	0.08799	111	75-125	5.244	7.28	25	
Lead	0.05249	0.0050	0.05	0	105	75-125	0.05166	1.61	25	
Manganese	1.016	0.0050	0.05	0.9886	55.5	75-125	1.043	2.56	25	SO
Molybdenum	0.05104	0.0050	0.05	0.003301	95.5	75-125	0.05065	0.753	25	
Nickel	0.05914	0.0050	0.05	0.01032	97.6	75-125	0.05995	1.36	25	
Potassium	5.175	0.20	5	0.3187	97.1	75-125	5.185	0.195	25	
Selenium	0.04861	0.0050	0.05	0	97.2	75-125	0.05066	4.12	25	
Silver	0.04821	0.0050	0.05	0	96.4	75-125	0.04846	0.523	25	
Sodium	77.87	0.20	5	75.22	52.9	75-125	80.45	3.26	25	so
Uranium	0.1148	0.0050	0.05	0.01453	201	75-125	0.1148	0.054	25	S
Zinc	0.121	0.0050	0.05	0.111	19.9	75-125	0.1201	0.707	25	S

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67639	Instrument ID ICPMS05		Method	SW602	0		(Dissolve	e)			
DUP Sampl	e ID: 1302162-02DDUP				Ur	nits: mg /	L	Analysi	s Date: 2 /	11/2013 0	5:49 PI
Client ID:	Run II	D: ICPMS	05_130211A		Seq	No: 310 9	9594	Prep Date: 2/8/2	2013	DF: 1	
Analysis	Deput	DOL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Analyte	Result	PQL	SPK Val			%KEC			%RPD		Quai
Aluminum	0.1358	0.010	0		0	0	0-0	0.08538	45.6	25	R
Arsenic	0.001544	0.0050	0		0	0	0-0	0.001764	0	25	J
Barium	0.07134	0.0050	0		0	0	0-0	0.07333	2.75	25	
Boron	0.7208	0.050	0		0	0	0-0	0.723	0.295	25	
Cadmium	U	0.0020	0		0	0	0-0	0.000088	0	25	
Chromium	U	0.0050	0		0	0	0-0	0.000339	0	25	
Cobalt	0.002315	0.0050	0		0	0	0-0	0.00258	0	25	J
Copper	0.007413	0.0050	0		0	0	0-0	0.007833	5.51	25	
Iron	0.1153	0.20	0		0	0	0-0	0.08799	0	25	J
Lead	U	0.0050	0		0	0	0-0	0.000123	0	25	
Manganese	0.9603	0.0050	0		0	0	0-0	0.9886	2.9	25	
Molybdenum	0.003106	0.0050	0		0	0	0-0	0.003301	0	25	J
Nickel	0.0105	0.0050	0		0	0	0-0	0.01032	1.73	25	
Potassium	0.3152	0.20	0		0	0	0-0	0.3187	1.11	25	
Selenium	U	0.0050	0		0	0	0-0	-0.000908	0	25	
Silver	U	0.0050	0		0	0	0-0	0.000034	0	25	
Sodium	74.01	0.20	0		0	0	0-0	75.22	1.62	25	
Uranium	0.01412	0.0050	0		0	0		0.01453	2.91	25	
Zinc	0.1104	0.0050	0		0	0	0-0	0.111	0.546	25	
DUP Sampl	e ID: 1302162-02DDUP				Ur	nits: mg/	L	Analysi	s Date: 2 /	12/2013 0	2:35 PI
Client ID:	Run II	D: ICPMS	05_130212A		Seq	No: 311 0	0589	Prep Date: 2/8/2	2013	DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	198.5	5.0	0		0	0	0-0	202.2	1.85	25	
The following samp	oles were analyzed in this batch:		302138-01E 302138-04E	13	0213	8-02E	13	02138-03E			

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

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Client: Navajo Refining Company

Work Order: 1302138

Naphthalene

Surr: 2,4,6-Tribromophenol

Surr: 2-Fluorobiphenyl

Surr: 2-Fluorophenol

Surr: 4-Terphenyl-d14

Surr: Nitrobenzene-d5

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 67652 Instrum	nent ID SV-6		Method	d: SW82 7	70						
MBLK Sample ID: SBLKW2	2-130207-67652				ι	Jnits: µg/L	_	Analys	sis Date: 2	/8/2013 01	:13 PM
Client ID:	Run II	D: SV-6_1	30208A		Se	eqNo: 310	8320	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	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.917	0.20	5		0	78.3	34-129	0)		
Surr: 2-Fluorobiphenyl	4.298	0.20	5		0	86	40-125	C)		
Surr: 2-Fluorophenol	3.88	0.20	5		0	77.6	20-120	0)		
Surr: 4-Terphenyl-d14	4.845	0.20	5		0	96.9	40-135	C	1		
Surr: Nitrobenzene-d5	4.337	0.20	5		0	86.7	41-120	0)		
Surr: Phenol-d6	4.179	0.20	5		0	83.6	20-120	0)		
LCS Sample ID: SLCSW2	2-130207-67652				Ĺ	Jnits: µg/L	_	Analys	sis Date: 2	/8/2013 01	:33 PM
Client ID:	Run II	D: SV-6_1	30208A		Se	eqNo: 310 8	8321	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	4.55	0.20	5		0	91	45-120	C)		
2-Methylnaphthalene	4.623	0.20	5		0	92.5	50-120	0)		
Benzo(a)pyrene	4.718	0.20	5		0	94.4	45-120	O)		

4.463

4.284

4.295

4.096

4.973

4.235

4.012

0.20

0.20

0.20

0.20

0.20

0.20

0.20

5

5

5

5

5

5

0

0

0

0

0

0

89.3

85.7

85.9

81.9

99.5

84.7

80.2

45-120

34-129

40-125

20-120

40-135

41-120

20-120

Client: Navajo Refining Company

Work Order: 1302138

Naphthalene

Surr: 2,4,6-Tribromophenol

Surr: 2-Fluorobiphenyl

Surr: 2-Fluorophenol

Surr: 4-Terphenyl-d14

Surr: Nitrobenzene-d5

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 67652 Instru	ument ID SV-6		Metho	d: SW827 0)						
LCSD Sample ID: SLCSD	DW2-130207-67652				U	nits: µg/L	-	Analysi	s Date: 2 /8	8/2013 01	:52 PM
Client ID:	Run ID	: SV-6_1	30208A		Sec	No: 310 8	3323	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.365	0.20	5	(0	87.3	45-120	4.55	4.13	20	
2-Methylnaphthalene	4.423	0.20	5	(0	88.5	50-120	4.623	4.44	20	
Benzo(a)pyrene	4.773	0.20	5	(0	95.5	45-120	4.718	1.16	20	
Naphthalene	4.285	0.20	5	(0	85.7	45-120	4.463	4.07	20	
Surr: 2,4,6-Tribromophenol	4.279	0.20	5	(0	85.6	34-129	4.284	0.118	0	
Surr: 2-Fluorobiphenyl	4.281	0.20	5	(0	85.6	40-125	4.295	0.322	0	
Surr: 2-Fluorophenol	4.05	0.20	5	(0	81	20-120	4.096	1.12	0	
Surr: 4-Terphenyl-d14	4.878	0.20	5	(0	97.6	40-135	4.973	1.92	0	
Surr: Nitrobenzene-d5	4.191	0.20	5	(0	83.8	41-120	4.235	1.04	0	
Surr: Phenol-d6	4.006	0.20	5	(0	80.1	20-120	4.012	0.155	0	
MS Sample ID: 130216	66-02AMS				U	nits: µg/L		Analysi	s Date: 2 /8	3/2013 02	:35 PM
Client ID:	Run ID	: SV-6_1	30208A		Sec	No: 310 8	3326	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.507	0.20	5	0.04	1	89.3	45-120	0			
2-Methylnaphthalene	4.563	0.20	5	0.0614	4	90	50-120	0			
Benzo(a)pyrene	4.668	0.20	5	(0	93.4	45-120	0			

0.05768

0

0

0

0

0

0

45-120

34-129

40-125

20-120

40-135

41-120

20-120

86.2

86.8

87

79.4

101

85.2

79

0

0

0

0

0

0

0

5

5

5

5

5

5

5

4.369

4.338

4.351

3.971

5.066

4.259

3.95

0.20

0.20

0.20

0.20

0.20

0.20

0.20

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: 67652 Instrument ID SV-6 Method: SW8270

MSD Sample ID: 1302166-0	2AMSD			ι	Jnits: µg/L	-	Analysi	s Date: 2/8	8/2013 02	:54 PN
Client ID:	Run II	D: SV-6_1	30208A	Se	eqNo: 310	3327	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.55	0.20	5	0.041	90.2	45-120	4.507	0.951	20	
2-Methylnaphthalene	4.617	0.20	5	0.06144	91.1	50-120	4.563	1.17	20	
Benzo(a)pyrene	4.952	0.20	5	0	99	45-120	4.668	5.91	20	
Naphthalene	4.415	0.20	5	0.05768	87.1	45-120	4.369	1.03	20	
Surr: 2,4,6-Tribromophenol	4.292	0.20	5	0	85.8	34-129	4.338	1.06	0	
Surr: 2-Fluorobiphenyl	4.291	0.20	5	0	85.8	40-125	4.351	1.38	0	
Surr: 2-Fluorophenol	3.848	0.20	5	0	77	20-120	3.971	3.15	0	
Surr: 4-Terphenyl-d14	5.26	0.20	5	0	105	40-135	5.066	3.77	0	
Surr: Nitrobenzene-d5	4.13	0.20	5	0	82.6	41-120	4.259	3.08	0	
Surr: Phenol-d6	3.943	0.20	5	0	78.9	20-120	3.95	0.168	0	

The following samples were analyzed in this batch:

1302138-01D	1302138-02D	1302138-03D	
1302138-04D			

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142213	Instrument ID VOA4		Metho	d: SW82 6	60						
MBLK Sample ID: VE	BLKW-130206-R142213				Units: µg/l	L	Analy	/sis Date: 2	/6/2013 1	0:59 AM	
Client ID:	Run II	Run ID: VOA4_1302 0			SeqNo: 310	3319	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 45.87	1.0	50		0 91.7	71-125		0			
Surr: 4-Bromofluorobenze	ne 48.12	1.0	50		0 96.2	70-125		0			
Surr: Dibromofluorometha	ne 50.46	1.0	50		0 101	74-125		0			
Surr: Toluene-d8	48.36	1.0	50		0 96.7	78-123		0			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142213	Instrument ID VOA4	Method:	SW8260

LCS Sample ID: VLCSW-13	0206-R142213				Units: µg/L	-	Analysis Date: 2/6/2013 10:11 AM				
Client ID:	Run II	D: VOA4_	130206A	S	eqNo: 310	3318	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	52.73	1.0	50	0	105	80-120	()			
1,1,2,2-Tetrachloroethane	43.78	1.0	50	0	87.6	74-123	()			
1,1,2-Trichloroethane	46.9	1.0	50	0	93.8	80-120	()			
1,1-Dichloroethane	45.3	1.0	50	0	90.6	80-120	()			
1,1-Dichloroethene	52.88	1.0	50	0	106	80-120	()			
1,2-Dibromoethane	51.68	1.0	50	0	103	80-120	()			
1,2-Dichloroethane	48.52	1.0	50	0	97	79-120	()			
Benzene	47.93	1.0	50	0	95.9	80-120	()			
Carbon tetrachloride	57.55	1.0	50	0	115	79-120	()			
Chloroform	46.06	1.0	50	0	92.1	80-120	()			
Ethylbenzene	47.01	1.0	50	0	94	80-120	()			
Methylene chloride	46.19	2.0	50	0	92.4	75-125	()			
Tetrachloroethene	51.51	1.0	50	0	103	80-120	()			
Toluene	46.16	1.0	50	0	92.3	80-121	()			
Trichloroethene	53.76	1.0	50	0	108	80-120	()			
Vinyl chloride	47.31	1.0	50	0	94.6	75-125	()			
Xylenes, Total	136.7	1.0	150	0	91.2	80-124	()			
Surr: 1,2-Dichloroethane-d4	44.19	1.0	50	0	88.4	71-125	()			
Surr: 4-Bromofluorobenzene	50.47	1.0	50	0	101	70-125	()			
Surr: Dibromofluoromethane	49.76	1.0	50	0	99.5	74-125	()			
Surr: Toluene-d8	47.67	1.0	50	0	95.3	78-123	()			

Navajo Refining Company Client:

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142213	Instrument ID VOA4	Method:	SW8260	
		•	•	

MS Sample ID: 1302133-09	5AMS			ı	Jnits: µg/L	_	Analy	sis Date: 2	/6/2013 1	1:23 AN
Client ID:	Run II	Se	eqNo: 310	3320	Prep Date: DF: 1			0		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	504.8	10	500	0	101	80-120	()		
1,1,2,2-Tetrachloroethane	421.3	10	500	0	84.3	74-123	()		
1,1,2-Trichloroethane	453.8	10	500	0	90.8	80-120	()		
1,1-Dichloroethane	427.1	10	500	0	85.4	80-120	()		
1,1-Dichloroethene	511.5	10	500	0	102	80-120	()		
1,2-Dibromoethane	501.8	10	500	0	100	80-120	()		
1,2-Dichloroethane	461.9	10	500	0	92.4	79-120	()		
Benzene	834.5	10	500	355.1	95.9	80-120	()		
Carbon tetrachloride	546.4	10	500	0	109	79-120	()		
Chloroform	438.5	10	500	0	87.7	80-120	()		
Ethylbenzene	460.1	10	500	0	92	80-120	()		
Methylene chloride	442.4	20	500	0	88.5	75-125	()		
Tetrachloroethene	501.9	10	500	0	100	80-120	()		
Toluene	454.7	10	500	1.298	90.7	80-121	()		
Trichloroethene	511.8	10	500	0	102	80-120	()		
Vinyl chloride	456.7	10	500	0	91.3	75-125	()		
Xylenes, Total	1358	10	1500	2.156	90.4	80-124	()		
Surr: 1,2-Dichloroethane-d4	428.4	10	500	0	85.7	71-125	()		
Surr: 4-Bromofluorobenzene	506.9	10	500	0	101	70-125	()		
Surr: Dibromofluoromethane	484.2	10	500	0	96.8	74-125	()		
Surr: Toluene-d8	479.6	10	500	0	95.9	78-123	()		

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142213	Instrument ID VOA4	Method:	SW8260

MSD Sample ID: 1302133-09	5AMSD			l	Jnits: µg/L	-	Analysis Date: 2/6/2013 11:47 AM			
Client ID:	Run II	Se	eqNo: 310	3321	Prep Date: DF: 10					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	497.3	10	500	0	99.5	80-120	504.8	1.5	20	
1,1,2,2-Tetrachloroethane	420.3	10	500	0	84.1	74-123	421.3	0.236	20	
1,1,2-Trichloroethane	447.3	10	500	0	89.5	80-120	453.8	1.46	20	
1,1-Dichloroethane	414	10	500	0	82.8	80-120	427.1	3.13	20	
1,1-Dichloroethene	480.8	10	500	0	96.2	80-120	511.5	6.19	20	
1,2-Dibromoethane	481.3	10	500	0	96.3	80-120	501.8	4.16	20	
1,2-Dichloroethane	452.8	10	500	0	90.6	79-120	461.9	1.97	20	
Benzene	801.7	10	500	355.1	89.3	80-120	834.5	4.02	20	
Carbon tetrachloride	535.7	10	500	0	107	79-120	546.4	1.99	20	
Chloroform	419.6	10	500	0	83.9	80-120	438.5	4.39	20	
Ethylbenzene	450.2	10	500	0	90	80-120	460.1	2.17	20	
Methylene chloride	421.3	20	500	0	84.3	75-125	442.4	4.87	20	
Tetrachloroethene	498.5	10	500	0	99.7	80-120	501.9	0.683	20	
Toluene	448.6	10	500	1.298	89.5	80-121	454.7	1.35	20	
Trichloroethene	483.1	10	500	0	96.6	80-120	511.8	5.78	20	
Vinyl chloride	435.8	10	500	0	87.2	75-125	456.7	4.68	20	
Xylenes, Total	1321	10	1500	2.156	87.9	80-124	1358	2.75	20	
Surr: 1,2-Dichloroethane-d4	421.1	10	500	0	84.2	71-125	428.4	1.71	20	
Surr: 4-Bromofluorobenzene	502.8	10	500	0	101	70-125	506.9	0.796	20	
Surr: Dibromofluoromethane	472.3	10	500	0	94.5	74-125	484.2	2.49	20	
Surr: Toluene-d8	479.3	10	500	0	95.9	78-123	479.6	0.0501	20	

The following samples were analyzed in this batch:

1302138-01A	1302138-02A	1302138-03A	
1302138-04A	1302138-05A	1302138-06A	

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R142275	Instrument ID ICS2100		Method	: E300		((Dissolve	e)			
MBLK Sample ID:	: WBLKW2-R142275				Ur	nits: mg/ l	L	Analys	is Date: 2/	6/2013 11	:17 AM
Client ID:	Run ID:	ICS210	0_130206A		SeqNo: 3104639		1639	Prep Date:		DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Chloride	U	0.50									
Fluoride	U	0.10									
Nitrogen, Nitrate (As N)	U	0.10									
Nitrogen, Nitrite (As N)	U	0.10									
Surr: Selenate (surr)	4.316	0.10	5		0	86.3	85-115	0			
LCS Sample ID:	: WLCSW2-R142275				Ur	nits: mg/ l	L	Analys	is Date: 2 /	6/2013 11	:31 AM
Client ID:	Run ID:	ICS210	0_130206A		Seq	No: 310 4	1640	Prep Date:		DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Chloride	20.78	0.50	20		0	104	90-110	0			
Fluoride	3.608	0.10	4		0	90.2	90-110	0			
Nitrogen, Nitrate (As N)	4.033	0.10	4		0	101	90-110	0			
Nitrogen, Nitrite (As N)	4.332	0.10	4		0	108	90-110	0			
Surr: Selenate (surr)	4.436	0.10	5		0	88.7	85-115	0			
MS Sample ID:	: 13011010-20BMS				Ur	nits: mg/ l	L	Analys	is Date: 2 /	6/2013 07	:14 PM
Client ID:	Run ID:	ICS210	0_130206A		SeqNo: 3104667			Prep Date:	DF: 5		
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Chloride	98.84	2.5	50	50.4	1 5	96.8	80-120	0			
Fluoride	8.773	0.50	10	0.12	25	86.5	80-120	0			
Nitrogen, Nitrate (As N)	10.03	0.50	10		0	100	80-120	0			Н
Nitrogen, Nitrite (As N)	10.57	0.50	10		0	106	80-120	0			Н
Surr: Selenate (surr)	21.26	0.50	25		0	85.1	85-115	0			
MSD Sample ID:	: 13011010-20BMSD				Ur	nits: mg/ l	L	Analys	is Date: 2/	6/2013 07	:29 PM
Client ID:	Run ID:	ICS210	0_130206A		Seq	No: 310 4	1669	Prep Date:		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	103.2	2.5	50	50.4	1 5	106	80-120	98.84	4.36	20	
Fluoride	9.222	0.50	10	0.12		91	80-120	8.773		20	
Nitrogen, Nitrate (As N)	10.45	0.50	10		0	105	80-120	10.03	4.12	20	Н
Nitrogen, Nitrite (As N)	10.86	0.50	10		0	109	80-120	10.57	2.65	20	Н
Surr: Selenate (surr)	22.16	0.50	25		0	88.6	85-115	21.26	4.11	20	

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R	2142370 Instrument I	D Balance1		Metho	d: M2540	С		(Dissolve	e)			
MBLK	Sample ID: WBLK-020713	3-R142370				Units	: mg/	L	Analys	sis Date: 2/	7/2013 10	:10 AM
Client ID:		Run ID	n ID: BALANCE1_130207D			SeqNo	: 310	6836	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	U	10									
LCS	Sample ID: WLCS-020713	3-R142370				Units	: mg/	L	Analys	sis Date: 2/	7/2013 10	:10 AM
Client ID:		Run ID	: BALAN	CE1_13020	7D	SeqNo	: 310	6837	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil 1010			10	1000		0	101	85-115	C)		
DUP	Sample ID: 1302016-01H	DUP				Units	: mg/	L	Analys	sis Date: 2/	7/2013 10	:10 AM
Client ID:		Run ID	: BALAN	BALANCE1_130207D			: 310	6830	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	562	10	0		0	0	0-0	564	0.355	20	
DUP	Sample ID: 1302138-04G	DUP				Units	: mg/	L	Analys	sis Date: 2/	7/2013 10	:10 AM
Client ID: M	IW-115	Run ID	: BALAN	CE1_13020	7D	SeqNo	: 3109	9474	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%F	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	4812	10	0		0	0	0-0	4956	2.95	20	
The followi	ing samples were analyzed	in this batch:	' '	302138-01G 302138-04G	13	302138-0)2G	13	02138-03G			

Navajo Refining Company

Work Order:

Client:

RO Discharge Sampling

1302138 **Project:**

Batch ID: R	142525	Instrument ID UV-2450		Method	d: M4500	CN E&G	(Dissolv	e)			
MBLK	Sample ID	: WBLKW1-021113-R142525				Units: n	ng/L	Anal	ysis Date: 2	/11/2013	10:05 AM
Client ID:		Run II	D: UV-245	60_130211A		SeqNo: 3	108735	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U	0.020								
LCS	Sample ID	: WLCSW1-021113-R142525				Units: n	ng/L	Anal	ysis Date: 2	/11/2013	10:05 AM
Client ID:		Run II	D: UV-245	0_130211A		SeqNo: 3	108736	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.17	0.020	0.2		0 8	5 80-120	ı	0		
LCSD	Sample ID	: WLCSDW1-021113-R14252	5			Units: n	ng/L	Anal	ysis Date: 2	/11/2013 ·	10:05 AM
Client ID:		Run II	D: UV-245	60_130211A		SeqNo: 3	108744	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.174	0.020	0.2		0 8	7 80-120	0.1	17 2.33	20	
MS	Sample ID	: 1302181-01EMS				Units: n	ng/L	Anal	ysis Date: 2	/11/2013	10:05 AM
Client ID:		Run II	D: UV-245	60_130211A		SeqNo: 3	108747	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.175	0.020	0.2		0 87.	5 80-120	1	0		
The followi	ing samples	were analyzed in this batch:		302138-01F 302138-04F	13	302138-02F	= 13	802138-03F			

Client: Navajo Refining Company

Work Order: 1302138

Project: RO Discharge Sampling

Batch ID: R	142615	Instrument ID ICS2100		Method	d: E300			(Dissolve	e)			
MBLK	Sample ID:	WBLKW1-R142615				ι	Jnits: mg/	L	Analys	sis Date: 2/	12/2013 1	0:37 Al
Client ID:		Run II	D: ICS21	100_130212A		Se	qNo: 311 0	0343	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		0.238	0.50)								J
Sulfate		U	0.50)								
Surr: Sel	enate (surr)	4.937	0.10	5		0	98.7	85-115	0)		
LCS	Sample ID:	WLCSW1-R142615				ι	Jnits: mg/	L	Analys	sis Date: 2/	12/2013 1	0:52 AI
Client ID:		Run II	D: ICS21	100_130212A		Se	qNo: 311 0	0344	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		21.96	0.50) 20		0	110	90-110	C)		
Sulfate		21.6	0.50) 20		0	108	90-110	0)		
Surr: Sele	enate (surr)	5.024	0.10) 5		0	100	85-115	0)		
MS	Sample ID:	1302189-01GMS				ι	Jnits: mg/	L	Analys	sis Date: 2/	12/2013 1	2:58 PI
Client ID:		Run II	D: ICS21	100_130212A		Se	qNo: 311 0	0358	Prep Date:		DF: 1	
Analyte		Result	PQL	. SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		410.7	0.50) 10	415	5.2	-45.1	80-120	C)		SEO
Sulfate		2156	0.50) 10	22	17	-610	80-120	0)		SEO
Surr: Sele	enate (surr)	4.387	0.10) 5		0	87.7	85-115	C)		
MSD	Sample ID:	1302189-01GMSD				ι	Jnits: mg/	L	Analys	sis Date: 2/	12/2013 0	1:12 PI
Client ID:		Run II	D: ICS21	100_130212A		Se	qNo: 311 0	0360	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		406.9	0.50) 10	415	5.2	-83.2	80-120	410.7	0.932	20	SEO
Sulfate		2130	0.50) 10	22	17	-869	80-120	2156	1.21	20	SEO
Surr: Sele	enate (surr)	4.498	0.10	5		0	90	85-115	4.387	2.5	20	
The followi	ing samples v	vere analyzed in this batch:		1302138-01H 1302138-04G	13	3021	38-02H	13	02138-03G			

Date: 18-Feb-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS,** RO Discharge Sampling **Project: ACRONYMS, UNITS**

WorkOrder: 1302138

Qualifier	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	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
	Donorintion
<u>Acronym</u>	<u>Description</u>
Acronym DCS	Detectability Check Study
	
DCS	Detectability Check Study
DCS DUP	Detectability Check Study Method Duplicate
DCS DUP LCS	Detectability Check Study Method Duplicate Laboratory Control Sample
DCS DUP LCS LCSD	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate
DCS DUP LCS LCSD MBLK	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank
DCS DUP LCS LCSD MBLK MDL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit
DCS DUP LCS LCSD MBLK MDL MQL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit
DCS DUP LCS LCSD MBLK MDL MQL MS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike
DCS DUP LCS LCSD MBLK MDL MQL MS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS PQL	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike Practical Quantitation Limit
DCS DUP LCS LCSD MBLK MDL MQL MS MSD PDS PQL SD	Detectability Check Study Method Duplicate Laboratory Control Sample Laboratory Control Sample Duplicate Method Blank Method Detection Limit Method Quantitation Limit Matrix Spike Matrix Spike Duplicate Post Digestion Spike Practical Quantitation Limit Serial Dilution

Units Reported Description

mg/L Milligrams per Liter

Sample Receipt Checklist

Client Name:	NAVAJO REFINING		Da	ate/Time Rece	eived: <u>05</u>	-Feb-13	<u>09:15</u>	
Work Order:	1302138		Re	eceived by:	<u>PN</u>	<u>IG</u>		
Checklist comp	pleted by Faresh M. Giga eSignature	05-Feb-	13 Review	wed by:	ignature			Date
Matrices: Carrier name:	Water FedEx	'						
Shipping conta	iner/cooler in good condition?	Ye	s V	No 🗌	Not Present			
Custody seals i	intact on shipping container/coole	r? Ye	s 🗸	No 🗌	Not Present			
Custody seals	intact on sample bottles?	Ye	s 🗌	No \square	Not Present	✓		
Chain of custoo	dy present?	Ye	s 🗸	No \square				
Chain of custoo	dy signed when relinquished and	received? Ye	s 🗸	No \square				
Chain of custoo	dy agrees with sample labels?	Ye	s 🗸	No \square				
Samples in pro	per container/bottle?	Ye	s 🗸	No \square				
Sample contain	ners intact?	Ye	s 🗸	No 🗌				
Sufficient samp	ole volume for indicated test?	Ye	s 🗸	No \square				
All samples rec	eived within holding time?	Ye	s 🗸	No \square				
Container/Tem	p Blank temperature in compliand	e? Ye	s 🗸	No \square				
Temperature(s)/Thermometer(s):	1.2c,	1.4c C/U		005			
Cooler(s)/Kit(s)	:	3323	<u>, 7119</u>					
	ple(s) sent to storage:		3 18:50					
	als have zero headspace?	Ye			VOA vials su	bmitted		
	eptable upon receipt?		s 🗸	No ∐ N/A	_			
pH adjusted? pH adjusted by	:	Ye _	s 🗆	No □ N/A				
Login Notes:	1302138-02;-03 & -04 Radiu	ım fraction re-logged inWo	O 1302192-05	5;-06 & -07 res	pectively			
Client Contacte	ed:	Date Contacted:		Person Con	tacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction	n:						050 =	
							SRC F	Page 1 of 1

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Holland, MI +1 616 399 6070

Everett, WA +1 425 356 2600

Fort Callins, CO +1 970 490 1511

Chain of Custody Fc

ō Page

coc ID: 72329

1302138

aston, WV 3168

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

				ALS Project Manager:	Jer:			
Customer Information			Project Information	ıtion				
Purchase Order	Proj	Project Name	RO Discharge/Sampling	Sampling	4	VOC (8260) MIN GIN LIST	List	
Work Order	Projec	Project Number	128823		œ	GRO (8015M)		
Company Name Navajo Refining Company	Bill To	Bill To Company	Navajo Refining Company	Сотрапу	ပ	DRO (8015M)		
Send Report To Robert Combs		Invoice Attn	Robert Combs		O	ORO (8015M)		
501 East Main			501 East Main		ш	LL SVOC (8270) NM GW List	GW List	
Address		Address			ш	Total Metals (6020/7669) RGRA-8- L	BEDREAMS Long List	
City/State/Zip Artesia, NM 88211		City/State/Zip	Artesia, NM 88211	1211	න	Dissolved Metals (6020/7000) RCRA 8	20/7000) RCRA 8 C	
Phone (575) 748-6733		Phone	(575) 748-6733		I	TDS		
Fax (575) 746-5421		Fax	(575) 746-5421	A STANDARD AND THE STAN		** Adistare C. S.		The state of the s
e-Mail Address	e-Mai	e-Mail Address	The state of the s		7	Fingesprint (PIANOS)	Fingsprin (PLANDSP Gray Simple) Xacio A. Aven	- July
No. Sample Description	Date	Time	e Matrix	Pres. # Bottles		A B C D	Н 5 Н	U Hold
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Sampler(s) Please Print & Sign	ਤਿ 	Shipment Method		Required Turnaround Time: (Check Box)	ne: (Chec	ok Box)	Results Due Date:	
Then Melynia I you !			_	Std 10 WK Days	Ц	5 WK Days 2 WK Days	24 Hour	
Relinquished by: W. Date: H.	245 Time: 345	Received by:	by: / James		Notes:		10 Day TAT. Dissolved Metals Field Filtered	
Relinquished.by.	Time:	Received	Received By (Laboratory):	700	Ĭ	Cooler ID Cooler Temp.	QC Package: (Check One Box Below)	
The state of the s	The state of the s	Chooling	A North Photostonii		1		V Level II Std OC	TRRP ChockList
	9		by (Laboratory).		Λ	X 2 X	Level III Std UC/May Data TRRP Level IV	TRRP Level IV
Preservative Key: 1-HCI 2-HNO ₃ 3-H ₂ SO ₄	4 4-NaOH 5-Na ₂ S ₂ O ₃		6-NaHSO ₄ 7-Other	er 8-4°C 9-5035	22] Other / EDD	

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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Everett, WA +1 425 356 2600

Chain of Custody Form

coc ID: 72328 Page of

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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

TRRP Checklis Encaperate Provider Grave Sm. Disc) Radium, Anions, Cetion Extra Battes Hold X Parameter/Method Request for Analysis Results Due Date: QC Package: (Check One Box Below) Level III Std OC/Raw Data Total Metals (8020/1888) nerve Long List X 10 Day TAT. Dissolved Metals Field Filtered ALS Work Order #: I X 乂 Level il Sid OC Dissolved Metals (6020/7000) RCRA 8 ø LL SVOC (8270) NM GW List ш VOC (8260) NIN GIN List -yanide ш Olther 2 MK Days Cooler Temp. ۵ GRO (8015M) ORO (8015M) DRO (8015M) ပ Najatre . TDS 5 VVK Days Cooler ID Ω Required Turnaround Time: (Check Box) 8 5 Notes: ⋖ ⋖ മ ပ Ω ш ш G T ALS Project Manager: # Bottles Std 10 WK Days کِ <u>و</u> Pres. 芒 Navajo Refining Company RO Discharge/Sampling D Project Information Artesia, NM 86211 W ンナジン (575) 748-6733 (575) 746-5421 Matrix Robert Combs 501 East Main みずる Received by (Laboratory): Checked by (Laboratory) 128823 1230 3 Received by: Time Shipment Method Bill To Company Project Name Project Number Fax City/State/Zip Phone e-Mail Address invoice Attn Address 3-13 2.3.13 11 A A Date 7 Time: J. Date; Date: Navajo Refining Company **Customer Information** Artesia, NM 88211 Sample Description (515) 748-6733 (515) 746-5421 East Main Robert Combs JW-115 Sampler(s) Please Print & Sign 20 Logged by (Laboratory): Company Name Send Report To Purchase Order Phone Fax Work Order Address Gity/State/Zip e-Mail Address Relinquished by: က ഗ ဖ œ ග ব ^ 45 of 47 9

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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Other / EDD

9-5035

8-4°C

7-Other

6-NaHSO4

5-Na₂S₂O₃

4-NaOH

3-H₂SO₄

2-HNO3

Preservative Key: 1-HCl



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

CUSTODY SEAL

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

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19-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: 1302189

Dear Robert,

ALS Environmental received 5 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 49.

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

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 19-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302189

Work Order Sample Summary

Lab Samp ID	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
1302189-01	MW-116	Water		2/3/2013 13:15	2/6/2013 08:40	
1302189-02	MW-119	Water		2/5/2013 14:25	2/6/2013 08:40	
1302189-03	MW-118	Water		2/5/2013 14:25	2/6/2013 08:40	
1302189-04	TRIP BLANK 011813-71			2/5/2013	2/6/2013 08:40	
1302189-05	TRIP BLANK 011813-30			2/5/2013	2/6/2013 08:40	

ALS Environmental

Date: 19-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302189

Case Narrative

Nitrogen, Nitrate (As N) Method Anions, Sample MW-116 holding time expired prior to sample receipt. Sample analyzed at the request of the client. Results should be considered estimated.

Batch 67624, Dissolved Mercury, Sample 1302162-02: MS/MSD is for an unrelated sample.

Batch 67639, Metals, Sample 1302162-02: MS/MSD is for an unrelated sample.

Batch 67639, Metals, Sample 1302162-02: MS/MSD RPD is for an unrelated sample.

Batch 67639, Metals, Sample 1302162-02: Duplicate RPD is for an unrelated sample.

Batch R142338, Volatile Organics, Sample 1302212-01: MS/MSD is for an unrelated sample.

Batch R142615, Anions, Sample MW-116: MS/MSD recoveries were outside the control limits for Fluoride. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Batch R142773, Anions, Sample 1302276-01: MS/MSD recoveries were outside the control limits for Chloride and Sulfate due to high concentration to the background sample. Results are flagged with an O. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 2/3/2013 01:15 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-01

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	thod: SW8015N	1	Prep: SW:	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.051	mg/L	1	2/11/2013 18:52
TPH (Oil Range)	U		0.041	0.10	mg/L	1	2/11/2013 18:52
Surr: 2-Fluorobiphenyl	106			60-135	%REC	1	2/11/2013 18:52
GASOLINE RANGE ORGANICS - SW8	015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	2/14/2013 00:02
Surr: 4-Bromofluorobenzene	91.7			70-130	%REC	1	2/14/2013 00:02
DISSOLVED MERCURY		Me	thod: SW7470		Prep: SW	7470 / 2/7/13	Analyst: OFO
Mercury	0.000131	J	0.000042	0.000200	mg/L	1	2/7/2013 18:01
DISSOLVED METALS		Me	thod: SW6020		Prep: SW:	3010A / 2/8/13	Analyst: SKS
Aluminum	0.00797	J	0.0040	0.0100	mg/L	1	2/11/2013 18:29
Arsenic	0.00274	J	0.0013	0.00500	mg/L	1	2/11/2013 18:29
Barium	0.0161		0.00090	0.00500	mg/L	1	2/11/2013 18:29
Boron	0.220		0.040	0.100	mg/L	2	2/12/2013 14:56
Cadmium	U		0.00080	0.00200	mg/L	1	2/11/2013 18:29
Calcium	624		1.7	10.0	mg/L	20	2/12/2013 15:03
Chromium	U		0.0012	0.00500	mg/L	1	2/11/2013 18:29
Cobalt	U		0.00080	0.00500	mg/L	1	2/11/2013 18:29
Copper	U		0.0015	0.00500	mg/L	1	2/11/2013 18:29
Iron	U		0.078	0.200	mg/L	1	2/11/2013 18:29
Lead	U		0.00070	0.00500	mg/L	1	2/11/2013 18:29
Manganese	0.0437		0.0025	0.00500	mg/L	1	2/11/2013 18:29
Molybdenum	0.00348	J	0.0015	0.00500	mg/L	1	2/11/2013 18:29
Nickel	0.00120	J	0.0012	0.00500	mg/L	1	2/11/2013 18:29
Potassium	1.06		0.084	0.200	mg/L	1	2/11/2013 18:29
Selenium	0.00203	J	0.0010	0.00500	mg/L	1	2/11/2013 18:29
Silver	U		0.00080	0.00500	mg/L	1	2/11/2013 18:29
Sodium	206		1.7	4.00	mg/L	20	2/12/2013 15:03
Uranium	0.0331		0.0050	0.00500	mg/L	1	2/11/2013 18:29
Zinc	0.00291	J	0.0025	0.00500	mg/L	1	2/11/2013 18:29
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW:	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:08
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:08
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:08
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:08
Surr: 2,4,6-Tribromophenol	45.3			34-129	%REC	1	2/8/2013 19:08
Surr: 2-Fluorobiphenyl	53.4			40-125	%REC	1	2/8/2013 19:08

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 2/3/2013 01:15 PM

Work Order: 1302189

Lab ID: 1302189-01

Date: 19-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	45.7			20-120	%REC	1	2/8/2013 19:08
Surr: 4-Terphenyl-d14	67.6			40-135	%REC	1	2/8/2013 19:08
Surr: Nitrobenzene-d5	58.7			41-120	%REC	1	2/8/2013 19:08
Surr: Phenol-d6	46.3			20-120	%REC	1	2/8/2013 19:08
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/9/2013 06:02
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/9/2013 06:02
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Benzene	U		0.00020	0.0010	mg/L	1	2/9/2013 06:02
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Chloroform	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Ethylbenzene	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/9/2013 06:02
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/9/2013 06:02
Toluene	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/9/2013 06:02
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/9/2013 06:02
Xylenes, Total	U		0.00030	0.0010	mg/L	1	2/9/2013 06:02
Surr: 1,2-Dichloroethane-d4	101			71-125	%REC	1	2/9/2013 06:02
Surr: 4-Bromofluorobenzene	103			70-125	%REC	1	2/9/2013 06:02
Surr: Dibromofluoromethane	100			74-125	%REC	1	2/9/2013 06:02
Surr: Toluene-d8	106			78-123	%REC	1	2/9/2013 06:02
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	389		10	25.0	mg/L	50	2/14/2013 08:13
Fluoride	1.31		0.050	0.100	mg/L	1	2/12/2013 12:43
Nitrogen, Nitrate (As N)	1.37	Н	0.030	0.100	mg/L	1	2/12/2013 12:43
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	2/12/2013 12:43
Sulfate	2,250		10	25.0	mg/L	50	2/14/2013 08:13
Surr: Selenate (surr)	92.9			85-115	%REC	1	2/12/2013 12:43
Surr: Selenate (surr)	109			85-115	%REC	50	2/14/2013 08:13
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/12/2013 11:45
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 2/3/2013 01:15 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-01

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	3,650	5.0	10.0 mg/L	1	2/8/2013 16:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 2/5/2013 02:25 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-02

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Method: SW8015M				3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.051	mg/L	1	2/11/2013 19:14
TPH (Oil Range)	U		0.041	0.10	mg/L	1	2/11/2013 19:14
Surr: 2-Fluorobiphenyl	110			60-135	%REC	1	2/11/2013 19:14
GASOLINE RANGE ORGANICS - SW8	015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	0.0371	J	0.020	0.0500	mg/L	1	2/14/2013 00:20
Surr: 4-Bromofluorobenzene	90.6			70-130	%REC	1	2/14/2013 00:20
DISSOLVED MERCURY		Me	thod: SW7470		Prep: SW	7470 / 2/7/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	2/7/2013 18:03
DISSOLVED METALS		Ме	thod: SW6020		Prep: SW	3010A / 2/8/13	Analyst: SKS
Aluminum	0.00994	J	0.0040	0.0100	mg/L	1	2/12/2013 14:59
Arsenic	0.00294	J	0.0013	0.00500	mg/L	1	2/12/2013 14:59
Barium	0.00981		0.00090	0.00500	mg/L	1	2/12/2013 14:59
Boron	0.0987		0.020	0.0500	mg/L	1	2/12/2013 14:59
Cadmium	U		0.00080	0.00200	mg/L	1	2/12/2013 14:59
Calcium	494		1.7	10.0	mg/L	20	2/12/2013 15:06
Chromium	U		0.0012	0.00500	mg/L	1	2/12/2013 14:59
Cobalt	0.000871	J	0.00080	0.00500	mg/L	1	2/12/2013 14:59
Copper	0.00309	J	0.0015	0.00500	mg/L	1	2/12/2013 14:59
Iron	U		0.078	0.200	mg/L	1	2/12/2013 14:59
Lead	U		0.00070	0.00500	mg/L	1	2/12/2013 14:59
Manganese	0.0424		0.0025	0.00500	mg/L	1	2/12/2013 14:59
Molybdenum	0.00830		0.0015	0.00500	mg/L	1	2/12/2013 14:59
Nickel	0.00174	J	0.0012	0.00500	mg/L	1	2/12/2013 14:59
Potassium	0.870		0.084	0.200	mg/L	1	2/12/2013 14:59
Selenium	0.00246	J	0.0010	0.00500	mg/L	1	2/12/2013 14:59
Silver	U		0.00080	0.00500	mg/L	1	2/12/2013 14:59
Sodium	127		1.7	4.00	mg/L	20	2/12/2013 15:06
Uranium	0.0244		0.0050	0.00500	mg/L	1	2/12/2013 14:59
Zinc	U		0.0025	0.00500	mg/L	1	2/12/2013 14:59
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:27
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:27
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:27
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:27
Surr: 2,4,6-Tribromophenol	59.1			34-129	%REC	1	2/8/2013 19:27
Surr: 2-Fluorobiphenyl	64.5			40-125	%REC	1	2/8/2013 19:27

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 2/5/2013 02:25 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-02

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	60.0			20-120	%REC	1	2/8/2013 19:27
Surr: 4-Terphenyl-d14	82.3			40-135	%REC	1	2/8/2013 19:27
Surr: Nitrobenzene-d5	65.4			41-120	%REC	1	2/8/2013 19:27
Surr: Phenol-d6	57.9			20-120	%REC	1	2/8/2013 19:27
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/7/2013 17:31
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/7/2013 17:31
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Benzene	0.0036		0.00020	0.0010	mg/L	1	2/7/2013 17:31
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Chloroform	U		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Ethylbenzene	0.0021		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/7/2013 17:31
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/7/2013 17:31
Toluene	0.0027		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/7/2013 17:31
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/7/2013 17:31
Xylenes, Total	0.0037		0.00030	0.0010	mg/L	1	2/7/2013 17:31
Surr: 1,2-Dichloroethane-d4	86.7			71-125	%REC	1	2/7/2013 17:31
Surr: 4-Bromofluorobenzene	98.0			70-125	%REC	1	2/7/2013 17:31
Surr: Dibromofluoromethane	95.4			74-125	%REC	1	2/7/2013 17:31
Surr: Toluene-d8	100			78-123	%REC	1	2/7/2013 17:31
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	116		10	25.0	mg/L	50	2/14/2013 08:34
Fluoride	2.36		0.050	0.100	mg/L	1	2/7/2013 10:34
Nitrogen, Nitrate (As N)	2.35		0.030	0.100	mg/L	1	2/7/2013 10:34
Nitrogen, Nitrite (As N)	U		0.030	0.100	mg/L	1	2/7/2013 10:34
Sulfate	2,090		10	25.0	mg/L	50	2/14/2013 08:34
Surr: Selenate (surr)	88.0			85-115	%REC	1	2/7/2013 10:34
Surr: Selenate (surr)	111			85-115	%REC	50	2/14/2013 08:34
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/12/2013 11:45
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 2/5/2013 02:25 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-02

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit U	Dilution nits Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	3,670	5.0	10.0 m	g/L 1	2/12/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 2/5/2013 02:25 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-03

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	thod: SW8015N	1	Prep: SW:	3511 / 2/8/13	Analyst: KMB
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	2/11/2013 19:36
TPH (Oil Range)	U		0.041	0.10	mg/L	1	2/11/2013 19:36
Surr: 2-Fluorobiphenyl	107			60-135	%REC	1	2/11/2013 19:36
GASOLINE RANGE ORGANICS - SW	8015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	0.0436	J	0.020	0.0500	mg/L	1	2/14/2013 00:38
Surr: 4-Bromofluorobenzene	88.5			70-130	%REC	1	2/14/2013 00:38
DISSOLVED MERCURY		Me	thod: SW7470		Prep: SW	7470 / 2/7/13	Analyst: OFO
Mercury	0.0000420	J	0.000042	0.000200	mg/L	1	2/7/2013 18:05
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 2/8/13	Analyst: SKS
Aluminum	0.0146		0.0040	0.0100	mg/L	1	2/12/2013 15:01
Arsenic	0.0110		0.0013	0.00500	mg/L	1	2/12/2013 15:01
Barium	0.0145		0.00090	0.00500	mg/L	1	2/12/2013 15:01
Boron	0.226		0.020	0.0500	mg/L	1	2/12/2013 15:01
Cadmium	U		0.00080	0.00200	mg/L	1	2/12/2013 15:01
Calcium	563		1.7	10.0	mg/L	20	2/12/2013 15:08
Chromium	U		0.0012	0.00500	mg/L	1	2/12/2013 15:01
Cobalt	U		0.00080	0.00500	mg/L	1	2/12/2013 15:01
Copper	0.00156	J	0.0015	0.00500	mg/L	1	2/12/2013 15:01
Iron	U		0.078	0.200	mg/L	1	2/12/2013 15:01
Lead	U		0.00070	0.00500	mg/L	1	2/12/2013 15:01
Manganese	0.0232		0.0025	0.00500	mg/L	1	2/12/2013 15:01
Molybdenum	0.0195		0.0015	0.00500	mg/L	1	2/12/2013 15:01
Nickel	0.00173	J	0.0012	0.00500	mg/L	1	2/12/2013 15:01
Potassium	7.95		0.084	0.200	mg/L	1	2/12/2013 15:01
Selenium	0.00861		0.0010	0.00500	mg/L	1	2/12/2013 15:01
Silver	U		0.00080	0.00500	mg/L	1	2/12/2013 15:01
Sodium	218		1.7	4.00	mg/L	20	2/12/2013 15:08
Uranium	0.0370		0.0050	0.00500	mg/L	1	2/12/2013 15:01
Zinc	U		0.0025	0.00500	mg/L	1	2/12/2013 15:01
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 2/7/13	Analyst: LG
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:47
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:47
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:47
Naphthalene	U		0.000050	0.00020	mg/L	1	2/8/2013 19:47
Surr: 2,4,6-Tribromophenol	59.0			34-129	%REC	1	2/8/2013 19:47
Surr: 2-Fluorobiphenyl	62.2			40-125	%REC	1	2/8/2013 19:47

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 2/5/2013 02:25 PM

Work Order: 1302189

Lab ID: 1302189-03

Date: 19-Feb-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	65.4			20-120	%REC	1	2/8/2013 19:47
Surr: 4-Terphenyl-d14	96.9			40-135	%REC	1	2/8/2013 19:47
Surr: Nitrobenzene-d5	71.7			41-120	%REC	1	2/8/2013 19:47
Surr: Phenol-d6	62.3			20-120	%REC	1	2/8/2013 19:47
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	2/7/2013 17:55
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	2/7/2013 17:55
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Benzene	0.0042		0.00020	0.0010	mg/L	1	2/7/2013 17:55
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Chloroform	U		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Ethylbenzene	0.0024		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Methylene chloride	U		0.00040	0.0020	mg/L	1	2/7/2013 17:55
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	2/7/2013 17:55
Toluene	0.0033		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Trichloroethene	U		0.00020	0.0010	mg/L	1	2/7/2013 17:55
Vinyl chloride	U		0.00040	0.0010	mg/L	1	2/7/2013 17:55
Xylenes, Total	0.0047		0.00030	0.0010	mg/L	1	2/7/2013 17:55
Surr: 1,2-Dichloroethane-d4	86.6			71-125	%REC	1	2/7/2013 17:55
Surr: 4-Bromofluorobenzene	95.7			70-125	%REC	1	2/7/2013 17:55
Surr: Dibromofluoromethane	95.7			74-125	%REC	1	2/7/2013 17:55
Surr: Toluene-d8	99.5			78-123	%REC	1	2/7/2013 17:55
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	296		10	25.0	mg/L	50	2/14/2013 08:56
Fluoride	5.16		0.050	0.100	mg/L	1	2/7/2013 10:49
Nitrogen, Nitrate (As N)	2.39		0.030	0.100	mg/L	1	2/7/2013 10:49
Nitrogen, Nitrite (As N)	U		0.030	0.100	mg/L	1	2/7/2013 10:49
Sulfate	2,450		10	25.0	mg/L	50	2/14/2013 08:56
Surr: Selenate (surr)	87.9			85-115	%REC	1	2/7/2013 10:49
Surr: Selenate (surr)	110			85-115	%REC	50	2/14/2013 08:56
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	2/12/2013 11:45
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

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

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 2/5/2013 02:25 PM

Date: 19-Feb-13

Work Order: 1302189

Lab ID: 1302189-03

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit U	U nits	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	4,610	5.0	10.0 n	mg/L	1	2/12/2013 10:15

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

Client:Navajo Refining CompanyProject:RO Discharge SamplingWork Order: 1302189Sample ID:TRIP BLANK 011813-71Lab ID: 1302189-04

Collection Date: 2/5/2013 Matrix:

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	2/7/2013 18:19
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	2/7/2013 18:19
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	2/7/2013 18:19
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Benzene	U	0.00020	0.0010	mg/L	1	2/7/2013 18:19
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Chloroform	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Ethylbenzene	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Methylene chloride	U	0.00040	0.0020	mg/L	1	2/7/2013 18:19
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	2/7/2013 18:19
Toluene	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Trichloroethene	U	0.00020	0.0010	mg/L	1	2/7/2013 18:19
Vinyl chloride	U	0.00040	0.0010	mg/L	1	2/7/2013 18:19
Xylenes, Total	U	0.00030	0.0010	mg/L	1	2/7/2013 18:19
Surr: 1,2-Dichloroethane-d4	87.1		71-125	%REC	1	2/7/2013 18:19
Surr: 4-Bromofluorobenzene	95.1		70-125	%REC	1	2/7/2013 18:19
Surr: Dibromofluoromethane	95.1		74-125	%REC	1	2/7/2013 18:19
Surr: Toluene-d8	99.2		78-123	%REC	1	2/7/2013 18:19

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

Date: 19-Feb-13

Client:Navajo Refining CompanyProject:RO Discharge SamplingWork Order: 1302189Sample ID:TRIP BLANK 011813-30Lab ID: 1302189-05

Collection Date: 2/5/2013 Matrix:

Analyses	Result Q	ual 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	2/7/2013 18:44
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	2/7/2013 18:44
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	2/7/2013 18:44
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Benzene	U	0.00020	0.0010	mg/L	1	2/7/2013 18:44
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Chloroform	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Ethylbenzene	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Methylene chloride	U	0.00040	0.0020	mg/L	1	2/7/2013 18:44
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	2/7/2013 18:44
Toluene	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Trichloroethene	U	0.00020	0.0010	mg/L	1	2/7/2013 18:44
Vinyl chloride	U	0.00040	0.0010	mg/L	1	2/7/2013 18:44
Xylenes, Total	U	0.00030	0.0010	mg/L	1	2/7/2013 18:44
Surr: 1,2-Dichloroethane-d4	87.4		71-125	%REC	1	2/7/2013 18:44
Surr: 4-Bromofluorobenzene	96.0		70-125	%REC	1	2/7/2013 18:44
Surr: Dibromofluoromethane	95.0		74-125	%REC	1	2/7/2013 18:44
Surr: Toluene-d8	98.0		78-123	%REC	1	2/7/2013 18:44

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

Date: 19-Feb-13

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Date: 19-Feb-13

QC BATCH REPORT

Batch ID: 67710	Instrument ID FID-16		Method	d: SW80 1	5M						
MBLK Sample ID: L	BLKW-130208-67710				L	Jnits: mg/	L	Analys	is Date: 2/	11/2013 0	2:30 PM
Client ID:	Run I	D: FID-1 6	6_130211B		Se	qNo: 311 (0036	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 (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.06355	0.0050	0.06061		0	105	60-135	0			
LCS Sample ID: L	LCSW-130208-67710				L	Jnits: mg /	L __	Analys	is Date: 2/	11/2013 0	2:52 PM
Client ID:	Run I	D: FID-1 6	6_130211B		Se	qNo: 311 0	0037	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 (Diesel Range)	0.5399	0.050	0.6061		0	89.1	70-130	0			
TPH (Oil Range)	0.5571	0.10	0.6061		0	91.9	70-130	0			
Surr: 2-Fluorobiphenyl	0.0583	0.0050	0.06061		0	96.2	60-135	0			
LCSD Sample ID: L	LCSDW-130208-67710				L	Jnits: mg/	L	Analys	is Date: 2/	11/2013 0	3:14 PM
Client ID:	Run I	D: FID-1 6	6_130211B		Se	qNo: 311 0	0038	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 (Diesel Range)	0.5053	0.050	0.6061		0	83.4	70-130	0.5399	6.61	20	
TPH (Oil Range)	0.494	0.10	0.6061		0	81.5	70-130	0.5571	12	20	
Surr: 2-Fluorobiphenyl	0.05676	0.0050	0.06061		0	93.7	60-135	0.0583	2.68	20	
The following samples we	ere analyzed in this batch:		1302189-01C	13	021	89-02C	13	02189-03C			

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R	142754 Instru	ument ID FID-9		Metho	d: SW801	5						
MBLK	Sample ID: GBLK	W-130213-R142754				U	nits: mg/	L	Analys	is Date: 2/	13/2013 1	1:44 PM
Client ID:		Run I	D: FID-9_	130213C		Se	qNo: 311 ;	3108	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Ra	ange Organics	U	0.050									
	romofluorobenzene	0.09263	0.0050	0.1		0	92.6	70-130	0			
LCS	Sample ID: GLCSV	W-130213-R142754				U	nits: mg/	L	Analys	is Date: 2/	13/2013 1	0:50 PM
Client ID:		Run I	D: FID-9_	130213C		Se	qNo: 311 :	3106	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Ra	ange Organics	0.9572	0.050	1		0	95.7	70-130	0			
Surr: 4-B	romofluorobenzene	0.09422	0.0050	0.1		0	94.2	70-130	0			
LCSD	Sample ID: GLCSI	DW-130213-R142754				U	nits: mg/	L	Analys	is Date: 2/	13/2013 1	1:08 PM
Client ID:		Run I	D: FID-9_	130213C		Se	qNo: 311 :	3107	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Ra	ange Organics	0.9516	0.050	1		0	95.2	70-130	0.9572	0.586	30	
Surr: 4-B	romofluorobenzene	0.0934	0.0050	0.1		0	93.4	70-130	0.09422	0.877	30	
MS	Sample ID: 13023 0	08-07BMS				U	nits: mg/	L	Analys	is Date: 2/	14/2013 0	3:19 AM
Client ID:		Run I	D: FID-9_	130213C		Se	qNo: 311 :	3125	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Ra	ange Organics	0.9172	0.050	1	0.0333	34	88.4	70-130	0			
Surr: 4-B	romofluorobenzene	0.09279	0.0050	0.1		0	92.8	70-130	0			
MSD	Sample ID: 130230	08-07BMSD				U	nits: mg/	L	Analys	is Date: 2/	14/2013 0	3:37 AM
Client ID:		Run I	D: FID-9_	130213C		Se	qNo: 311 :	3126	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Ra	ange Organics	0.9414	0.050	1	0.0333	34	90.8	70-130	0.9172	2.61	30	
Surr: 4-B	romofluorobenzene	0.09245	0.0050	0.1		0	92.4	70-130	0.09279	0.365	30	

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 67	7624 Instrument ID Mercur	у	Method	SW747	0	(Dissolv	e)			
MBLK	Sample ID: GBLKW4-020713-6762	4			Units: m	g/L	Analysi	s Date: 2 /	7/2013 04	:12 PM
Client ID:	F	Run ID: MER	RCURY_130207	A	SeqNo: 3	105666	Prep Date: 2/7/2013		DF: 1	
Analyte	Resul	lt PG		SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	l	0.0002 ل	20							
LCS	Sample ID: GLCSW4-020713-6762	4			Units: m	g/L	Analysi	s Date: 2 /	7/2013 04	:14 PN
Client ID:	F	Run ID: MER	RCURY_130207	A	SeqNo: 3'	105667	Prep Date: 2/7/ 2	2013	DF: 1	
Analyte	Resul	lt PG		SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0053	4 0.0002	20 0.005		0 107	7 80-120	0			
MS	Sample ID: 1302162-02DMS				Units: m	g/L	Analysi	s Date: 2 /	7/2013 04	:20 PN
Client ID:	F	Run ID: MER	RCURY_130207	A	SeqNo: 3'	105670	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Resul	lt PG		SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury	0.0039	9 0.0002	20 0.005	-0.000	01 80	80-120	0			
MSD	Sample ID: 1302162-02DMSD				Units: m	g/L	Analysi	s Date: 2 /	7/2013 04	:22 PN
Client ID:	F	Run ID: MER	RCURY_130207	A	SeqNo: 3'	105671	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Resul	lt PG		SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0039	2 0.0002	20 0.005	-0.000	01 78.6	80-120	0.00399	1.77	20	S
DUP	Sample ID: 1302162-02DDUP				Units: m	g/L	Analysi	s Date: 2 /	7/2013 04	:18 PN
Client ID:	F	Run ID: MEF	RCURY_130207	A	SeqNo: 3'	105669	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Resul	lt PC		SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Mercury	·	0.0002	20 0		0 (0-0	-0.00001	0	20	
The following	ng samples were analyzed in this ba	atch:	1302189-01E	13	02189-02E	13	302189-03E			

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPMS05		Method	: SW602	20	(Dissolve	e)			
MBLK	Sample ID: MBLKW5-020813-67639				Units: mg/	L	Analy	sis Date: 2	/11/2013 ()5:25 PM
Client ID:	Rui	n ID: ICPMS	05_130211A		SeqNo: 310 9	9576	Prep Date: 2/8	/2013	DF: 1	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Aluminum	0.006192	0.010								J
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Calcium	0.2533	0.50								J
Chromium	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Lead	U	0.0050								
Manganese	U	0.0050								
Molybdenum	U	0.0050								
Nickel	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Uranium	U	0.0050								
Zinc	0.003007	0.0050								J
MBLK	Sample ID: MBLKW5-020813-67639				Units: mg/	L	Analy	sis Date: 2	/12/2013 ()2:04 PM
Client ID:		n ID: ICPMS	05_130212A		SeqNo: 311		Prep Date: 2/8		DF: 1	
			-	SPK Ref	•	Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Boron	U	0.050								
Sodium	U	0.20								

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 67639	Instrument ID ICPMS05		Method:	SW602	20		(Dissolve	e)			
LCS Sa	ample ID: MLCSW5-020813-67639				l	Jnits: mg /	L	Analysi	s Date: 2	/11/2013 0	5:27 PM
Client ID:	Run	ID: ICPMS	05_130211A		Se	qNo: 310	9577	Prep Date: 2/8/2	2013	DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Aluminum	0.1117	0.010	0.1		0	112	80-120	0			
Arsenic	0.05058	0.0050	0.05		0	101	80-120	0			
Barium	0.05024	0.0050	0.05		0	100	80-120	0			
Cadmium	0.05148	0.0020	0.05		0	103	80-120	0			
Calcium	5.189	0.50	5		0	104	80-120	0			
Chromium	0.05108	0.0050	0.05		0	102	80-120	0			
Cobalt	0.05227	0.0050	0.05		0	105	80-120	0			
Copper	0.05136	0.0050	0.05		0	103	80-120	0			
Iron	5.088	0.20	5		0	102	80-120	0			
Lead	0.05288	0.0050	0.05		0	106	80-120	0			
Manganese	0.05154	0.0050	0.05		0	103	80-120	0			
Molybdenum	0.04945	0.0050	0.05		0	98.9	80-120	0			
Nickel	0.05042	0.0050	0.05		0	101	80-120	0			
Potassium	5.069	0.20	5		0	101	80-120	0			
Selenium	0.05183	0.0050	0.05		0	104	80-120	0			
Silver	0.05213	0.0050	0.05		0	104	80-120	0			
Sodium	5.221	1.0	5		0	104	80-120	0			
Uranium	0.1001	0.0050	0.1		0	100	80-120	0			
Zinc	0.05315	0.0050	0.05		0	106	80-120	0			
LCS Sa	ample ID: MLCSW5-020813-67639				ι	Jnits: mg /	L	Analysi	s Date: 2	/12/2013 0	2:06 PM
Client ID:	Run	ID: ICPMS	05_130212A		Se	qNo: 311	0577	Prep Date: 2/8/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5137	0.050	0.5		0	103	80-120	0			

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPMS05		Method:	SW6020		(Dissolve	9)		
MS	Sample ID: 1302162-02DMS				Units: mg/	L	Analysis Date: 2	2/11/2013	05:51 PM
Client ID:	Ru	ın ID: ICPMS	05_130211A	s	eqNo: 310 :	9595	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	0.3754	0.010	0.1	0.08538	290	75-125	0		S
Arsenic	0.05166	0.0050	0.05	0.001764	99.8	75-125	0		
Barium	0.1245	0.0050	0.05	0.07333	102	75-125	0		
Boron	1.31	0.050	0.5	0.723	117	75-125	0		
Cadmium	0.05072	0.0020	0.05	0	101	75-125	0		
Calcium	205.4	0.50	5	195.9	189	75-125	0		SEO
Chromium	0.05017	0.0050	0.05	0	100	75-125	0		
Cobalt	0.05197	0.0050	0.05	0.00258	98.8	75-125	0		
Copper	0.05874	0.0050	0.05	0.007833	102	75-125	0		
Iron	5.244	0.20	5	0.08799	103	75-125	0		
Lead	0.05166	0.0050	0.05	0	103	75-125	0		
Manganese	1.043	0.0050	0.05	0.9886	108	75-125	0		0
Molybdenum	0.05065	0.0050	0.05	0.003301	94.7	75-125	0		
Nickel	0.05995	0.0050	0.05	0.01032	99.3	75-125	0		
Potassium	5.185	0.20	5	0.3187	97.3	75-125	0		
Selenium	0.05066	0.0050	0.05	0	101	75-125	0		
Silver	0.04846	0.0050	0.05	0	96.9	75-125	0		
Sodium	80.45	0.20	5	75.22	105	75-125	0		0
Uranium	0.1148	0.0050	0.05	0.01453	201	75-125	0		S
Zinc	0.1201	0.0050	0.05	0.111	18.2	75-125	0		S

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 676	639	Instrument ID ICPMS05		Method:	SW6020		(Dissolve	e)			
MSD	Sample ID: 13	302162-02DMSD				Units: mg/	L	Analysi	s Date: 2 /	11/2013 0	5:54 PM
Client ID:		Run	D: ICPMS	05_130211A	S	eqNo: 310 :	9596	Prep Date: 2/8/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum		0.8466	0.010	0.1	0.08538	761	75-125	0.3754	77.1	25	SR
Arsenic		0.05059	0.0050	0.05	0.001764	97.7	75-125	0.05166	2.1	25	
Barium		0.1256	0.0050	0.05	0.07333	105	75-125	0.1245	0.876	25	
Boron		1.281	0.050	0.5	0.723	112	75-125	1.31	2.24	25	
Cadmium		0.05061	0.0020	0.05	0	101	75-125	0.05072	0.231	25	
Calcium		198.7	0.50	5	195.9	54.4	75-125	205.4	3.34	25	SEO
Chromium		0.04976	0.0050	0.05	0	99.5	75-125	0.05017	0.817	25	
Cobalt		0.05119	0.0050	0.05	0.00258	97.2	75-125	0.05197	1.53	25	
Copper		0.06255	0.0050	0.05	0.007833	109	75-125	0.05874	6.3	25	
Iron		5.64	0.20	5	0.08799	111	75-125	5.244	7.28	25	
Lead		0.05249	0.0050	0.05	0	105	75-125	0.05166	1.61	25	
Manganese		1.016	0.0050	0.05	0.9886	55.5	75-125	1.043	2.56	25	SO
Molybdenum		0.05104	0.0050	0.05	0.003301	95.5	75-125	0.05065	0.753	25	
Nickel		0.05914	0.0050	0.05	0.01032	97.6	75-125	0.05995	1.36	25	
Potassium		5.175	0.20	5	0.3187	97.1	75-125	5.185	0.195	25	
Selenium		0.04861	0.0050	0.05	0	97.2	75-125	0.05066	4.12	25	
Silver		0.04821	0.0050	0.05	0	96.4	75-125	0.04846	0.523	25	
Sodium		77.87	0.20	5	75.22	52.9	75-125	80.45	3.26	25	SO
Uranium		0.1148	0.0050	0.05	0.01453	201	75-125	0.1148	0.054	25	S
Zinc		0.121	0.0050	0.05	0.111	19.9	75-125	0.1201	0.707	25	S

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 676	Instrument ID ICPMS05		Method:	SW602	0		(Dissolve	e)			
DUP	Sample ID: 1302162-02DDUP				L	Jnits: mg /	L	Analysi	s Date: 2 /	11/2013 0	5:49 PM
Client ID:	Run II	D: ICPMS	05_130211A		SeqNo		9594	Prep Date: 2/8/2013		DF: 1	
			S	SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Aluminum	0.1358	0.010	0		0	0	0-0	0.08538	45.6	25	R
Arsenic	0.001544	0.0050	0		0	0	0-0	0.001764	0	25	J
Barium	0.07134	0.0050	0		0	0	0-0	0.07333	2.75	25	
Boron	0.7208	0.050	0		0	0	0-0	0.723	0.295	25	
Cadmium	U	0.0020	0		0	0	0-0	0.000088	0	25	
Chromium	U	0.0050	0		0	0	0-0	0.000339	0	25	
Cobalt	0.002315	0.0050	0		0	0	0-0	0.00258	0	25	J
Copper	0.007413	0.0050	0		0	0	0-0	0.007833	5.51	25	
Iron	0.1153	0.20	0		0	0	0-0	0.08799	0	25	J
Lead	U	0.0050	0		0	0	0-0	0.000123	0	25	
Manganese	0.9603	0.0050	0		0	0	0-0	0.9886	2.9	25	
Molybdenum	0.003106	0.0050	0		0	0	0-0	0.003301	0	25	J
Nickel	0.0105	0.0050	0		0	0	0-0	0.01032	1.73	25	
Potassium	0.3152	0.20	0		0	0	0-0	0.3187	1.11	25	
Selenium	U	0.0050	0		0	0	0-0	-0.000908	0	25	
Silver	U	0.0050	0		0	0	0-0	0.000034	0	25	
Sodium	74.01	0.20	0		0	0	0-0	75.22	1.62	25	
Uranium	0.01412	0.0050	0		0	0		0.01453	2.91	25	
Zinc	0.1104	0.0050	0		0	0	0-0	0.111	0.546	25	
DUP	Sample ID: 1302162-02DDUP				L	Jnits: mg/	L	Analysi	s Date: 2 /	12/2013 0	2:35 PM
Client ID:	Run II	D: ICPMS	05_130212A		Se	qNo: 311 0	0589	Prep Date: 2/8/2	2013	DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
											- Quui
Calcium	198.5	5.0	0		0	0	0-0	202.2	1.85	25	
The following	g samples were analyzed in this batch:	13	302189-01E	13	021	89-02E	13	02189-03E			

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

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 67652 Instrum	ment ID SV-6		Metho	d: SW827	0						
MBLK Sample ID: SBLKW2	2-130207-67652				Į	Jnits: µg/l	_	Analys	is Date: 2	/8/2013 0 ⁻	1:13 PM
Client ID:	Run II	D: SV-6_1	30208A		Se	qNo: 310	8320	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	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.917	0.20	5		0	78.3	34-129	0			
Surr: 2-Fluorobiphenyl	4.298	0.20	5		0	86	40-125				
Surr: 2-Fluorophenol	3.88	0.20	5		0	77.6	20-120				
Surr: 4-Terphenyl-d14	4.845	0.20	5		0	96.9	40-135				
Surr: Nitrobenzene-d5	4.337	0.20	5		0	86.7	41-120	0			
Surr: Phenol-d6	4.179	0.20	5		0	83.6	20-120	0			
- Carr. 1 Honor do		0.20				00.0	20 120				
LCS Sample ID: SLCSW2						Jnits: µg/l		Analys	is Date: 2	/8/2013 N	1.22 DM
Campic ib. CLOCK	2-130207-67652				Ĺ	Jinto. pg/L	-	7 ti lai y c	is Date. Z	1012013 0	1.33 F W
Client ID:		D: SV-6_1	30208A			qNo: 310		Prep Date: 2/7/		DF: 1	I.33 PIVI
		D: SV-6_1 PQL	30208A SPK Val	SPK Ref Value				•			Qual
Client ID: Analyte	Run II Result	PQL	SPK Val	Value	Se	eqNo: 310	Control Limit	Prep Date: 2/7/ RPD Ref Value	2013 %RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene	Run II Result 4.55	PQL 0.20	SPK Val	Value	Se 0	%REC 91	Control Limit 45-120	Prep Date: 2/7/ RPD Ref Value	2013 %RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene	Run II Result 4.55 4.623	PQL 0.20 0.20	SPK Val 5 5	Value	0 0	%REC 91 92.5	Control Limit 45-120 50-120	Prep Date: 2/7/ RPD Ref Value 0 0	2013 %RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene	Run II Result 4.55 4.623 4.718	PQL 0.20 0.20 0.20	SPK Val 5 5 5	Value	0 0	%REC 91 92.5 94.4	Control Limit 45-120 50-120 45-120	Prep Date: 2/7/ RPD Ref Value 0 0	2013 %RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene Naphthalene	Run II Result 4.55 4.623 4.718 4.463	PQL 0.20 0.20 0.20 0.20	5 5 5 5	Value	0 0 0	%REC 91 92.5 94.4 89.3	Control Limit 45-120 50-120 45-120 45-120	Prep Date: 2/7/ RPD Ref Value 0 0	% RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol	Result 4.55 4.623 4.718 4.463 4.284	PQL 0.20 0.20 0.20 0.20 0.20	5 5 5 5 5	Value	0 0 0 0	%REC 91 92.5 94.4 89.3 85.7	Control Limit 45-120 50-120 45-120 45-120 34-129	Prep Date: 2/7/ RPD Ref Value 0 0 0 0	%RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl	Run II Result 4.55 4.623 4.718 4.463 4.284 4.295	PQL 0.20 0.20 0.20 0.20 0.20 0.20 0.20	SPK Val 5 5 5 5 5 5 5 5 5	Value	0 0 0 0 0	%REC 91 92.5 94.4 89.3 85.7 85.9	Control Limit 45-120 50-120 45-120 45-120 34-129 40-125	Prep Date: 2/7/ RPD Ref Value 0 0 0 0 0	% RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl Surr: 2-Fluorophenol	Result 4.55 4.623 4.718 4.463 4.284 4.295 4.096	PQL 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Value	0 0 0 0 0	%REC 91 92.5 94.4 89.3 85.7 85.9 81.9	Control Limit 45-120 50-120 45-120 45-120 34-129 40-125 20-120	Prep Date: 2/7/ RPD Ref Value 0 0 0 0 0 0 0	%RPD	DF: 1 RPD	
Client ID: Analyte 1-Methylnaphthalene 2-Methylnaphthalene Benzo(a)pyrene Naphthalene Surr: 2,4,6-Tribromophenol Surr: 2-Fluorobiphenyl	Run II Result 4.55 4.623 4.718 4.463 4.284 4.295	PQL 0.20 0.20 0.20 0.20 0.20 0.20 0.20	SPK Val 5 5 5 5 5 5 5 5 5	Value	0 0 0 0 0	%REC 91 92.5 94.4 89.3 85.7 85.9	Control Limit 45-120 50-120 45-120 45-120 34-129 40-125	Prep Date: 2/7/ RPD Ref Value 0 0 0 0 0 0 0 0 0 0	%RPD	DF: 1 RPD	

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 67	652 Ins	trument ID SV-6		Metho	d: SW827	0						
LCSD	Sample ID: SLC	SDW2-130207-67652				Į	Jnits: μg/L		Analys	is Date: 2/	8/2013 01	:52 PM
Client ID:		Run ID	: SV-6_1	30208A		Se	eqNo: 310	3323	Prep Date: 2/7/2	2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnap	hthalene	4.365	0.20	5		0	87.3	45-120	4.55	4.13	20	
2-Methylnap	hthalene	4.423	0.20	5		0	88.5	50-120	4.623	4.44	20	
Benzo(a)pyro	ene	4.773	0.20	5		0	95.5	45-120	4.718	1.16	20	
Naphthalene	!	4.285	0.20	5		0	85.7	45-120	4.463	4.07	20	
Surr: 2,4,6	6-Tribromophenol	4.279	0.20	5		0	85.6	34-129	4.284	0.118	0	
Surr: 2-Flu	uorobiphenyl	4.281	0.20	5		0	85.6	40-125	4.295	0.322	0	
Surr: 2-Flu	uorophenol	4.05	0.20	5		0	81	20-120	4.096	1.12	0	
Surr: 4-Te	erphenyl-d14	4.878	0.20	5		0	97.6	40-135	4.973	1.92	0	
Surr: Nitro	benzene-d5	4.191	0.20	5		0	83.8	41-120	4.235	1.04	0	
Surr: Phei	nol-d6	4.006	0.20	5		0	80.1	20-120	4.012	0.155	0	

MS	Sample ID: 1302166-02AMS				ı	Jnits: µg/L	-	Analys	sis Date: 2	2/8/2013 02	::35 PM
Client ID:		Run I	D: SV-6_1	30208A	Se	eqNo: 310	8326	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-Methyln	naphthalene	4.507	0.20	5	0.041	89.3	45-120	0)		
2-Methyln	naphthalene	4.563	0.20	5	0.06144	90	50-120	0)		
Benzo(a)	pyrene	4.668	0.20	5	0	93.4	45-120	0)		
Naphthale	ene	4.369	0.20	5	0.05768	86.2	45-120	0)		
Surr: 2,	,4,6-Tribromophenol	4.338	0.20	5	0	86.8	34-129	0)		
Surr: 2	-Fluorobiphenyl	4.351	0.20	5	0	87	40-125	0)		
Surr: 2-	-Fluorophenol	3.971	0.20	5	0	79.4	20-120	0)		
Surr: 4	-Terphenyl-d14	5.066	0.20	5	0	101	40-135	0)		
Surr: N	litrobenzene-d5	4.259	0.20	5	0	85.2	41-120	0)		
Surr: P	Phenol-d6	3.95	0.20	5	0	79	20-120	0)		

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: 67652 Instrument ID SV-6 Method: SW8270

MSD Sample ID: 1302166-0	2AMSD			ţ	Jnits: µg/l	-	Analysis Date: 2/8/2013 02:54 P			
Client ID:	Run II	D: SV-6_1	30208A	Se	eqNo: 310	8327	Prep Date: 2/7/2	2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.55	0.20	5	0.041	90.2	45-120	4.507	0.951	20	
2-Methylnaphthalene	4.617	0.20	5	0.06144	91.1	50-120	4.563	1.17	20	
Benzo(a)pyrene	4.952	0.20	5	0	99	45-120	4.668	5.91	20	
Naphthalene	4.415	0.20	5	0.05768	87.1	45-120	4.369	1.03	20	
Surr: 2,4,6-Tribromophenol	4.292	0.20	5	0	85.8	34-129	4.338	1.06	0	
Surr: 2-Fluorobiphenyl	4.291	0.20	5	0	85.8	40-125	4.351	1.38	0	
Surr: 2-Fluorophenol	3.848	0.20	5	0	77	20-120	3.971	3.15	0	
Surr: 4-Terphenyl-d14	5.26	0.20	5	0	105	40-135	5.066	3.77	0	
Surr: Nitrobenzene-d5	4.13	0.20	5	0	82.6	41-120	4.259	3.08	0	
Surr: Phenol-d6	3.943	0.20	5	0	78.9	20-120	3.95	0.168	0	

The following samples were analyzed in this batch:

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142338	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	BLKW-130207-R142338				Units: µg/l	L	Analy	sis Date: 2	/7/2013 0	1:04 PM
Client ID:	Run II	D: VOA4_	130207A		SeqNo: 310	6182	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 43.22	1.0	50		0 86.4	71-125		0		
Surr: 4-Bromofluorobenz	ene 47.27	1.0	50		0 94.5	70-125		0		
Surr: Dibromofluorometh	ane 48.09	1.0	50		0 96.2	74-125		0		
Surr: Toluene-d8	48.74	1.0	50		0 97.5	78-123		0		-

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142338	Instrument ID VOA4		Method	l: SW8260	ı					
LCS Sample ID: Y	VLCSW-130207-R142338				Units: µg/	′L	Analys	sis Date: 2	2/7/2013 1	1:52 AM
Client ID:	Run	ID: VOA4_	130207A	;	SeqNo: 31 (06180	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	54.12	1.0	50	() 108	80-120	0)		
1,1,2,2-Tetrachloroethane	47.37	1.0	50	(94.7	74-123	0)		
1,1,2-Trichloroethane	49.93	1.0	50	(99.9	80-120	0)		
1,1-Dichloroethane	45.83	1.0	50	(91.7	80-120	0)		
1,1-Dichloroethene	53.33	1.0	50	(107	80-120	C)		
1,2-Dibromoethane	54.67	1.0	50	(109	80-120	0)		
1,2-Dichloroethane	47.37	1.0	50	(94.7	79-120	C)		
Benzene	48.2	1.0	50	(96.4	80-120	0)		
Carbon tetrachloride	58.64	1.0	50	() 117	79-120	0)		
Chloroform	46.43	1.0	50	(92.9	80-120	0)		
Ethylbenzene	50.46	1.0	50	(101	80-120	C)		
Methylene chloride	47.39	2.0	50	(94.8	75-125	0)		
Tetrachloroethene	55.58	1.0	50	() 111	80-120	C)		
Toluene	49.84	1.0	50	(99.7	80-121	0)		
Trichloroethene	54.31	1.0	50	(109	80-120	C)		
Vinyl chloride	48.12	1.0	50	(96.2	75-125	0)		
Xylenes, Total	147.3	1.0	150	(98.2	80-124	0)		
Surr: 1,2-Dichloroethane	e-d4 40.29	1.0	50	(80.6	71-125	0)		
Surr: 4-Bromofluorobenz	zene 51.07	1.0	50	() 102	70-125	, O)		
Surr: Dibromofluorometh	nane 46.75	1.0	50	(93.5	74-125)		

48.46

1.0

50

0

96.9

78-123

0

Surr: Toluene-d8

Client: Navajo Refining Company

Work Order: 1302189

Batch ID: R142338

Vinyl chloride

Xylenes, Total

Note:

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Project: RO Discharge Sampling

Instrument ID VOA4

46

144.2

42.39

51.83

48.24

48.94

1.0

1.0

1.0

1.0

1.0

1.0

50

150

50

50

50

50

0

0

0

0

0

0

92

96.1

84.8

104

96.5

97.9

75-125

80-124

71-125

70-125

74-125

78-123

48.12

147.3

40.29

51.07

46.75

48.46

4.5

2.14

5.09

1.47

3.14

0.98

20

20

20

20

20

20

LCSD Sample ID: VLCSDV	V-130207-R142338			ı	Jnits: µg/I	_	Analysi	is Date: 2/	7/2013 12	2:16 PN
Client ID:	Run II	D: VOA4_	130207A	Se	eqNo: 310	6181	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	53.04	1.0	50	0	106	80-120	54.12	2.03	20	
1,1,2,2-Tetrachloroethane	47.24	1.0	50	0	94.5	74-123	47.37	0.272	20	
1,1,2-Trichloroethane	50.09	1.0	50	0	100	80-120	49.93	0.316	20	
1,1-Dichloroethane	45.24	1.0	50	0	90.5	80-120	45.83	1.3	20	
1,1-Dichloroethene	51.67	1.0	50	0	103	80-120	53.33	3.17	20	
1,2-Dibromoethane	53.7	1.0	50	0	107	80-120	54.67	1.8	20	
1,2-Dichloroethane	46.81	1.0	50	0	93.6	79-120	47.37	1.19	20	
Benzene	46.92	1.0	50	0	93.8	80-120	48.2	2.7	20	
Carbon tetrachloride	55.21	1.0	50	0	110	79-120	58.64	6.03	20	
Chloroform	45.85	1.0	50	0	91.7	80-120	46.43	1.24	20	
Ethylbenzene	49.1	1.0	50	0	98.2	80-120	50.46	2.75	20	
Methylene chloride	46.39	2.0	50	0	92.8	75-125	47.39	2.13	20	
Tetrachloroethene	53.36	1.0	50	0	107	80-120	55.58	4.07	20	
Toluene	48.56	1.0	50	0	97.1	80-121	49.84	2.58	20	
Trichloroethene	52.61	1.0	50	0	105	80-120	54.31	3.17	20	

Method: SW8260

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142338	Instrument ID VOA4		Method	: SW826	0						
MS Sample ID:	1302212-01AMS				ι	Jnits: µg/L		Analy	sis Date: 2	2/7/2013 0	7:57 PM
Client ID:	Ru	ın ID: VOA4 _	130207A		Se	qNo: 310 6	6199	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	53.97	1.0	50		0	108	80-120	()		
1,1,2,2-Tetrachloroethane	45.9	1.0	50		0	91.8	74-123	()		
1,1,2-Trichloroethane	49.51	1.0	50		0	99	80-120	()		
1,1-Dichloroethane	44.96	1.0	50		0	89.9	80-120	()		
1,1-Dichloroethene	54.68	1.0	50		0	109	80-120	()		
1,2-Dibromoethane	53.74	1.0	50		0	107	80-120	()		
1,2-Dichloroethane	47.08	1.0	50		0	94.2	79-120	()		
Benzene	48	1.0	50		0	96	80-120	()		
Carbon tetrachloride	58.28	1.0	50		0	117	79-120	()		
Chloroform	45.95	1.0	50		0	91.9	80-120	()		
Ethylbenzene	49.44	1.0	50		0	98.9	80-120	()		
Methylene chloride	46.21	2.0	50		0	92.4	75-125	()		
Tetrachloroethene	54.73	1.0	50		0	109	80-120	()		
Toluene	49.36	1.0	50		0	98.7	80-121	()		
Trichloroethene	54.11	1.0	50		0	108	80-120	()		
Vinyl chloride	49.09	1.0	50		0	98.2	75-125	()		
Xylenes, Total	144.9	1.0	150		0	96.6	80-124	()		
Surr: 1,2-Dichloroethane	e-d4 42.45	1.0	50		0	84.9	71-125	()		
Surr: 4-Bromofluorobenz	zene 51.15	1.0	50		0	102	70-125	()		
Surr: Dibromofluorometh	nane 47.86	1.0	50		0	95.7	74-125	()		
Surr: Toluene-d8	48.37	1.0	50		0	96.7	78-123	()		

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142338	Instrument ID VOA4	Method:	SW8260
Dalcii ID. K 142330	Institution to VOA4	Metriou.	300200

MSD Sample ID: 1302212-0	1AMSD				Units: µg/I	_	Analysi	is Date: 2/	7/2013 08	3:21 PN
Client ID:	Run I	D: VOA4_	130207A	S	eqNo: 310	6200	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	57.01	1.0	50	0	114	80-120	53.97	5.48	20	
1,1,2,2-Tetrachloroethane	48.94	1.0	50	0	97.9	74-123	45.9	6.42	20	
1,1,2-Trichloroethane	50.75	1.0	50	0	101	80-120	49.51	2.47	20	
1,1-Dichloroethane	48.16	1.0	50	0	96.3	80-120	44.96	6.87	20	
1,1-Dichloroethene	56.88	1.0	50	0	114	80-120	54.68	3.95	20	
1,2-Dibromoethane	56.5	1.0	50	0	113	80-120	53.74	5	20	
1,2-Dichloroethane	51.51	1.0	50	0	103	79-120	47.08	8.98	20	
Benzene	52.19	1.0	50	0	104	80-120	48	8.37	20	
Carbon tetrachloride	63.72	1.0	50	0	127	79-120	58.28	8.92	20	S
Chloroform	49.3	1.0	50	0	98.6	80-120	45.95	7.04	20	
Ethylbenzene	52.5	1.0	50	0	105	80-120	49.44	5.99	20	
Methylene chloride	48.73	2.0	50	0	97.5	75-125	46.21	5.31	20	
Tetrachloroethene	57.75	1.0	50	0	115	80-120	54.73	5.36	20	
Toluene	51.86	1.0	50	0	104	80-121	49.36	4.94	20	
Trichloroethene	58.65	1.0	50	0	117	80-120	54.11	8.06	20	
Vinyl chloride	52.37	1.0	50	0	105	75-125	49.09	6.45	20	
Xylenes, Total	153.8	1.0	150	0	103	80-124	144.9	5.99	20	
Surr: 1,2-Dichloroethane-d4	43	1.0	50	0	86	71-125	42.45	1.3	20	
Surr: 4-Bromofluorobenzene	50.33	1.0	50	0	101	70-125	51.15	1.61	20	
Surr: Dibromofluoromethane	48.55	1.0	50	0	97.1	74-125	47.86	1.44	20	
Surr: Toluene-d8	48.73	1.0	50	0	97.5	78-123	48.37	0.743	20	

The following samples were analyzed in this batch:

1302189-01A	1302189-02A	1302189-03A	
1302189-04A	1302189-05A		

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142498	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	BLKW2-130208-R142498				Units: µg/l	L	Analy	sis Date: 2	/8/2013 1	1:09 PM
Client ID:	Run ID	: VOA4_	130208B		SeqNo: 310	8013	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 49.71	1.0	50		0 99.4	71-125		0		
Surr: 4-Bromofluorobenze	ene 50.66	1.0	50		0 101	70-125		0		
Surr: Dibromofluorometha	ane 49.37	1.0	50		0 98.7	74-125		0		
Surr: Toluene-d8	52.58	1.0	50		0 105	78-123		0		

Navajo Refining Company Client:

Work Order: 1302189

RO Discharge Sampling Project:

Batch ID: R142498	Instrument ID VOA4		Method	: SW8260	0						
LCS Sample ID: V	/LCSW2-130208-R142498				U	Inits: μg/L		Analys	sis Date: 2	/8/2013 0	9:57 PM
Client ID:	Run I): VOA4_	130208B		Se	qNo: 310 8	3009	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	55.09	1.0	50		0	110	80-120	C)		
1,1,2,2-Tetrachloroethane	49.36	1.0	50		0	98.7	74-123	C)		
1,1,2-Trichloroethane	51.51	1.0	50		0	103	80-120	C)		
1,1-Dichloroethane	51.83	1.0	50		0	104	80-120	C)		
1,1-Dichloroethene	54.88	1.0	50		0	110	80-120	C)		
1,2-Dibromoethane	54.57	1.0	50		0	109	80-120	C)		
1,2-Dichloroethane	50.55	1.0	50		0	101	79-120	C)		
Benzene	50.32	1.0	50		0	101	80-120	C)		
Carbon tetrachloride	50.54	1.0	50		0	101	79-120	C)		
Chloroform	50.55	1.0	50		0	101	80-120	C)		
Ethylbenzene	51.95	1.0	50		0	104	80-120	C)		
Methylene chloride	52.11	2.0	50		0	104	75-125	C)		
Tetrachloroethene	53.98	1.0	50		0	108	80-120	C)		
Toluene	52.03	1.0	50		0	104	80-121	C)		
Trichloroethene	53.32	1.0	50		0	107	80-120	C)		
Vinyl chloride	56.32	1.0	50		0	113	75-125	C	1		
Xylenes, Total	153.9	1.0	150		0	103	80-124	C)		
Surr: 1,2-Dichloroethane	e-d4 47.96	1.0	50		0	95.9	71-125	C	1		
Surr: 4-Bromofluorobenz	zene 53.9	1.0	50		0	108	70-125	C)		
Surr: Dibromofluorometh	nane 49.34	1.0	50		0	98.7	74-125	C	1		
Surr: Toluene-d8	51.2	1.0	50		0	102	78-123	C)		

Client: Navajo Refining Company

Work Order: 1302189

Batch ID: R142498

Vinyl chloride

Xylenes, Total

Note:

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Project: RO Discharge Sampling

Instrument ID VOA4

Dater ID. K142430	IIII ID VOA4		IVICUIO	u. 3440200						
LCSD Sample ID: VLCSD	W2-130208-R142498				Units: µg/I	_	Analys	s Date: 2 /	8/2013 10):21 PM
Client ID:	Run ID	: VOA4_	130208B	Se	eqNo: 310	8011	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	54.6	1.0	50	0	109	80-120	55.09	0.901	20	
1,1,2,2-Tetrachloroethane	49.32	1.0	50	0	98.6	74-123	49.36	0.068	20	
1,1,2-Trichloroethane	50.72	1.0	50	0	101	80-120	51.51	1.54	20	
1,1-Dichloroethane	50.95	1.0	50	0	102	80-120	51.83	1.71	20	
1,1-Dichloroethene	54.92	1.0	50	0	110	80-120	54.88	0.0699	20	
1,2-Dibromoethane	53.64	1.0	50	0	107	80-120	54.57	1.71	20	
1,2-Dichloroethane	50.43	1.0	50	0	101	79-120	50.55	0.233	20	
Benzene	49.36	1.0	50	0	98.7	80-120	50.32	1.93	20	
Carbon tetrachloride	49.16	1.0	50	0	98.3	79-120	50.54	2.78	20	
Chloroform	49.36	1.0	50	0	98.7	80-120	50.55	2.36	20	
Ethylbenzene	50.31	1.0	50	0	101	80-120	51.95	3.2	20	
Methylene chloride	51.14	2.0	50	0	102	75-125	52.11	1.88	20	
Tetrachloroethene	52.07	1.0	50	0	104	80-120	53.98	3.59	20	
Toluene	50.24	1.0	50	0	100	80-121	52.03	3.5	20	
Trichloroethene	51.88	1.0	50	0	104	80-120	53.32	2.73	20	

Method: SW8260

54.47

149.4

47.27

53.48

49.25

51.32

1.0

1.0

1.0

1.0

1.0

1.0

50

150

50

50

50

50

0

0

0

0

0

0

109

99.6

94.5

107

98.5

103

75-125

80-124

71-125

70-125

74-125

78-123

56.32

153.9

47.96

53.9

49.34

51.2

3.34

2.94

1.45

0.798

0.193

0.233

20

20

20

20

20

20

Navajo Refining Company Client:

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R	142498 Instrument ID V	VOA4		Metho	d: SW826	50						-
мѕ	Sample ID: 1302236-06AMS	3				Units: μg/l	_	Analy	sis Date: 2	/9/2013 01	1:35 AM	•
Client ID:		Run I	: VOA4_	130208B		SeqNo: 310	8165	Prep Date:		DF: 25	500	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

MS Sample ID: 1302236-0	6AMS			ı	Units: µg/l	-	Analy	sis Date: 2	/9/2013 0	1:35 AM
Client ID:	Run I	D: VOA4_	130208B	Se	eqNo: 310	8165	Prep Date:		DF: 2 5	500
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	133700	2,500	125000	0	107	80-120	()		
1,1,2,2-Tetrachloroethane	118800	2,500	125000	0	95	74-123	()		
1,1,2-Trichloroethane	124000	2,500	125000	0	99.2	80-120	()		
1,1-Dichloroethane	125300	2,500	125000	0	100	80-120	()		
1,1-Dichloroethene	133000	2,500	125000	0	106	80-120	()		
1,2-Dibromoethane	128600	2,500	125000	0	103	80-120	()		
1,2-Dichloroethane	122700	2,500	125000	0	98.1	79-120	()		
Benzene	120300	2,500	125000	0	96.3	80-120	()		
Carbon tetrachloride	119000	2,500	125000	0	95.2	79-120	()		
Chloroform	129400	2,500	125000	8729	96.5	80-120	()		
Ethylbenzene	128100	2,500	125000	4531	98.9	80-120	()		
Methylene chloride	126400	5,000	125000	3717	98.1	75-125	()		
Tetrachloroethene	125900	2,500	125000	0	101	80-120	()		
Toluene	123700	2,500	125000	0	99	80-121	()		
Trichloroethene	125300	2,500	125000	0	100	80-120	()		
Vinyl chloride	134600	2,500	125000	0	108	75-125	()		
Xylenes, Total	418500	2,500	375000	49150	98.5	80-124	()		
Surr: 1,2-Dichloroethane-d4	120700	2,500	125000	0	96.6	71-125	()		
Surr: 4-Bromofluorobenzene	134800	2,500	125000	0	108	70-125	()		
Surr: Dibromofluoromethane	125100	2,500	125000	0	100	74-125)		
Surr: Toluene-d8	129500	2,500	125000	0	104	78-123	()		

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142498	Instrument ID VOA4	Method:	SW8260
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MSD Sample ID: 1302236-0	6AMSD			ı	Units: µg/L	-	Analysi	s Date: 2/	9/2013 01	:59 AN
Client ID:	Run I	D: VOA4_	130208B	Se	eqNo: 310	8166	Prep Date:		DF: 25	00
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	126500	2,500	125000	0	101	80-120	133700	5.49	20	
1,1,2,2-Tetrachloroethane	114100	2,500	125000	0	91.3	74-123	118800	3.98	20	
1,1,2-Trichloroethane	121100	2,500	125000	0	96.9	80-120	124000	2.42	20	
1,1-Dichloroethane	119600	2,500	125000	0	95.7	80-120	125300	4.61	20	
1,1-Dichloroethene	126100	2,500	125000	0	101	80-120	133000	5.28	20	
1,2-Dibromoethane	125900	2,500	125000	0	101	80-120	128600	2.14	20	
1,2-Dichloroethane	120200	2,500	125000	0	96.2	79-120	122700	2.05	20	
Benzene	115900	2,500	125000	0	92.7	80-120	120300	3.75	20	
Carbon tetrachloride	114600	2,500	125000	0	91.7	79-120	119000	3.76	20	
Chloroform	126000	2,500	125000	8729	93.8	80-120	129400	2.64	20	
Ethylbenzene	123600	2,500	125000	4531	95.2	80-120	128100	3.62	20	
Methylene chloride	122300	5,000	125000	3717	94.8	75-125	126400	3.31	20	
Tetrachloroethene	121800	2,500	125000	0	97.5	80-120	125900	3.3	20	
Toluene	120100	2,500	125000	0	96.1	80-121	123700	2.94	20	
Trichloroethene	120400	2,500	125000	0	96.3	80-120	125300	3.98	20	
Vinyl chloride	126900	2,500	125000	0	102	75-125	134600	5.88	20	
Xylenes, Total	409000	2,500	375000	49150	96	80-124	418500	2.29	20	
Surr: 1,2-Dichloroethane-d4	119500	2,500	125000	0	95.6	71-125	120700	0.999	20	
Surr: 4-Bromofluorobenzene	135500	2,500	125000	0	108	70-125	134800	0.5	20	
Surr: Dibromofluoromethane	123000	2,500	125000	0	98.4	74-125	125100	1.7	20	
Surr: Toluene-d8	129000	2,500	125000	0	103	78-123	129500	0.346	20	

The following samples were analyzed in this batch:

Note:

1302189-01A

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142275	Instrument ID ICS2100		Method	d: E300		(Dissolve)			
MBLK Sample ID:	WBLKW2-R142275				Units: mg	/L	Analys	sis Date: 2/	6/2013 11	:17 AN
Client ID:	Run	ID: ICS210	0_130206A		SeqNo: 310	4639	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Fluoride	U	0.10								
Nitrogen, Nitrate (As N)	U	0.10								
Nitrogen, Nitrite (As N)	U	0.10								
Surr: Selenate (surr)	4.316	0.10	5		0 86.3	85-115	0)		
.CS Sample ID:	WLCSW2-R142275				Units: mg	/L	Analys	sis Date: 2/	6/2013 11	:31 AN
Client ID:	Run	ID: ICS210	0_130206A		SeqNo: 310	4640	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
- luoride	3.608	0.10	4		0 90.2	90-110	0)		
Nitrogen, Nitrate (As N)	4.033	0.10	4		0 101	90-110	0)		
Nitrogen, Nitrite (As N)	4.332	0.10	4		0 108	90-110	0)		
Surr: Selenate (surr)	4.436	0.10	5		0 88.7	85-115	0)		
MS Sample ID:	13011010-20BMS				Units: mg	/L	Analys	sis Date: 2/	6/2013 07	':14 PI
Client ID:	Run	ID: ICS210	0_130206A		SeqNo: 310	4667	Prep Date:		DF: 5	
	Run Result	ID: ICS210 PQL	0_130206A SPK Val	SPK Ref Value	SeqNo: 310 %REC	Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 5 RPD Limit	Qua
Analyte					%REC	Control	RPD Ref		RPD	Qua
Client ID: Analyte Fluoride Nitrogen, Nitrate (As N)	Result	PQL	SPK Val	Value 0.12	%REC	Control Limit	RPD Ref Value)	RPD	Qua
Analyte Fluoride Nitrogen, Nitrate (As N)	Result 8.773	PQL 0.50	SPK Val	Value 0.12	%REC 5 86.5	Control Limit	RPD Ref Value)	RPD	
analyte Fluoride Jitrogen, Nitrate (As N)	Result 8.773 10.03	PQL 0.50 0.50	SPK Val 10 10	Value 0.12	%REC 5 86.5 0 100	Control Limit 80-120 80-120	RPD Ref Value)	RPD	
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr)	Result 8.773 10.03 10.57	PQL 0.50 0.50 0.50	SPK Val 10 10	Value 0.12	%REC 5 86.5 0 100 0 106	Control Limit 80-120 80-120 80-120 85-115	RPD Ref Value)	RPD Limit	H
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr) MSD Sample ID:	Result 8.773 10.03 10.57 21.26 13011010-20BMSD	PQL 0.50 0.50 0.50	SPK Val 10 10 10 25	Value 0.12	%REC 5 86.5 0 100 0 106 0 85.1	Control Limit 80-120 80-120 80-120 85-115	RPD Ref Value		RPD Limit	H
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr) MSD Sample ID: Client ID:	Result 8.773 10.03 10.57 21.26 13011010-20BMSD	PQL 0.50 0.50 0.50 0.50	SPK Val 10 10 10 25	Value 0.12	%REC 5 86.5 0 100 0 106 0 85.1 Units: mg	Control Limit 80-120 80-120 80-120 85-115	RPD Ref Value 0 0 0 0 Analys		RPD Limit	Н Н
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr) MSD Sample ID: Client ID: Analyte	Result 8.773 10.03 10.57 21.26 13011010-20BMSD Run	PQL 0.50 0.50 0.50 0.50	SPK Val 10 10 25 0_130206A	Value 0.12 SPK Ref	%REC 5 86.5 0 100 0 106 0 85.1 Units: mg SeqNo: 310 %REC	Control Limit 80-120 80-120 80-120 85-115 /L 4669 Control	RPD Ref Value 0 0 0 0 Analys Prep Date: RPD Ref	sis Date: 2 /	RPD Limit 6/2013 07 DF: 5 RPD	Н
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr) MSD Sample ID: Client ID: Analyte Fluoride	Result 8.773 10.03 10.57 21.26 13011010-20BMSD Run Result	PQL 0.50 0.50 0.50 0.50	SPK Val 10 10 25 0_130206A SPK Val	Value 0.12 SPK Ref Value 0.12	%REC 5 86.5 0 100 0 106 0 85.1 Units: mg SeqNo: 310 %REC	Control Limit 80-120 80-120 80-120 85-115 //L Control Limit	RPD Ref Value 0 0 0 0 Analys Prep Date: RPD Ref Value	sis Date: 2 // %RPD 3 4.99	RPD Limit 6/2013 07 DF: 5 RPD Limit	Н Н
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr)	Result 8.773 10.03 10.57 21.26 13011010-20BMSD Run Result 9.222	PQL 0.50 0.50 0.50 0.50 ID: ICS210 PQL 0.50	SPK Val 10 10 10 25 0_130206A SPK Val 10	Value 0.12 SPK Ref Value 0.12	%REC 5 86.5 0 100 0 106 0 85.1 Units: mg SeqNo: 310 %REC 5 91	Control Limit 80-120 80-120 80-120 85-115 //L 4669 Control Limit 80-120	RPD Ref Value 0 0 0 0 Analys Prep Date: RPD Ref Value 8.773	sis Date: 2 / %RPD 3 4.99 4.12	RPD Limit 6/2013 07 DF: 5 RPD Limit	H H 7:29 PI Qua
Analyte Fluoride Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) Surr: Selenate (surr) MSD Sample ID: Client ID: Analyte Fluoride Nitrogen, Nitrate (As N)	Result 8.773 10.03 10.57 21.26 13011010-20BMSD Run Result 9.222 10.45	PQL 0.50 0.50 0.50 0.50 ID: ICS210 PQL 0.50 0.50	SPK Val 10 10 25 0_130206A SPK Val 10 10	Value 0.12 SPK Ref Value 0.12	%REC 5 86.5 0 100 0 106 0 85.1 Units: mg SeqNo: 310 %REC 5 91 0 105	Control Limit 80-120 80-120 80-120 85-115 /L 4669 Control Limit 80-120 80-120	Analys Prep Date: RPD Ref Value	%RPD 3 4.99 4.12 2.65	RPD Limit 6/2013 07 DF: 5 RPD Limit 20 20	H H 7:29 PI Qua

Navajo Refining Company

Work Order: 1302189

Client:

RO Discharge Sampling Project:

QC BATCH REPORT

Batch ID: R	142545 Instrument	ID Balance1		Method	d: M2540 0	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-02081	3-R142545				Units: m ạ	J/L	Analys	sis Date: 2/	8/2013 04	:15 PN
Client ID:		Run II	D: BALAN	CE1_13020	8E	SeqNo: 31	09325	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
Total Dissol	lved Solids (Residue, Fil	U	10								
LCS	Sample ID: WLCS-02081	3-R142545				Units: m	j/L	Analys	sis Date: 2/	8/2013 04	:15 PN
Client ID:		Run II	D: Balan	CE1_13020	8E	SeqNo: 31	09326	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	940	10	1000		0 94	85-115	0			
DUP	Sample ID: 1302121-01F	DUP				Units: m	j/L	Analys	sis Date: 2/	8/2013 04	:15 PN
Client ID:		Run II	D: BALAN	CE1_13020	8E	SeqNo: 31	09329	Prep Date:		DF: 1	
					SPK Ref		Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
	lved Solids (Residue, Fil	Result 496	PQL 10	SPK Val	Value	%REC	,	Value 498			Qual
Total Dissol	lved Solids (Residue, Fil Sample ID: 1302189-01G	496			Value		0-0	498		20	
Total Dissol	Sample ID: 1302189-01G	496 DUP	10		Value	0 0	0-0 g/L	498	0.402	20	
	Sample ID: 1302189-01G	496 DUP	10	0	Value	0 0 Units: m g	0-0 g/L 09492 Control	498 Analys	0.402	20 / 8/2013 04	

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R142615	Instrument ID ICS2100		Method	d: E300			(Dissolve	!)			
MBLK Sample ID:	WBLKW1-R142615				L	Jnits: mg/	L	Analys	is Date: 2/	12/2013 1	0:37 AN
Client ID:	Run II	D: ICS210	0_130212A		Se	qNo: 311 (0343	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	U	0.10									
Nitrogen, Nitrate (As N)	0.064	0.10									J
Nitrogen, Nitrite (As N)	U	0.10									
Surr: Selenate (surr)	4.937	0.10	5		0	98.7	85-115	0			
LCS Sample ID:	WLCSW1-R142615				L	Jnits: mg /	L	Analys	is Date: 2/	12/2013 1	0:52 AN
Client ID:	Run IE	D: ICS210	0_130212A		Se	qNo: 311 (0344	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	3.832	0.10	4		0	95.8	90-110	0			
Nitrogen, Nitrate (As N)	4.379	0.10	4		0	109	90-110	0			
Nitrogen, Nitrite (As N)	4.304	0.10	4		0	108	90-110	0			
Surr: Selenate (surr)	5.024	0.10	5		0	100	85-115	0			
MS Sample ID:	1302189-01GMS				L	Jnits: mg/	L	Analys	is Date: 2/	12/2013 1	2:58 PI
Client ID: MW-116	Run I	D: ICS210	0_130212A		Se	qNo: 311	0358	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.761	0.10	2	1.30	07	72.7	80-120	0			S
Nitrogen, Nitrate (As N)	3.165	0.10	2	1.36	67	89.9	80-120	0			Н
Nitrogen, Nitrite (As N)	2.338	0.10	2		0	117	80-120	0			Н
Surr: Selenate (surr)	4.387	0.10	5		0	87.7	85-115	0			
MSD Sample ID:	1302189-01GMSD				L	Jnits: mg/	L	Analys	is Date: 2/	12/2013 0	1:12 PN
Client ID: MW-116	Run II	D: ICS210	0_130212A		Se	qNo: 311 (0360	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.747	0.10	2	1.30	07	72	80-120	2.761	0.508	20	S
Nitrogen, Nitrate (As N)	3.201	0.10	2	1.36	67	91.7	80-120	3.165	1.13	20	Н
Nitrogen, Nitrite (As N)	2.324	0.10	2		0	116	80-120	2.338	0.601	20	Н
Surr: Selenate (surr)	4.498	0.10	5		0	90	85-115	4.387	2.5	20	
The following samples v	were analyzed in this batch:	13	302189-01G								

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R	R142650 Instrument	D UV-2450		Method	: M4500	CN E&G	(Dissolve)			
MBLK	Sample ID: WBLKW1-02	1213-R142650				Units: mg/	'L	Analys	sis Date: 2/	12/2013 1	1:45 AM
Client ID:		Run II): UV-245	0_130212D		SeqNo: 311	1136	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U	0.020								
LCS	Sample ID: WLCSW1-02	1213-R142650				Units: mg/	'L	Analys	sis Date: 2/	12/2013 ′	1:45 AM
Client ID:		Run II	D: UV-245	0_130212D		SeqNo: 311	1137	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.162	0.020	0.2		0 81	80-120	0	ı		
LCSD	Sample ID: WLCSDW1-0	21213-R14265)			Units: mg/	′L	Analys	sis Date: 2/	12/2013	1:45 AM
Client ID:		Run II): UV-245	0_130212D		SeqNo: 311	1147	Prep Date:		DF: 1	
					SPK Ref		Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
		Result 0.166	PQL 0.020	SPK Val		%REC 0 83		Value 0.162		Limit 20	Qual
Cyanide	Sample ID: 1302217-01B	0.166					Limit 80-120	0.162		20	
Cyanide	Sample ID: 1302217-01B	0.166 MS	0.020			0 83	Limit 80-120 'L	0.162	2.44	20	
Analyte Cyanide MS Client ID: Analyte	Sample ID: 1302217-01B	0.166 MS	0.020	0.2		0 83	Limit 80-120 'L	0.162 Analys	2.44	20 / 12/2013 1	
Cyanide MS Client ID:	Sample ID: 1302217-01B	0.166 MS Run II	0.020 D: UV-245	0.2 60_130212D	Value SPK Ref	0 83 Units: mg/ SeqNo: 311 %REC	80-120 /L 1146 Control	0.162 Analys Prep Date: RPD Ref	2.44 sis Date: 2 / %RPD	20 12/2013 1 DF: 1 RPD	11:45 AM

Navajo Refining Company

Work Order: 1302189

Client:

RO Discharge Sampling Project:

Batch ID: R	142723 Instrument I	D Balance1		Metho	d: M2540	С		(Dissolve	e)			
MBLK	Sample ID: WBLK-02121	3-R142723				Ur	nits: mg/	L	Analys	is Date: 2	/12/2013 1	0:15 AN
Client ID:		Run I	D: BALAN	CE1_13021	12C	Seq	No: 311 2	2460	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	U	10									
LCS	Sample ID: WLCS-02121	3-R142723				Un	nits: mg/	L	Analys	is Date: 2	/12/2013 1	0:15 AN
Client ID:		Run I	D: BALAN	CE1_13021	12C	Seq	No: 311 2	2461	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	964	10	1000		0	96.4	85-115	0			
DUP	Sample ID: 1302159-01C	DUP				Ur	nits: mg/	L __	Analys	is Date: 2	/12/2013 1	0:15 AM
Client ID:		Run I	D: BALAN	CE1_13021	12C	Seq	No: 311 2	2436	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	230	10	0		0	0	0-0	216	6.28	20	
DUP	Sample ID: 1302276-01K	DUP				Ur	nits: mg/	L	Analys	is Date: 2	/12/2013 1	0:15 AM
Client ID:		Run I	D: BALAN	CE1_13021	12C	Seq	No: 311 2	2993	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	1960	10	0		0	0	0-0	1960	0	20	
The followi	ing samples were analyzed	in this batch:	13	302189-02G	13	10218	9-03G					

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1302189

Project: RO Discharge Sampling

Batch ID: R	142773	Instrument ID ICS3K2		Metho	d: E300			(Dissolve)			
MBLK	Sample ID:	WBLKW1-R142773				L	Jnits: mg /	L	Analys	is Date: 2/	14/2013 1	2:37 AN
Client ID:		Run II	D: ICS3K2	2_130214B		Se	qNo: 311 :	3452	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.50									
Sulfate		U	0.50									
Surr: Sele	enate (surr)	5.088	0.10	5		0	102	85-115	0			
LCS	Sample ID:	WLCSW1-R142773				L	Jnits: mg/	L	Analys	is Date: 2/	14/2013 1	2:59 AM
Client ID:		Run II	D: ICS3K2	2_130214B		Se	qNo: 311 :	3454	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		18.08	0.50	20		0	90.4	90-110	0			
Sulfate		18.57	0.50	20		0	92.9	90-110	0			
Surr: Sele	enate (surr)	5.138	0.10	5		0	103	85-115	0			
MS	Sample ID:	1302276-01GMS				L	Jnits: mg/	L	Analys	is Date: 2/	14/2013 0	6:46 AM
Client ID:		Run II	D: ICS3K2	2_130214B		Se	qNo: 311 :	3475	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		749.4	0.50	10	762	2.7	-133	80-120	0			SEO
Sulfate		160.2	0.50	10	154	1.2	59.6	80-120	0			SEO
Surr: Sele	enate (surr)	5.296	0.10	5		0	106	85-115	0			
MSD	Sample ID:	1302276-01GMSD				L	Jnits: mg/	L	Analys	is Date: 2/	14/2013 0	7:07 AM
Client ID:		Run II	D: ICS3K2	2_130214B		Se	qNo: 311 :	3476	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		749	0.50	10	762	2.7	-137	80-120	749.4	0.0533	20	SEO
Sulfate		160.1	0.50	10	154		58.6	80-120	160.2		20	SEO
Surr: Sele	enate (surr)	5.309	0.10	5		0	106	85-115	5.296			
The followi	ing samples v	vere analyzed in this batch:	1:	302189-01G	19	3021	89-02G	130	02189-03G			
	5 04		L.,			1						

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

Date: 19-Feb-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS,** RO Discharge Sampling **Project:**

ACRONYMS, UNITS WorkOrder: 1302189

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

mg/L Milligrams per Liter

Sample Receipt Checklist

Client Name: I	NAVAJO REFINING		Date/Time	Received: 06-F	eb-13 08:40	
Work Order:	1302189		Received b	y: <u>JBA</u>		
	ested by Lahnnie B. Allen esignature	12-Feb-13 Date	Reviewed by:	Patricia L. c	Lynch	19-Feb-13 Date
Matrices: Carrier name:	water FedEx Priority Overnight					
Shipping contain	er/cooler in good condition?	Yes	✓ No □	Not Present		
Custody seals in	tact on shipping container/coole	? Yes	✓ No □	Not Present		
Custody seals in	tact on sample bottles?	Yes	□ No □	Not Present	\checkmark	
Chain of custody	present?	Yes	✓ No □			
Chain of custody	signed when relinquished and r	eceived? Yes	✓ No □			
Chain of custody	agrees with sample labels?	Yes	✓ No □			
Samples in prope	er container/bottle?	Yes	✓ No □			
Sample containe	rs intact?	Yes	✓ No □			
Sufficient sample	volume for indicated test?	Yes	✓ No □			
All samples recei	ived within holding time?	Yes	✓ No □			
Container/Temp	Blank temperature in complianc	e? Yes	✓ No □			
Temperature(s)/7	Thermometer(s):	1.6 C,	1.0 C,1.1 C,1.3 /uc	<u>IR 1</u>		
Cooler(s)/Kit(s):		3747/3	3040/3306/418 <u>5</u>			
Date/Time sample	le(s) sent to storage:	2/6/13				
Water - VOA vial	s have zero headspace?	Yes	✓ No ☐	No VOA vials subr	nitted L	
	otable upon receipt?	Yes	✓ No □	N/A \square		
pH adjusted? pH adjusted by:		Yes	No ✓	N/A L		
Login Notes:	1302189-01;-02; & -03 Radio	um fraction re-logged in WC	1302192-01;-02 & -	03 respectively		
				- — — — — — —		
Client Contacted	:	Date Contacted:	Person	Contacted:		
Contacted By:		Regarding:				
Comments:						
CorrectiveAction	:				SRC P	age 1 of 1

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Fort Collins, CO +1 970 490 151 I Holfand, MI +1 616 399 6070

Chain of Custody Form

coc ID: 72327 Page 1 of 1

ALS Project Manager:

NAVAJO REFINING: Navajo Refining Company

1302189

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Project: RO Discharge Sampling

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RX+F.S. Hold Results Due Date: QC Package: (Check One Box Below) × 10 Day TAT. Dissolved Metals Field Filtered メ I G X | 24 Hour X ш. Ø₩. ш Other Onlys Cooler Temp. Ω ပ X ☐ 5 WK Days Cooler ID Required Turnaround Time: (Check Box) ⋖ # Bottles <u>و</u> STATION Days Pres. Ĭ かれる 文文 Matrix Reseived by (Laboratory) 520 Time 1315 Shipment Method 2-4-13 Date Time: OJ 30 Sample Description AW-116 211-Wh Sampler(s) Please Print & Sig Relinquished by: ć.) ঝ Ŋ 9 8 ^ 0 2

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Total Metals (60297089) NORTH LONG CIST

LL SVOC (8270) NM GW LIST

ORO (8015M)

GRO (8015M) DRO (8015M)

Navajo Refining Company

Robert Combs 501 East Main

Invoice Attn

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RO Discharge/Sampling Project Information

Project Name

Customer Information

Purchase Order Work Order

128823

Project Number

Bill To Company

Navajo Refining Company

Company Name Send Report To

Robert Combs 501 East Main Dissolved Metals (6020/7000) RCRA 8

Artesia, NM 86211

City/State/Zip

Artesia, NM 88211

City/State/Zip

Address

(575) 748-6733

Phone

(575) 746-5421

Fax

e-Mail Address

Address

(575) 748-6733

Phone Fax

(575) 746-5421

e-Mail Address

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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TRRP CheckList

TRRP Level IV

V Level II SId QC
Level III SId QC/Raw Data
Level IV SW846/CLP
Other / EDD

4020

9-5035

8-4°C

7-Other

6-NaHSO

5-Na₂S₂O₃

4-NaOH

3-H,SO,

2-HNO3

Preservative Key: 1-HCI

Logged by (Laboratory);

Checked by (Laboratory):

Time:

Date:

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

coc ID: 72325 Page of

Houston, TX +1 281 530 5656

Saft Lake City, UT +1 801 266 7700

Spring City, PA +1 610 948 4903

ALS Work Order #:

ALS Project Manager:

Middletown, PA +1 717 944 5541

York, PA +1 717 505 5280

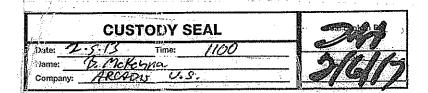
South Charleston, WV +1 304 356 3168

Purchase Order Work Order					
Purchase Order Work Order	customer information		Project Information		Parameter/Method Request for Analysis
Work Order	man may a may the transfer and the management of the management of the forest of the statement of the statem	Project Name	RO Discharge/Sampling	A	VOC (8260) NW GW List
	A PARA PARA BARBARA MARA MARA MARA MARA MARA MAR	Project Number	128823	œ.	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	O	DRO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	Ω	ORO (8015M)
Andress	501 East Main	S S S S S S S S S S S S S S S S S S S	501 East Main	Ш	LL SVOC (8270) NM GW List
	NOTE PARTICIONES EN ENTRE ENTR	See Thorough		11.	Total Metals (6029/1050) NOTALE / C.C. / LA.
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	Ø	Dissolved Metals (6020/7000) RCRA 8
Phone	(575) 748-6733	Phone	(575) 748-6733	I	
Fax	(575) 746-5421	Fax	(575) 746-5421		Maisture
e-Mail Address		e-Mail Address	AND THE PROPERTY AND TH	7	They complime the transpose Great Sun Dist. Oct.
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Helinquished by:		1	Received by (Laboratory):	90 	ne Box Below)
Logged by (Laboratory);	Date:	Time: Checket	Checked by (Laboratory):	M	Level ii Std OCR TRRP Check.lst
Preservative Key: 1-HC	4CI 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH	1 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄	7-Other 8-4°C	9-5035	Level iv SWP46/CLP

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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S Environmental 10450 Stancill Rd Suite 27 Houston, Texas 77099 Tel. 41 281 530 5656 Fax. +1 281 530 5887

CUSTODY SEAL Date:

Name: Company:



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Rev. Date 2/12 • Port #163134 • @1954-2012 FadEx • PRINTED IN U.S.A. SRS



28-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: 1302192

Dear Robert,

ALS Environmental received 6 samples on 05-Feb-2013 through 06-Feb-2013 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 38.

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

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager



Certificate No: T104704231-12-10

ALS Environmental

Date: 28-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302192

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	<u>Hold</u>
1302192-01	MW-116	Water		2/3/2013 13:15	2/6/2013 08:40	
1302192-02	MW-119	Water		2/5/2013 13:15	2/6/2013 08:40	
1302192-03	MW-118	Water		2/5/2013 14:25	2/6/2013 08:40	
1302192-05	MW-117	Water		2/3/2013 10:00	2/5/2013 09:15	
1302192-06	MW-114	Water		2/3/2013 11:30	2/5/2013 09:15	
1302192-07	MW-115	Water		2/3/2013 12:30	2/5/2013 09:15	

ALS Environmental Date: 28-Feb-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1302192

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

ALS Environmental Date: 28-Feb-13

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302192

 Sample ID:
 MW-116
 Lab ID:
 1302192-01

 Collection Date:
 2/3/2013 01:15 PM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302192

 Sample ID:
 MW-119
 Lab ID:
 1302192-02

 Collection Date:
 2/5/2013 01:15 PM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 28-Feb-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302192

 Sample ID:
 MW-118
 Lab ID:
 1302192-03

 Collection Date:
 2/5/2013 02:25 PM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 28-Feb-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 2/3/2013 10:00 AM

Work Order: 1302192

Lab ID: 1302192-05

Date: 28-Feb-13

Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302192

 Sample ID:
 MW-114
 Lab ID:
 1302192-06

 Collection Date:
 2/3/2013 11:30 AM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 28-Feb-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 1302192
Sample ID: MW-115
Lab ID: 1302192-07

 Sample ID:
 MW-115
 Lab ID: 1302192-0

 Collection Date:
 2/3/2013 12:30 PM
 Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 28-Feb-13

MISCELLANEOUS ANALYSISMethod: NAAnalyst: SUBMiscellaneous AnalysisSee Attached012/28/2013

Date: 28-Feb-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS,** RO Discharge Sampling **Project:** ACRONYMS, UNITS

WorkOrder: 1302192

01'6'	Description
Qualifier	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
	Described On antituding Limit
PQL	Practical Quantitation Limit
PQL SD	Serial Dilution
_	-
SD	Serial Dilution

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time I	Received:	06-Feb-13	00:00	
Work Order:	1302192			Received by	y:	<u>PMG</u>		
Checklist comp	oleted by Lohnnie B. Dlen eSignature		Feb-13 Date	Reviewed by:	eSignature			Date
Matrices: Carrier name:	water FedEx Priority Overnight							
Shipping conta	iner/cooler in good condition?		Yes 🗸	No 🗌	Not Pres	ent		
Custody seals	intact on shipping container/coole	r?	Yes 🗸	No 🗌	Not Pres	ent		
Custody seals	intact on sample bottles?		Yes \square	No 🗆	Not Pres	ent 🗹		
Chain of custoo	dy present?		Yes 🗸	No 🗆				
Chain of custoo	dy signed when relinquished and	received?	Yes 🗸	No 🗆				
Chain of custoo	dy agrees with sample labels?		Yes 🗹	No 🗌				
Samples in pro	per container/bottle?		Yes 🗸	No 🗆				
Sample contain	ners intact?		Yes 🗸	No 🗆				
Sufficient samp	ole volume for indicated test?		Yes 🗹	No 🗆				
All samples red	ceived within holding time?		Yes 🗹	No 🗆				
Container/Tem	p Blank temperature in compliand	ce?	Yes 🗹	No 🗆				
Temperature(s)/Thermometer(s):		1.2 C,1.4 (C,1.0 C,1.6 C/uc	IR	<u>1</u>		
Cooler(s)/Kit(s)):		3323/7119	/3040/3747				
Date/Time sam	nple(s) sent to storage:			00 & 2/6/13 17:00				
	ials have zero headspace?		Yes 🗹		No VOA vials	s submitted		
	eptable upon receipt?		Yes 🔽		N/A \square			
pH adjusted? pH adjusted by	<i>r</i> :		Yes □ -	No 🗹	N/A			
Login Notes:	Two separate arrival dates;	These samples were	initially in	WO 1302138 & 1	302189 for Ra	adium analy	<u>rses</u>	
Client Contacte	ed:	Date Contacted:		Person	Contacted:			
Contacted By:		Regarding:						
Comments:								
CorrectiveAction	on:							
							SRC	Page 1 of 1



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Chain of Custody Form

coc ID: 72329

1302192

NAVAJO REFINING: Navajo Refining Company Project: RO Discharge Sampling

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		Line	ALS Project Manager	- Jugur	Project: RO Discharge Sampling
0	Customer Information		Project Information		
Purchase Order		Project Name	RO Discharge/Sampling	A	
Work Order		Project Number	128823	m	GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	.c	DRO (8015M)
Send Report To	Robert Cornbs	Invoice Attn	Robert Combs	Ω	ORO (8015M)
Address	501 East Main	Address	501 East Main	(u)	LL SVOC (8270) NM GW List
				ш.	Total Metals (6020/7600) RERA B Lace
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	Dissolved Metals (6020/7000) RCRA 8
Phone	(575) 748-15733	Phone	(575) 748-6733	1	TDS
Fax	(575) 746-5421	Fax	(575) 746-5421	-	Weisture-
e-Mail Address	Total Translation of the Control of	e-Mail Address			Lyanide Ballin A
No.	Sample Description	Date			Ange-print (PLANONS-OFF-SIM Dist) Cations (12.5%)
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	21/4/	345 Heceived	1	Notes:	10 Day TAT. Dissolved Metals Field Filtered
Neinduisne de la company	Date:	Received	Mac (aboratory):	Coo	Cooler ID Cooler Temp. QC Package: (Check One Box Below)

4-NaOH 5-Na₂S₂O₃

2-HNO₃ 3-H₂SO₄

Preservative Key: 1-HCI

Logged by (Laboratory):

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TRRP ChockList

Level II Std QC
Level III Std QC/Raw Data
Level IV SW846/CLP
Other / EDD

9-5035

8-4°C

7-Other

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coc ID: 72328

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ALS Work Order #:

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Cn	Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	RO Discharge/Sampling	4	VOC (8260) NW GW List	
Work Order		Project Number	128823	m	GRO (8015M)	
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	ွပ	DRO (8015M)	
Send Report To	Rebert Combs	Invoice Attn	Robert Combs	Ω	ORO (8015M)	
	501 East Main	•	501 East Main	ш	LL SVOC (8270) NM GW List	
Address		Address		ш.	Total Metals (6020/7000) RGRAB Long List	
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	Ø	Dissolved Metals (6020/7000) RCRA 8	
Phone	(515) 748-6733	Phone	(575) 748-6733	E	TDS	
Fax	(515) 746-5421	T.	(575) 746-5421	<u>- 1866</u> . (2858.)	Meisture Charide	
e-Mail Address		e-Mail Address		7	Encountry Phyloder Grav, Shatist) Kadis x, Anions, Cations	ns, Cations
No.	Sample Description	S.Date France	me Matrix Pres. # Bottles	S	L I G D E F G H G	Hold
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Sampler(s) Please Print Sign	ye Sign	Shipment Method	nod Required Turnaround Time: (Check Box)	: (Chec	ं ध्र	
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Relinquished by:		Time:	and by (Laboratory):	¥.490	Cooler ID Cooler Temp. QC Package: (Check One Box Below)	TRRP CheckLis
Logged by (Laboratory):	Date:	Time: Checked	by (Laboratory):		TO S TRRP Level III SIG QC/Raw Data TRRP Level IV	FRRP Level IV
Preservative Key: 1-HCI	1-HCI 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		Olbert Education	
					Convright 2011 by ALS 6	NVICUILIEURAL

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coc 10: 72327 Page | of |

ALS Project Manager:

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5	Customer Information	-	Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	RO Discharge/Sampling	્≼	VOC (8260) NIN GW List	
Work Order		Project Number	128823	m	GRO (8015M)	THE TAXABLE PROPERTY OF THE PR
Company Name	Navejo Refining Company	Bill To Company	Navajo Refining Company	O	DRO (8015M)	The state of the s
Send Report To	Robert Combs	Invoice Attn	Robert Combs	Ω	ORO (8015M)	
V	501 East Main		501 East Main	ш	LL SVOC (8270) NM GW List	THE THE THE THE THE THE THE THE THE THE
5				u.	Total Metals (60207988) PROPAGE LONG LIST	
City/State/Zip	Arlesia, NM 86211	City/State/Zip	Artesia, NM 86211	ග	Dissolved Metals (6020/7000) RCRA 8	The same varieties and some vari
Phone	(575) 748-6733	Phone	(575) 748-6733	I	TDS	
Fax	(575) 746-5421	X a	(575) 746-5421	77 ,3	Meisture Radium	
e-Mail Address		e-Mail Address		7	Engergries (Pala No. 1900) Anions, Cations,	Crande
No.	Sample Description	Date	Time Matrix Pres. #Bottles	SA	B C D E F G H	
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Sampler(s) Please Print & Sign	nt & Sigar	Shipment Method	Requ	: (Check E	Olher	
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Relinquished by:	3	2	Regeived by (Laboratory):	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Cooler ID Cooler Temp. QC Package: (Check One Box Below)	
Logged by (Laboratory):	Date	Time: Chec	Checked by (Laboratory):	20	Z Level III Std QC	TRRP CheckList
					Level IV SW846/CLP	
Preservative Key: 1-HCI	2-HNO ₃ 3-H ₂ SO ₄	4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other	5-NaHSO ₄ 7-Other 8-4°C 9-5035		Olher / EDD	***************************************

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Customer Information			Project Information		Parameter/Method Request for Analysis	r Analysis
Purchase Order		Project Name	RO Discharge/Sampling	11 4 10	VOC (8260) NW GW List	
Work Order		Project Number	128823	B	GRO (8015M)	THE RESERVE OF THE PROPERTY OF
Company Name Navajo Refining Company	рапу	Bill To Company	Navajo Refining Company	O	DRO (8015M)	THE THE PARTY OF T
Send Report To Robert Combs		Invoice Attn	Robert Combs	Ω	ORO (8015M)	
501 East Main			501 East Main	ш	LL SVOC (8270) NM GW List	
Address		Address		u.	Total Metals (6026/1000) RONARS / OCA	, t.
City/State/Zip Artesia, NM 88211		City/State/Zip	Artesia, NM 88211	0	Dissolved Metals (6020/7000) RCRA 8	
Phone (575) 748-6733		Phone	(575) 748-6733			
Fax (575) 746-5421		Fax	(575) 746-5421		Moisture	
e-Mail Address		e-Mail Address	NOTE THE PROPERTY OF THE PROPE		Tingerptin (Print) 65- Gray, Sim Blst) (Othors Anisas Canid
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Preservative Key: 1-HCI 2-HNO ₃ 3-H ₂ SO ₂ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₂ 7-Other 8-4°C 9-5035	-H ₂ SO ₄ 4-NaOH	5-Na ₂ S ₂ O ₃ 6-	NaHSO4 7-Other 8-4°C	9-5035	Other / EDD	
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We cannot deliver to P.O. botas or the Continuation of your shipping address. Address Use this line for the HOLD location address or for continuation of your shipping address. City O 4 9 5 5 5 0 0 7 7	7 Payment Birt ID. Enter FedEx Anot. No. or Credit Card No. Decision Sender Acct. No. or Credit Card No. Decision Acct. No. or Credit Card Card Card Card Card Card Card Card
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To	6 Special Handling and Delivery Signature Options
Recipients Name Phone 281 530-565	SATURDAY Delivery ROT available for Foots Standard Overnight, Foots 20ay A.M., or Foots Express Saver.
Company AS LOS (TOS)	No Signature Required Proctage may be left without Someone at recipient's address may signate deterry. For applica. Indirect Signature If no one is available at recipient's address address, common at a neighboring address, may sign for deterry.
Address HOLD Weekday Feets location address REQUIRED. NOT available for Feets Feets Organized.	Does this shipment contain dangerous goods? One box must be checked.
We cannot deliver to P.O. boxes or P.O. ZIP codes. Gept/Floor/Suite/Room HOLD Saturday	No Yes Asper attached Shopper's Declaration Dry Ice Dr
City State ZIP 7	7 Payment Bill to: Sender Sender Obtain recip. Acct. No. or Crodit Card No. below. Acct. No.
8022 1536 6851	Total Packages Total Weight Credit Card Cash/Check Total Packages Total Weight Credit Card Auch The Sability's Inhand to USS 100 unless you declare a Trigher value. See the current FedEn Service Guide for details. Rev. Date 1/12 - Pan #167002 - ©2012 FedEn + PRINTED IN U.S.A. SRF

0200

ALS Environmental 10450 Stancim Rd 53 te 27 Houston, Texas 77095 Tel. 1 281 530 5856 Fax. +1 281 530 5867

CUSTODY SEAL Date: 📆 🔞 Name: Company:

-		
	Package Surbill Package Bol3 Bol2 5570	for, 1215
1	From Date 2/6/15	4 Express Package Service *To most locations. NOTE: Service order has changed, Please select carefully.
	Sender's Est Sergersen Phone 28/ 787-123-	Next Business Day 2 or 3 Business Feder First Cybrofight Confederate the process promote the professional and processing the process proces
	Company ARCADIS	FedEx Priority Overnight Next business morning "Fidday objected will be defined on Monday unless SATURIDAY Delivery is selected. FedEx 2Day Second business and will be delivered on the deliver
	Address 2929 Var park 1 Duite 200	FedEx Standard Overnight Near business eternoon. Saturday Delivery NOT available. FedEx Express Taird business day. Sururday Delivery N
	City In State TX ZIP 1/047	5 Packaging * Declared value finit SSO. FedEx Envelope* FedEx Pak* FedEx Box
3	Your Internal Billing Reference To	6 Special Handling and Delivery Signature Options
J	Recipients OLIENT SERVICES Phone 28: 530-5655	SATURDAY Delivery NOT available for FedEx Standard Overnight, FedEx 20ay A.M., or FedEx Express Saves
	Company ALS LABSPATORY GROUP	No Signature Required Package may be lett without of obtaining a signature for delivery. Fee applies may sign for delivery. Fee applies.
	Address Address PO. Daves or PO. ZIP codes. Mecanist deliver to PO. boxes or PO. ZIP codes. Dept/Poor/Subm/Room URQ OR Submy to Post day. Dept/Poor/Subm/Room URQ OR Submy to Post day. URQ OR Submy to Post day.	Does this shipment contain dangerous goods? One box must be checked. Yes — Yes — Onvice
	We cannot deliver to P.U. boxes of P.U. Cir coats. Address Address Use this fine for the HOLO location address or for continuation of your shipping address.	No YES As par stanched As par a tracked
	City State Section address on the communication by your simpling duriness. State 3 ZIP 77099-4838	7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Sender Acct. No. or Credit Card No. below.
		Acct No.in Section A Recipient Third Party C

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MUH2

FedEx 2Day A.M.
Second business morning.*
Saturday Delivery NOT available.

FedEx Express Saver
Third business day."
Saturday Delivery NOT available.

Dry ice

*Our Sobiay is limited to USSYOD unless you declare a higher value. See the current FooEx Service Guide ha details.

Rev. Date 2/12 • Peri /153134 • @1994-2012 FedEx • PRINTED IN U.S.A. SRS

Credit Card

FedEx 2Day
Second business afternoon.* Thursday shipmen
will be delivered on Monday unless SATURDAY
Defivery is selected.

FedEx

Cargo Aircraft Only

Indirect Signature
If no one is greatable at recipient's
address, someone et a neighborir
address may sign for delivery. For
residential deliveries only. For app

Obtain recip. Acct. No.

Cash/Check

611

Packages up to 150 lbs. for packages over 150 lbs. use the fedEx Express Freight US Airhill.

, Other



ALS Environmental 10450 Standiff Ed., Suite 210 Houston, Texas 7,7099 Tel. +1 281 530 5656 Fax. +1 281 530 5887

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CUCTODY OF AL	
CUSTODY SEAL	Seal Broken By:
Time: 1600	Date:
inpany: And Age Use.	



February 28, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re: ALS Workorder: 13-02-163

Project Name: None Submitted

Project Number: 1302192

Dear Ms. West:

Six water samples were received from ALS Environmental on February 14, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses 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

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



1302163

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1302163

Client Name: ALS Environmental

Client Project Name: 1302192

Client Project Number:

Client PO Number: 10-1302192

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1302192-01A (MW-116)	1302163-1		WATER	03-Feb-13	13:15
1302192-02A (MW-119)	1302163-2		WATER	05-Feb-13	13:15
1302192-03A (MW-118)	1302163-3		WATER	05-Feb-13	14:25
1302192-05A (MW-117)	1302163-4		WATER	03-Feb-13	10:00
1302192-06A (MW-114)	1302163-5		WATER	03-Feb-13	11:30
1302192-07A (MW-115)	1302163-6		WATER	03-Feb-13	12:30



Subcontractor: ALS Environmental

TEL: FAX:

225 Commerce Drive

Fort Collins, CO 80524

Acct #:

(800) 443-1511 (970) 490-1522

CHAIN-OF-CUSTODY RECORD Date: 13-Feb-13 COC ID: 13351

1302163

	Salesperson	Mala H. Belmonte			(50×10×1
Cus	🐣 💮 Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	10-1302192	Project Name	1302192		A Radium 226 228 Sub to ALS Ft. Collins
Work Order		Project Number			(A)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	Corp.	9
Send Report To	Sonia West	Inv Attn	Accounts Payable	0	G
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	1, Suite 210	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	099-4338	9
Phone	(281) 530-5656	Phone	(281) 530-5656		
Fax	(281) 530-5887	Fax	(281) 530-5887		
eMail Address	Sonia. West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com		A. Pa
Sample ID	W	Matrix Collecti	Collection Date 24hr	Bottle	AND CONTRACTOR OF THE SIGN OF
(1302192-01A (MW-116)	9	Water 3/Feb/	3/Feb/2013 13:15 (2)	(2) 1LPHNO3	
1302192-02A (MW-119)	6	Water 5/Feb/	5/Feb/2013 13:15 (2)	(2) 1LPHNO3	×
1302192-03A (MW-118)	(S)	Water 5/Feb/	5/Feb/2013 14:25 (2)	(2) 1LPHNO3	X
1302192-05A (MW-117)	(F)	Water 3/Feb/	3/Feb/2013 10:00 (2)	(2) 1LPHNO3	X
1302192-06A (MW-114)	(5)	Water 3/Feb/	3/Feb/2013 11:30 (2)	(2) 1LPHNO3	X
(1302192-07A (MW-115)	(2)	Water 3/Feb/	3/Feb/2013 12:30 (2)	(2) 1LPHNO3	X
)				

		Report/QC Level	
		Cooler IDs	
		Date/Time	DateTime
um 226/228	M	Received by:	Received by:
WO 1302192 - Please analyze for Radium 226/228	IN PARIS	Date/Time	Date/Time
Comments: WO 130219		Relinguished by:	Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: <u>A15-7x</u> Workorder No: 1302	163		
Project Manager: Manager: M			- R
	<u></u>		
Does this project require any special handling in addition to standard ALS procedures? And a part does not a mark in a part in a p		YES	
* ***	ONE	(YES_)	NO
	ONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YE\$	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?	OP 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?	√y)	YES	NO
10. Is there sufficient sample for the requested analyses?	(YES?	NO
U. 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	VA)	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	N/A	YES	NÖ
16. Were the samples shipped on ice?		(YES)	NO
17. Were cooler temperatures measured at 0.1.6.0°C2	RAD	(YES)	NO
Cooler #:	NLW		
Temperature (°C): 3.2			
No. of custody seals on cooler:			
DOT Survey/ Acceptance External μR/hr reading: / 2	— -		
Information			
Background μR/hr reading: /ઝ Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES /NO / NA (If no, see Form	000.		
		D. 111.6	
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEP	I#IAN	D#16.	
		-	
If applicable, was the client contacted? YES / NO / Contact: D	ate/Time	e:	
Project Manager Signature / Date: 2-14-13			
/ /(*IR Gun #2: Oakton, SN 29922500201-0066 Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002			1

Page 1 of

ef: pl/bf/jbs ep: Environmental

Date: 13Feb13 Wgt: 43.47 LBS

SHIPPING: SPECIAL: HANDL ING: 0.00 TOTAL:

93.39 9.34 0.00 102.73

DV:

SVCS: PRIORITY OVERNIGHT TRCK: 4340 2174 2849

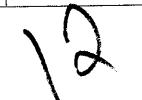
1302163

ORIGIN ID: SGRA (281) 530-5856 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77098 UNITED STATES US

SHIP DATE: 13FEB13 ACTHGT: 43.5 LB CAD: 300130/CAFE2606

BILL SENDER

ROY FRENCH **ALS ENVIRONMENTAL** 225 COMMERCE DRIVE



FORT COLLINS CO 80524 (970) 490- 1611 DEPT: ENVIRONMENTAL



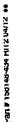
FedEx Express

TRK# 4340 2174 2849

THU - 14 FEB A2 PRIORITY OVERNIGHT

NA FTCA

80524 co-us DEN





Legal Location:

SAMPLE SUMMARY REPORT

Matrix: WATER

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-01A (MW-116)
 Lab ID:
 1302163-1

Collection Date: 2/3/2013 13:15 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 2/15/2 0	013 PrepBy: PJW
Ra-226	ND (+/- 0.17)	U	0.32	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	88		40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 2/15/20	D13 PrepBy: EKG
Ra-228	ND (+/- 0.29)	U	0.55	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	88		40-110	%REC	NA	2/21/2013 11:13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-02A (MW-119)
 Lab ID:
 1302163-2

Legal Location: Matrix: WATER

Collection Date: 2/5/2013 13:15 Percent Moisture:

Analyses	Result	Qual	Report Limit U	J nits	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	TION - METHOD 903.1		PAI 783		Prep Date: 2/15/2013	PrepBy: PJW
Ra-226	ND (+/- 0.17)	U	0.25	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	88.2		40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 2/15/2013	PrepBy: EKG
Ra-228	ND (+/- 0.26)	U	0.52	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	88.2		40-110	%REC	NA	2/21/2013 11:13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-03A (MW-118)
 Lab ID:
 1302163-3

Legal Location: Matrix: WATER

Collection Date: 2/5/2013 14:25 Percent Moisture:

Analyses	Result	Qual	Report Limit (U nits	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANATION - ME	THOD 903.1		PAI 783		Prep Date: 2/15/2013	PrepBy: PJW
Ra-226	0.38 (+/- 0.24)	Y1,LT	0.21	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	101	Y1	40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY GFPC			PAI 724		Prep Date: 2/15/2013	PrepBy: EKG
Ra-228	0.87 (+/- 0.33)	Y1,LT	0.49	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	101	Y1	40-110	%REC	NA	2/21/2013 11:13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-05A (MW-117)
 Lab ID:
 1302163-4

Legal Location: Matrix: WATER
Collection Date: 2/3/2013 10:00 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 2/15/ 2	2013 PrepBy: PJW
Ra-226	0.54 (+/- 0.3)	LT	0.09	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	95.6		40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 2/15/ 2	2013 PrepBy: EKG
Ra-228	0.89 (+/- 0.34)	LT	0.48	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	95.6		40-110	%REC	NA	2/21/2013 11:13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-06A (MW-114)
 Lab ID:
 1302163-5

Legal Location: Matrix: WATER

Collection Date: 2/3/2013 11:30 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANATION	ON - METHOD 903.1		PAI 783		Prep Date: 2/15/201 :	B PrepBy: PJW
Ra-226	0.43 (+/- 0.27)	LT	0.23	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	96		40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY GR	PC .		PAI 724		Prep Date: 2/15/2013	PrepBy: EKG
Ra-228	0.74 (+/- 0.31)	LT	0.49	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	96		40-110	%REC	NA	2/21/2013 11:13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

 Project:
 1302192
 Work Order:
 1302163

 Sample ID:
 1302192-07A (MW-115)
 Lab ID:
 1302163-6

Legal Location: Matrix: WATER

Collection Date: 2/3/2013 12:30 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 2/15/20	13 PrepBy: PJW
Ra-226	ND (+/- 0.17)	U	0.23	pCi/l	NA	2/27/2013 15:18
Carr: BARIUM	99.4		40-110	%REC	NA	2/27/2013 15:18
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 2/15/20	13 PrepBy: EKG
Ra-228	ND (+/- 0.25)	U	0.52	pCi/l	NA	2/21/2013 11:13
Carr: BARIUM	99.4		40-110	%REC	NA	2/21/2013 11:13

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

Project: 1302192 **Work Order:** 1302163

Sample ID: 1302192-07A (MW-115) Lab ID: 1302163-6
Legal Location: Matrix: WATER

Collection Date: 2/3/2013 12:30 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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
LIMS Version: 6.630

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 28-Feb-13

Project: 1302192 **Work Order:** 1302163

Sample ID: 1302192-07A (MW-115) Lab ID: 1302163-6 Legal Location: Matrix: WATER

Collection Date: 2/3/2013 12:30 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units 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

LIMS Version: 6.630

Client: ALS Environmental

Work Order: 1302163 **Project:** 1302192

Date: 2/28/2013 8:22:

QC BATCH REPORT

Batch ID: R	RE130215-2-2	Instrument ID:	Alpha Scin		Method:	Ra-226 by	Radon I	Emanation - Me				
LCS	Sample ID: RE13021	15-2				Units: pCi/	Ί	Analys	is Date: 2/	27/2013 1	5:41	
Client ID:		Ru	un ID: RE130 2	215-2A				Prep Date: 2/15	ite: 2/15/2013		DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual	
Ra-226		27.7 (+/- 7)	0.2	30		92.3	67-120				P,Y1	
Carr: BAF	RIUM	32180		31720		101	40-110				Y1	
LCSD	Sample ID: RE13021	15-2				Units: pCi/	Ί	Analys	is Date: 2/	27/2013 1	5:41	
Client ID:		Ru	un ID: RE130 2	215-2A				Prep Date: 2/15	5/2013	DF: NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual	
Ra-226		26.1 (+/- 6.7)	0.4	30		87.2	67-120	27.7	0.16	2.13	P,Y1	
Carr: BAF	RIUM	32670		31720		103	40-110	32180			Y1	
MB	Sample ID: RE13021	15-2				Units: pCi/	1	Analys	is Date: 2	27/2013 1	5:18	
Client ID:		Ru	un ID: RE130 2	215-2A				Prep Date: 2/15	5/2013	DF: N	4	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual	
Ra-226		ND	0.3								U	
Carr: BAF	RIUM	30860		31720		97.3	40-110					
The follow	ving samples were ana	lyzed in this bate		302163-1 302163-4		02163-2 02163-5		302163-3 302163-6				

QC BATCH REPORT

Client: ALS Environmental Work Order: 1302163

Project: 1302163

Batch ID: R	RA130215-1-2	Instrument ID:	: LB4100-B		Method:	Radium-2	28 Analy	sis by GFPC			
LCS	Sample ID: RA130215	-1				Units: pCi	l	Analysi	s Date: 2	/21/2013 1	1:13
Client ID:		Ru	un ID: RA130	215-1A				Prep Date: 2/15	/2013	013 DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-228		11 (+/- 2.6)	0.5	10.19		108	70-130				P,Y1
Carr: BAF	RIUM	32180		31720		101	40-110				Y1
LCSD	Sample ID: RA130215	-1				Units: pCi	1	Analysi	s Date: 2 /	/21/2013 1	1:13
Client ID:		Ru	un ID: RA130	215-1A				Prep Date: 2/15	/2013	DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-228		10.7 (+/- 2.5)	0.5	10.19		105	70-130	11	0.095	2.13	P,Y1
Carr: BAF	RIUM	32670		31720		103	40-110	32180			Y1
МВ	Sample ID: RA130215	-1				Units: pCi	l	Analysi	s Date: 2 /	/21/2013 1	1:13
Client ID:		Rı	un ID: RA130	215-1A				Prep Date: 2/15	/2013	DF: NA	4
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-228		ND	0.49								U
Carr: BAF	RIUM	30860		31720		97.3	40-110				
The following samples were analyzed in this batch:			302163-1 302163-4		1302163-2 1302163-3 1302163-5 1302163-6						

DATA VALIDATION CHECKLIST

NAVAJO REFINING RO Discharge Sampling

	1.D. 1.D. 1.D. 1.D. 1.D. 1.D. 1.D. 1.D.
Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory;	ALS Environmental
Laboratory Work Order No.:	1301989
Lab Project Manager:	Sonia West
Analyses:	VOCs, SVOCs, TPH, Metals, Mercury, Cyanide, and Anions
QA Reporting Level:	ARCADIS, Level II

ARCADIS, Inc. 2929 Briarpark Dr. Suite 300 Houston, TX 77042 Tel. (713) 953-4800

Environmental Project: Navajo Refinery

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic TX001027.0002 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
1302189	MW-116	2/3/2013	
1302189	MW-119	2/5/2013	
1302189	MW-118	2/5/2013	
1302189	TRIP BLANK 011813-71	2/5/2013	
1302189	TRIP BLANK 011813-30	2/5/2013	

I. VOLATILE COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL C		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		Х	Х		Х		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		Χ	Х		Х		
B. Equipment Blanks	X						X
C. Trip Blanks		Х	Х		Х		
4. Laboratory control sample (LCS) (%R)		Х	Х		Х		
5. Laboratory control sample duplicate (LCSD) (%R)		Х	Х		X		
6. LCS/LCSD (RPD)		Χ	X		X		
7. Matrix spike (MS) (%R)	Χ						X
8. Matrix spike duplicate (MSD) (%R)	X						Х
9. MS/MSD (RPD)	X						Χ
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						Х

COMMENTS: The samples were analyzed for Volatiles by Method 8260. Performance was acceptable, with the following exceptions and notes.

II. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL C	ITEM NOT REQUIRED	
	NO	YES	NO	YES	YES	NO	
1. Holding times		Х	Х			Х	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		Χ		Χ	Χ		
B. Field Blanks	Х						X
C. Equipment Blank	Χ						Χ
4. Laboratory control sample (LCS) (%R)		Х	Х			Х	
5. LCSD (% R)	X						Χ
6. LCS/LCSD (RPD)	Х						Х
7. Matrix spike (MS) (%R)	X						Х
8. MSD (%R)	X						Х
9. MS/MSD (RPD)	Х						Χ
10. Lab Duplicate (RPD)	X						Χ
11. Field Duplicate (RPD)	Х						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 field sample results were less than five times the method blank concentration. The field sample results for aluminum were qualified as non-detect at the Reporting Limit (RL), or at the detected sample concentration when greater than the RL. See the attached qualification summary for details of the qualifications.
- 3A. Calcium was detected in the associated method blank. The associated field sample calcium results were greater than five times the blank value; therefore, qualification of the data was not warranted.
- 3A. Zinc was detected in the associated method blank. The result for sample location MW-116 was less than five times the method blank concentration. The zinc result for this sample was qualified as non-detect at the RL. Sample locations MW-119 and MW-118 were either non-detect or greater than five times the method blank concentration, and did not require qualification. See the attached qualification summary for details of the qualifications.

III. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED		REPORTED/ REVIEWED		TIONS ED	GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		Χ	Х		X		
2. Reporting limits		Χ	Χ		X		
3. Blanks							
A. Method Blanks		Χ	Χ		X		
B. Field Blanks	X						Χ
C. Equipment Blank	X						Χ
4. Surrogate Recovery		Χ	Χ		X		
5. Laboratory control sample (LCS) (%R)		X	Х		X		
6. LCSD (% R)		Х	Х		Х		
7. LCS/LCSD (RPD)		Х	Х		Х		
8. Matrix spike (MS) (%R)	X						Χ
9. MSD (%R)	X						X
10. MS/MSD (RPD)	X	-					X
11. Field Duplicate (RPD)	X	-					X

 ${\tt COMMENTS:}\ \ {\tt The\ samples\ were\ analyzed\ for\ SVOCs\ by\ Method\ 8270.}\ \ {\tt Performance\ was\ acceptable,\ with\ the\ following\ exceptions\ and\ notes.}$

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		Х	Х		Х			
2. Reporting limits		X	Χ		X			
3. Blanks								
A. Method Blanks		X	Χ		X			
B. Field Blanks	X						Χ	
C. Equipment Blank	X						Χ	
4. Surrogate Recovery		X	Χ		Χ			
5. Laboratory control sample (LCS) (%R)		X	Х		Х			
6. LCSD (% R)		Х	Х		Х			
7. LCS/LCSD (RPD)		Х	Х		Х			
8. Matrix spike (MS) (%R)	X						Χ	
9. MSD (%R)	X						Χ	
10. MS/MSD (RPD)	X						X	
11. Field Duplicate (RPD)	X						X	

 ${\tt COMMENTS:}\ \ {\tt The\ samples\ were\ analyzed\ for\ TPH\ by\ Method\ 8015.}\ \ {\tt Performance\ was\ acceptable,\ with\ the\ following\ exceptions\ and\ notes.}$

V. CYANIDE

ITEMS REVIEWED		REPORTED/ REVIEWED		TIONS ED	GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	YES	NO	
1. Holding times		Х	Х			Х	
2. Reporting limits		Χ	Χ			X	
3. Blanks							
A. Method Blanks		Χ		X	Χ		
B. Field Blanks	X						X
C. Equipment Blank	X						Χ
4. Laboratory control sample (LCS) (%R)		Х	Х			Х	
5. LCSD (% R)		Χ	X			X	
6. LCS/LCSD (RPD)		Χ	Х			Х	
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	Х			_			Х
9. MS/MSD (RPD)	X						Χ
10. Lab Duplicate (RPD)	X						Χ

 ${\tt COMMENTS:}\ \ {\tt The\ samples\ were\ analyzed\ for\ cyanide\ by\ Standard\ Methods\ 4500CN\ E\&G.\ Performance\ was\ acceptable,\ with\ the\ following\ exceptions\ and\ notes.}$

VI. ANIONS

ITEMS REVIEWED		REPORTED/ REVIEWED		TIONS TED	GENERAL COMMENTS NOTED		ITEM NOT REQUIRED	
	NO	YES	NO	YES	YES	NO		
1. Holding times		X		Х	X			
2. Reporting limits		X	X			X		
3. Blanks								
A. Method Blanks		Χ	Χ	Χ		X		
B. Field Blanks	X						X	
C. Equipment Blank	Х						Х	
4. Laboratory control sample (LCS) (%R)		Х		Х		Х		
5. LCSD (% R)	Х						Х	
6. LCS/LCSD (RPD)	Х						Х	
7. Matrix spike (MS) (%R)		Х		Х		Х		
8. MSD (%R)		Х		Х		Х		
9. MS/MSD (RPD)		X	Х		Х			
10. Lab Duplicate (RPD)	Х						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.

- 1. Sample location MW-116 was received by the laboratory beyond the 48 hour hold time for nitrate and nitrite. The laboratory contacted the client, and the lab was authorized to proceed with the analysis. The nitrate and nitrite analysis was performed 9 days from collection, which is greater than twice the holding time. The nitrate result should be considered estimated. The nitrite result was non-detect and is rejected. See the attached qualification summary for details of the qualifications.
- 3A. Nitrate was detected in the method blank associated with the analysis of sample location MW-116. The associated sample result was greater than five times the method blank concentration therefore, qualification of the data was not required.
- 7-8. Sample MW-116 was used as the MS/MSD for fluoride, nitrate and nitrite. The recovery of fluoride was less than the control limit in the MS and the MSD. The fluoride result for sample location MW-116 was qualified as estimated. See the attached qualification summary for details of the qualifications.

VII. TOTAL DISSOVLED SOLIDS (TDS)

1111 10 17 12 510 00 12 12 00 12 0 (12 0)											
ITEMS REVIEWED		REPORTED/ REVIEWED		TIONS TED	GENERAL COMMENTS NOTED		ITEM NOT REQUIRED				
	NO	YES	NO	YES	YES	NO					
1. Holding times		Х	Х			X					
2. Reporting limits		X	Χ			X					
3. Blanks											
A. Method Blanks		X		Χ	X						
B. Field Blanks	X						X				
C. Equipment Blank	X						X				
4. Laboratory control sample (LCS) (%R)		Х		Х		X					
5. LCSD (% R)	Х						Χ				
6. LCS/LCSD (RPD)	X						X				
7. Matrix spike (MS) (%R)	Х						Х				
8. MSD (%R)	Х						Х				
9. MS/MSD (RPD)	Х						Х				
10. Lab Duplicate (RPD)		Х		Χ		Х					

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.

10. Sample MW-116 was used as the laboratory duplicate for TDS. The RPD was acceptable.

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
	Nitrate	1.37	mg/L	J	Holding Time
	Nitrite	0.1 U	mg/L	R	Holding Time
MW-116	Aluminum	0.01	mg/L	UB	Blank contamination
	Zinc	0.005	mg/L	UB	Blank contamination
	Fluoride	1.31	mg/L	J	MS/MSD % Recovery
MW-119	Aluminum	0.01	mg/L	UB	Blank contamination
MW-118	Aluminum	0.0146	mg/L	UB	Blank contamination

VALIDATION PERFORMED BY: Lyndi Mott

SIGNATURE:

DATE: March 6, 2013

PEER REVIEW:

DATE: March 12, 2013

Low lu mon



12-Jun-2013

Aaron Strange Navajo Refining Company PO Box 159 Artesia, NM 88211

Tel: (575) 748-6733 Fax: (575) 746-5421

Re: RO Discharge Sampling 128823 Work Order: 1305797

Dear Aaron,

ALS Environmental received 17 samples on 17-May-2013 09:00 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 89.

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

Sincerely,

Electronically approved by: Luke F. Hernandez

Sonia West

Sonia West Project Manager ENP ACCREONES

Certificate No: T104704231-13-12

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company
Project: RO Discharge Sampling 128823

Work Order: 1305797

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
1305797-01	MW-114	Water		5/15/2013 13:50	5/17/2013 09:00	
1305797-01	MW-114	Water		5/15/2013 13:50	5/17/2013 09:00	
1305797-02	MW-115	Water		5/15/2013 15:50	5/17/2013 09:00	
1305797-02	MW-115	Water		5/15/2013 15:50	5/17/2013 09:00	
1305797-03	MW-117	Water		5/15/2013 10:30	5/17/2013 09:00	
1305797-03	MW-117	Water		5/15/2013 10:30	5/17/2013 09:00	
1305797-04	MW-118	Water		5/15/2013 18:30	5/17/2013 09:00	
1305797-04	MW-118	Water		5/15/2013 18:30	5/17/2013 09:00	
1305797-05	MW-119	Water		5/15/2013 18:10	5/17/2013 09:00	
1305797-05	MW-119	Water		5/15/2013 18:10	5/17/2013 09:00	
1305797-06	DUP-03	Water		5/15/2013 00:01	5/17/2013 09:00	
1305797-06	DUP-03	Water		5/15/2013 00:01	5/17/2013 09:00	
1305797-07	MW-116	Water		5/16/2013 10:15	5/17/2013 09:00	
1305797-07	MW-116	Water		5/16/2013 10:15	5/17/2013 09:00	
1305797-08	EQB-03	Water		5/16/2013 11:40	5/17/2013 09:00	
1305797-08	EQB-03	Water		5/16/2013 11:40	5/17/2013 09:00	
1305797-09	RO Discharge	Water		5/16/2013 08:30	5/17/2013 09:00	
1305797-09	RO Discharge	Water		5/16/2013 08:30	5/17/2013 09:00	
1305797-10	Trip Blank 050313-36	Water		5/16/2013	5/17/2013 09:00	
1305797-11	Trip Blank 050313-33	Water		5/16/2013	5/17/2013 09:00	
1305797-12	Trip Blank 050313-49	Water		5/16/2013	5/17/2013 09:00	
1305797-13	Trip Blank 050313-43	Water		5/16/2013	5/17/2013 09:00	
1305797-14	Trip Blank 050313-12	Water		5/16/2013	5/17/2013 09:00	
1305797-15	Trip Blank 050313-34	Water		5/16/2013	5/17/2013 09:00	
1305797-16	Trip Blank 050313-14	Water		5/16/2013	5/17/2013 09:00	
1305797-17	Trip Blank 050313-24	Water		5/16/2013	5/17/2013 09:00	

ALS Environmental

Date: 12-Jun-13

Client: Navajo Refining Company
Project: RO Discharge Sampling 128823

Work Order: 1305797

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Batch 70138, Dissolved Metals 6020, Sample 1305631-07C: MS/MSD are for an unrelated sample.

Batch 70117, Semivolatile Organics 8270, Sample SLCSW1-130520: Insufficinet sample volume was received for MS/MSD.

Batch R147734, Volatile Organics 8260, Sample 1306842-01A: MS/MSD are for an unrelated sample.

Batch R147736, Volatile Organics 8260, Sample 1306818-01A: MS/MSD are for an unrelated sample.

Batch R147882, Si;fate, Sample 1306966-06E: MS/MSD are for an unrelated sample.

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-114

Collection Date: 5/15/2013 01:50 PM

Work Order: 1305797

Lab ID: 1305797-01

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	thod: SW8015N	1	Prep: SW	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	5/22/2013 19:03
TPH (Oil Range)	U		0.042	0.10	mg/L	1	5/22/2013 19:03
Surr: 2-Fluorobiphenyl	93.7			60-135	%REC	1	5/22/2013 19:03
GASOLINE RANGE ORGANICS - SW8015	iC .	Me	thod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/23/2013 17:08
Surr: 4-Bromofluorobenzene	105			70-130	%REC	1	5/23/2013 17:08
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:20
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00722	J	0.0040	0.0100	mg/L	1	5/22/2013 06:14
Arsenic	0.00437	J	0.0010	0.00500	mg/L	1	5/22/2013 06:14
Barium	0.0129		0.00090	0.00500	mg/L	1	5/22/2013 06:14
Boron	0.101		0.040	0.100	mg/L	2	5/22/2013 15:51
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 06:14
Calcium	576		0.86	5.00	mg/L	10	5/22/2013 05:13
Chromium	U		0.0010	0.00500	mg/L	1	5/22/2013 06:14
Cobalt	0.00451	J	0.00080	0.00500	mg/L	1	5/22/2013 06:14
Copper	U		0.0010	0.00500	mg/L	1	5/22/2013 06:14
Iron	U		0.078	0.200	mg/L	1	5/22/2013 06:14
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 06:14
Manganese	0.844		0.0025	0.00500	mg/L	1	5/22/2013 06:14
Molybdenum	0.00978		0.0015	0.00500	mg/L	1	5/22/2013 06:14
Nickel	0.00410	J	0.0010	0.00500	mg/L	1	5/22/2013 06:14
Potassium	2.76		0.084	0.200	mg/L	1	5/22/2013 06:14
Selenium	0.00636		0.0010	0.00500	mg/L	1	5/22/2013 06:14
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 06:14
Sodium	123		0.085	0.200	mg/L	1	5/22/2013 06:14
Uranium	0.0108		0.0050	0.00500	mg/L	1	5/22/2013 06:14
Zinc	U		0.0025	0.00500	mg/L	1	5/22/2013 06:14
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:25
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:25
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:25
Naphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:25
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/22/2013 21:25
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/22/2013 21:25

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

MW-114 Sample ID:

Collection Date: 5/15/2013 01:50 PM

Work Order: 1305797

Lab ID: 1305797-01

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/22/2013 21:25
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/22/2013 21:25
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/22/2013 21:25
Surr: Phenol-d6	0			20-120	%REC	1	5/22/2013 21:25
LOW LEVEL VOLATILES - SW82600	;	Meth	nod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 17:17
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 17:17
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 17:17
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 17:17
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 17:17
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 17:17
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 17:17
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 17:17
Surr: 1,2-Dichloroethane-d4	104			71-125	%REC	1	5/21/2013 17:17
Surr: 4-Bromofluorobenzene	102			70-125	%REC	1	5/21/2013 17:17
Surr: Dibromofluoromethane	101			74-125	%REC	1	5/21/2013 17:17
Surr: Toluene-d8	97.5			78-123	%REC	1	5/21/2013 17:17
MISCELLANEOUS ANALYSIS		Meth	nod:NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Meth	nod: E300				Analyst: JKP
Chloride	150		20	50.0	mg/L	100	5/23/2013 21:56
Fluoride	1.91		0.050	0.100	mg/L	1	5/24/2013 11:34
Sulfate	1,800		20	50.0	mg/L	100	5/23/2013 21:56
Nitrate/Nitrite (as N)	U		0.30	2.00	mg/L	10	5/22/2013 17:33
Surr: Selenate (surr)	104			85-115	%REC	10	5/22/2013 17:33
Surr: Selenate (surr)	94.6			85-115	%REC	100	5/23/2013 21:56
Surr: Selenate (surr)	96.6			85-115	%REC	1	5/24/2013 11:34
CYANIDE - SM4500CN E		Meth	nod: M4500CN	E&G			Analyst: EDG
Cyanide	0.00432	J	0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Work Order: 1305797

Sample ID: MW-114 Lab ID: 1305797-01

Collection Date: 5/15/2013 01:50 PM Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

Date: 12-Jun-13

TOTAL DISSOLVED SOLIDS Method: M2540C Analyst: KAH

Total Dissolved Solids (Residue, 3,990 5.0 10.0 mg/L 1 5/22/2013 09:55 Filterable)

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

MW-115 Sample ID:

Collection Date: 5/15/2013 03:50 PM

Work Order: 1305797

Lab ID: 1305797-02

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Ме	thod: SW8015 N	1	Prep: SW	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.020	0.051	mg/L	1	5/22/2013 17:42
TPH (Oil Range)	U		0.041	0.10	mg/L	1	5/22/2013 17:42
Surr: 2-Fluorobiphenyl	111			60-135	%REC	1	5/22/2013 17:42
GASOLINE RANGE ORGANICS - SW8015	iC .	Me	thod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 01:37
Surr: 4-Bromofluorobenzene	105			70-130	%REC	1	5/24/2013 01:37
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:21
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00816	J	0.0040	0.0100	mg/L	1	5/22/2013 06:20
Arsenic	0.00478	J	0.0020	0.0100	mg/L	2	5/22/2013 15:56
Barium	0.0107		0.00090	0.00500	mg/L	1	5/22/2013 06:20
Boron	0.605		0.040	0.100	mg/L	2	5/22/2013 15:56
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 06:20
Calcium	511		0.86	5.00	mg/L	10	5/22/2013 05:19
Chromium	U		0.0020	0.0100	mg/L	2	5/22/2013 15:56
Cobalt	U		0.0016	0.0100	mg/L	2	5/22/2013 15:56
Copper	U		0.0020	0.0100	mg/L	2	5/22/2013 15:56
Iron	U		0.16	0.400	mg/L	2	5/22/2013 15:56
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 06:20
Manganese	0.0267		0.0050	0.0100	mg/L	2	5/22/2013 15:56
Molybdenum	0.00750		0.0015	0.00500	mg/L	1	5/22/2013 06:20
Nickel	U		0.0020	0.0100	mg/L	2	5/22/2013 15:56
Potassium	0.780		0.084	0.200	mg/L	1	5/22/2013 06:20
Selenium	0.00654	J	0.0020	0.0100	mg/L	2	5/22/2013 15:56
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 06:20
Sodium	206		0.85	2.00	mg/L	10	5/22/2013 05:19
Uranium	0.0825		0.0050	0.00500	mg/L	1	5/22/2013 06:20
Zinc	0.00821	J	0.0050	0.0100	mg/L	2	5/22/2013 15:56
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 08:56
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 08:56
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 08:56
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 08:56
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 08:56
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 08:56

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-115

Collection Date: 5/15/2013 03:50 PM

Work Order: 1305797

Lab ID: 1305797-02

Matrix: WATER

Date: 12-Jun-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/21/2013 08:56
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/21/2013 08:56
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/21/2013 08:56
Surr: Phenol-d6	0			20-120	%REC	1	5/21/2013 08:56
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 17:44
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 17:44
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 17:44
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 17:44
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 17:44
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 17:44
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 17:44
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 17:44
Surr: 1,2-Dichloroethane-d4	104			71-125	%REC	1	5/21/2013 17:44
Surr: 4-Bromofluorobenzene	99.9			70-125	%REC	1	5/21/2013 17:44
Surr: Dibromofluoromethane	98.6			74-125	%REC	1	5/21/2013 17:44
Surr: Toluene-d8	96.7			78-123	%REC	1	5/21/2013 17:44
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	373		20	50.0	mg/L	100	5/23/2013 22:11
Fluoride	1.18		0.050	0.100	mg/L	1	5/24/2013 11:48
Sulfate	2,490		20	50.0	mg/L	100	5/23/2013 22:11
Nitrate/Nitrite (as N)	U		0.30	2.00	mg/L	10	5/22/2013 17:48
Surr: Selenate (surr)	104			85-115	%REC	10	5/22/2013 17:48
Surr: Selenate (surr)	99.4			85-115	%REC	100	5/23/2013 22:11
Surr: Selenate (surr)	95.0			85-115	%REC	1	5/24/2013 11:48
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	5/22/2013 13:00

Filterable)

Note:

Date: 12-Jun-13

Client: Navajo Refining Company Work Order: 1305797 Project: RO Discharge Sampling 128823

Lab ID: 1305797-02 Sample ID: MW-115 Matrix: WATER **Collection Date:** 5/15/2013 03:50 PM

Report Dilution **Date Analyzed** MDL Limit **Factor Analyses** Result Qual Units

Method: M2540C **TOTAL DISSOLVED SOLIDS** Analyst: KAH 5/22/2013 09:55 Total Dissolved Solids (Residue, 5,510 5.0 10.0 mg/L

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-117

Collection Date: 5/15/2013 10:30 AM

Work Order: 1305797

Lab ID: 1305797-03

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Ме	thod: SW8015 N	1	Prep: SW3	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	5/22/2013 16:22
TPH (Oil Range)	U		0.042	0.10	mg/L	1	5/22/2013 16:22
Surr: 2-Fluorobiphenyl	105			60-135	%REC	1	5/22/2013 16:22
GASOLINE RANGE ORGANICS - SW801	5C	Me	thod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 01:55
Surr: 4-Bromofluorobenzene	106			70-130	%REC	1	5/24/2013 01:55
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:27
DISSOLVED METALS		Ме	thod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.0184		0.0040	0.0100	mg/L	1	5/22/2013 06:25
Arsenic	0.00367	J	0.0020	0.0100	mg/L	2	5/22/2013 16:01
Barium	0.0113		0.00090	0.00500	mg/L	1	5/22/2013 06:25
Boron	0.175		0.040	0.100	mg/L	2	5/22/2013 16:01
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 06:25
Calcium	524		0.86	5.00	mg/L	10	5/22/2013 05:24
Chromium	U		0.0020	0.0100	mg/L	2	5/22/2013 16:01
Cobalt	U		0.0016	0.0100	mg/L	2	5/22/2013 16:01
Copper	U		0.0020	0.0100	mg/L	2	5/22/2013 16:01
Iron	U		0.16	0.400	mg/L	2	5/22/2013 16:01
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 06:25
Manganese	0.00978	J	0.0050	0.0100	mg/L	2	5/22/2013 16:01
Molybdenum	0.00664		0.0015	0.00500	mg/L	1	5/22/2013 06:25
Nickel	U		0.0020	0.0100	mg/L	2	5/22/2013 16:01
Potassium	4.37		0.084	0.200	mg/L	1	5/22/2013 06:25
Selenium	0.00585	J	0.0020	0.0100	mg/L	2	5/22/2013 16:01
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 06:25
Sodium	160		0.085	0.200	mg/L	1	5/22/2013 06:25
Uranium	0.0247		0.0050	0.00500	mg/L	1	5/22/2013 06:25
Zinc	U		0.0050	0.0100	mg/L	2	5/22/2013 16:01
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:45
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:45
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:45
Naphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 21:45
Surr: 2,4,6-Tribromophenol	70.7			34-129	%REC	1	5/22/2013 21:45
Surr: 2-Fluorobiphenyl	64.6			40-125	%REC	1	5/22/2013 21:45

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

MW-117 Sample ID:

Collection Date: 5/15/2013 10:30 AM

Work Order: 1305797

Lab ID: 1305797-03

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	51.9			20-120	%REC	1	5/22/2013 21:45
Surr: 4-Terphenyl-d14	73.0			40-135	%REC	1	5/22/2013 21:45
Surr: Nitrobenzene-d5	59.9			41-120	%REC	1	5/22/2013 21:45
Surr: Phenol-d6	49.9			20-120	%REC	1	5/22/2013 21:45
LOW LEVEL VOLATILES - SW8260	C	Metl	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 18:07
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 18:07
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:07
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 18:07
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 18:07
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:07
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 18:07
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 18:07
Surr: 1,2-Dichloroethane-d4	102			71-125	%REC	1	5/21/2013 18:07
Surr: 4-Bromofluorobenzene	98.3			70-125	%REC	1	5/21/2013 18:07
Surr: Dibromofluoromethane	99.1			74-125	%REC	1	5/21/2013 18:07
Surr: Toluene-d8	96.0			78-123	%REC	1	5/21/2013 18:07
MISCELLANEOUS ANALYSIS		Metl	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Metl	hod: E300				Analyst: JKP
Chloride	137		20	50.0	mg/L	100	5/23/2013 22:26
Fluoride	2.29		0.050	0.100	mg/L	1	5/24/2013 12:03
Sulfate	2,010		20	50.0	mg/L	100	5/23/2013 22:26
Nitrate/Nitrite (as N)	U		0.30	2.00	mg/L	10	5/22/2013 18:02
Surr: Selenate (surr)	100			85-115	%REC	10	5/22/2013 18:02
Surr: Selenate (surr)	98.9			85-115	%REC	100	5/23/2013 22:26
Surr: Selenate (surr)	99.4			85-115	%REC	1	5/24/2013 12:03
CYANIDE - SM4500CN E		Metl	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-117

Collection Date: 5/15/2013 10:30 AM

Work Order: 1305797

Lab ID: 1305797-03

Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

TOTAL DISSOLVED SOLIDS	Me		Analyst: KAH		
Total Dissolved Solids (Residue, Filterable)	4,260	5.0	10.0 mg/L	1	5/22/2013 09:55

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-118

Collection Date: 5/15/2013 06:30 PM

Work Order: 1305797

Lab ID: 1305797-04

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		N	lethod: SW8015M		Prep: SW:	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.020	0.051	mg/L	1	5/22/2013 18:36
TPH (Oil Range)	U		0.041	0.10	mg/L	1	5/22/2013 18:36
Surr: 2-Fluorobiphenyl	98.2			60-135	%REC	1	5/22/2013 18:36
GASOLINE RANGE ORGANICS - SW80150	;	N	Method: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 02:13
Surr: 4-Bromofluorobenzene	105			70-130	%REC	1	5/24/2013 02:13
DISSOLVED MERCURY BY 7470A		N	lethod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:29
DISSOLVED METALS		N	lethod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00796	J	0.0040	0.0100	mg/L	1	5/22/2013 08:05
Arsenic	0.0146		0.0010	0.00500	mg/L	1	5/22/2013 08:05
Barium	0.00919		0.00090	0.00500	mg/L	1	5/22/2013 08:05
Boron	0.230		0.040	0.100	mg/L	2	5/22/2013 16:06
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 08:05
Calcium	530		0.86	5.00	mg/L	10	5/22/2013 05:30
Chromium	U		0.0010	0.00500	mg/L	1	5/22/2013 08:05
Cobalt	U		0.00080	0.00500	mg/L	1	5/22/2013 08:05
Copper	0.00156	J	0.0010	0.00500	mg/L	1	5/22/2013 08:05
Iron	U		0.078	0.200	mg/L	1	5/22/2013 08:05
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 08:05
Manganese	U		0.0025	0.00500	mg/L	1	5/22/2013 08:05
Molybdenum	0.0179		0.0015	0.00500	mg/L	1	5/22/2013 08:05
Nickel	0.00184	J	0.0010	0.00500	mg/L	1	5/22/2013 08:05
Potassium	7.20		0.084	0.200	mg/L	1	5/22/2013 08:05
Selenium	0.0127		0.0010	0.00500	mg/L	1	5/22/2013 08:05
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 08:05
Sodium	229		0.85	2.00	mg/L	10	5/22/2013 05:30
Uranium	0.0330		0.0050	0.00500	mg/L	1	5/22/2013 08:05
Zinc	U		0.0025	0.00500	mg/L	1	5/22/2013 08:05
LOW-LEVEL SEMIVOLATILES		N	lethod: SW8270		Prep: SW:	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U	-	0.000050	0.00020	mg/L	1	5/21/2013 09:37
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 09:37
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 09:37
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 09:37
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 09:37
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 09:37

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

MW-118 Sample ID:

Collection Date: 5/15/2013 06:30 PM

Work Order: 1305797

Lab ID: 1305797-04

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/21/2013 09:37
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/21/2013 09:37
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/21/2013 09:37
Surr: Phenol-d6	0			20-120	%REC	1	5/21/2013 09:37
LOW LEVEL VOLATILES - SW82600	;	Met	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 18:31
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 18:31
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:31
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 18:31
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 18:31
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:31
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 18:31
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 18:31
Surr: 1,2-Dichloroethane-d4	106			71-125	%REC	1	5/21/2013 18:31
Surr: 4-Bromofluorobenzene	100			70-125	%REC	1	5/21/2013 18:31
Surr: Dibromofluoromethane	99.0			74-125	%REC	1	5/21/2013 18:31
Surr: Toluene-d8	97.4			78-123	%REC	1	5/21/2013 18:31
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	287		20	50.0	mg/L	100	5/23/2013 22:40
Fluoride	5.39		0.050	0.100	mg/L	1	5/24/2013 12:25
Sulfate	2,250		20	50.0	mg/L	100	5/23/2013 22:40
Nitrate/Nitrite (as N)	2.09		0.30	2.00	mg/L	10	5/22/2013 18:30
Surr: Selenate (surr)	103			85-115	%REC	10	5/22/2013 18:30
Surr: Selenate (surr)	94.6			85-115	%REC	100	5/23/2013 22:40
Surr: Selenate (surr)	95.9			85-115	%REC	1	5/24/2013 12:25
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823 Work Order: 1305797

 Sample ID:
 MW-118
 Lab ID:
 1305797-04

 Collection Date:
 5/15/2013 06:30 PM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

TOTAL DISSOLVED SOLIDS

Method: M2540C

Analyst: KAH

Total Dissolved Solids (Residue, 5,090 5.0 10.0 mg/L 1 5/22/2013 09:55 Filterable)

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-119

Collection Date: 5/15/2013 06:10 PM

Work Order: 1305797

Lab ID: 1305797-05

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	ethod:SW8015N	1	Prep: SW:	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	5/22/2013 17:16
TPH (Oil Range)	U		0.041	0.10	mg/L	1	5/22/2013 17:16
Surr: 2-Fluorobiphenyl	101			60-135	%REC	1	5/22/2013 17:16
GASOLINE RANGE ORGANICS - SW801	5C	Мє	ethod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 02:31
Surr: 4-Bromofluorobenzene	104			70-130	%REC	1	5/24/2013 02:31
DISSOLVED MERCURY BY 7470A		Мє	ethod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:31
DISSOLVED METALS		Мє	ethod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.0296		0.0040	0.0100	mg/L	1	5/22/2013 08:10
Arsenic	0.00537		0.0010	0.00500	mg/L	1	5/22/2013 08:10
Barium	0.00625		0.00090	0.00500	mg/L	1	5/22/2013 08:10
Boron	0.130		0.040	0.100	mg/L	2	5/22/2013 16:21
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 08:10
Calcium	491		0.86	5.00	mg/L	10	5/22/2013 05:36
Chromium	U		0.0010	0.00500	mg/L	1	5/22/2013 08:10
Cobalt	U		0.00080	0.00500	mg/L	1	5/22/2013 08:10
Copper	0.00137	J	0.0010	0.00500	mg/L	1	5/22/2013 08:10
Iron	U		0.078	0.200	mg/L	1	5/22/2013 08:10
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 08:10
Manganese	U		0.0025	0.00500	mg/L	1	5/22/2013 08:10
Molybdenum	0.00745		0.0015	0.00500	mg/L	1	5/22/2013 08:10
Nickel	0.00163	J	0.0010	0.00500	mg/L	1	5/22/2013 08:10
Potassium	0.794		0.084	0.200	mg/L	1	5/22/2013 08:10
Selenium	0.00506		0.0010	0.00500	mg/L	1	5/22/2013 08:10
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 08:10
Sodium	120		0.085	0.200	mg/L	1	5/22/2013 08:10
Uranium	0.0222		0.0050	0.00500	mg/L	1	5/22/2013 08:10
Zinc	U		0.0025	0.00500	mg/L	1	5/22/2013 08:10
LOW-LEVEL SEMIVOLATILES		Мє	ethod: SW8270		Prep: SW:	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 22:06
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 22:06
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/22/2013 22:06
Naphthalene	U		0.000050	0.00020	mg/L	1	5/22/2013 22:06
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/22/2013 22:06
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/22/2013 22:06

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

MW-119 Sample ID:

Collection Date: 5/15/2013 06:10 PM

Work Order: 1305797

Lab ID: 1305797-05

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/22/2013 22:06
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/22/2013 22:06
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/22/2013 22:06
Surr: Phenol-d6	0			20-120	%REC	1	5/22/2013 22:06
LOW LEVEL VOLATILES - SW8260C	;	Metl	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 18:57
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 18:57
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:57
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 18:57
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 18:57
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 18:57
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 18:57
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 18:57
Surr: 1,2-Dichloroethane-d4	105			71-125	%REC	1	5/21/2013 18:57
Surr: 4-Bromofluorobenzene	100			70-125	%REC	1	5/21/2013 18:57
Surr: Dibromofluoromethane	102			74-125	%REC	1	5/21/2013 18:57
Surr: Toluene-d8	97.5			78-123	%REC	1	5/21/2013 18:57
MISCELLANEOUS ANALYSIS		Metl	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Metl	hod: E300				Analyst: JKP
Chloride	118		20	50.0	mg/L	100	5/23/2013 22:55
Fluoride	2.43		0.050	0.100	mg/L	1	5/24/2013 12:39
Sulfate	1,970		20	50.0	mg/L	100	5/23/2013 22:55
Nitrate/Nitrite (as N)	1.91	J	0.30	2.00	mg/L	10	5/22/2013 18:45
Surr: Selenate (surr)	105			85-115	%REC	10	5/22/2013 18:45
Surr: Selenate (surr)	98.5			85-115	%REC	100	5/23/2013 22:55
Surr: Selenate (surr)	96.0			85-115	%REC	1	5/24/2013 12:39
CYANIDE - SM4500CN E		Metl	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

Lab ID: 1305797-05 Sample ID: MW-119

Matrix: WATER **Collection Date:** 5/15/2013 06:10 PM

Report Dilution **Date Analyzed** MDL Limit **Factor Analyses** Result Qual Units

Work Order: 1305797

Method: M2540C **TOTAL DISSOLVED SOLIDS** Analyst: KAH 5/22/2013 09:55 Total Dissolved Solids (Residue, 4,030 5.0 10.0 mg/L Filterable)

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: DUP-03

Collection Date: 5/15/2013 12:01 AM

Work Order: 1305797

Lab ID: 1305797-06

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO	Method: SW8015M		Prep: SW3511 / 5/20/13		Analyst: RPM		
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	5/22/2013 18:09
TPH (Oil Range)	U		0.042	0.10	mg/L	1	5/22/2013 18:09
Surr: 2-Fluorobiphenyl	87.4			60-135	%REC	1	5/22/2013 18:09
GASOLINE RANGE ORGANICS - SW8015	SC .	Me	thod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 03:25
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	5/24/2013 03:25
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:33
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00865	J	0.0040	0.0100	mg/L	1	5/22/2013 08:16
Arsenic	0.00427	J	0.0010	0.00500	mg/L	1	5/22/2013 08:16
Barium	0.0110		0.00090	0.00500	mg/L	1	5/22/2013 08:16
Boron	0.635		0.040	0.100	mg/L	2	5/22/2013 16:26
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 08:16
Calcium	495		0.86	5.00	mg/L	10	5/22/2013 05:41
Chromium	U		0.0010	0.00500	mg/L	1	5/22/2013 08:16
Cobalt	U		0.00080	0.00500	mg/L	1	5/22/2013 08:16
Copper	0.00151	J	0.0010	0.00500	mg/L	1	5/22/2013 08:16
Iron	U		0.078	0.200	mg/L	1	5/22/2013 08:16
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 08:16
Manganese	0.0230		0.0025	0.00500	mg/L	1	5/22/2013 08:16
Molybdenum	0.00723		0.0015	0.00500	mg/L	1	5/22/2013 08:16
Nickel	0.00225	J	0.0010	0.00500	mg/L	1	5/22/2013 08:16
Potassium	0.766		0.084	0.200	mg/L	1	5/22/2013 08:16
Selenium	0.00734		0.0010	0.00500	mg/L	1	5/22/2013 08:16
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 08:16
Sodium	201		0.85	2.00	mg/L	10	5/22/2013 05:41
Uranium	0.0731		0.0050	0.00500	mg/L	1	5/22/2013 08:16
Zinc	U		0.0025	0.00500	mg/L	1	5/22/2013 08:16
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW:	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:18
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:18
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:18
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:18
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 10:18
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 10:18

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

DUP-03 Sample ID:

Collection Date: 5/15/2013 12:01 AM

Work Order: 1305797

Lab ID: 1305797-06

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0		20-120	%REC	1	5/21/2013 10:18
Surr: 4-Terphenyl-d14	0		40-135	%REC	1	5/21/2013 10:18
Surr: Nitrobenzene-d5	0		41-120	%REC	1	5/21/2013 10:18
Surr: Phenol-d6	0		20-120	%REC	1	5/21/2013 10:18
OW LEVEL VOLATILES - SW8260	OC N	Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/21/2013 19:24
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/21/2013 19:24
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Benzene	U	0.00020	0.0010	mg/L	1	5/21/2013 19:24
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Chloroform	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/21/2013 19:24
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/21/2013 19:24
Toluene	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/21/2013 19:24
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/21/2013 19:24
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/21/2013 19:24
Surr: 1,2-Dichloroethane-d4	107		71-125	%REC	1	5/21/2013 19:24
Surr: 4-Bromofluorobenzene	100		70-125	%REC	1	5/21/2013 19:24
Surr: Dibromofluoromethane	102		74-125	%REC	1	5/21/2013 19:24
Surr: Toluene-d8	97.6		78-123	%REC	1	5/21/2013 19:24
MISCELLANEOUS ANALYSIS	N	/lethod:NA				Analyst: SUB
Miscellaneous Analysis	See Attached	0			1	6/12/2013
ANIONS - EPA 300.0 (1993)	N	Method: E300				Analyst: JKP
Chloride	364	20	50.0	mg/L	100	5/23/2013 23:09
Fluoride	1.15	0.050	0.100	mg/L	1	5/24/2013 15:29
Sulfate	2,420	20	50.0	mg/L	100	5/23/2013 23:09
Nitrate/Nitrite (as N)	U	0.30	2.00	mg/L	10	5/22/2013 19:00
Surr: Selenate (surr)	104		85-115	%REC	10	5/22/2013 19:00
Surr: Selenate (surr)	98.6		85-115	%REC	100	5/23/2013 23:09
Surr: Selenate (surr)	95.6		85-115	%REC	1	5/24/2013 15:29
CYANIDE - SM4500CN E	N	Method: M4500CN	E&G			Analyst: EDG
Cyanide	U	0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823 Work Order: 1305797

 Sample ID:
 DUP-03
 Lab ID:
 1305797-06

 Collection Date:
 5/15/2013 12:01 AM
 Matrix:
 WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

TOTAL DISSOLVED SOLIDS

Method: M2540C

Analyst: JKP

Total Dissolved Solids (Residue, 4,990 5.0 10.0 mg/L 1 5/21/2013 10:00 Filterable)

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-116

Collection Date: 5/16/2013 10:15 AM

Work Order: 1305797

Lab ID: 1305797-07

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	:hod: SW8015 N	1	Prep: SW3	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	5/22/2013 16:49
TPH (Oil Range)	U		0.041	0.10	mg/L	1	5/22/2013 16:49
Surr: 2-Fluorobiphenyl	105			60-135	%REC	1	5/22/2013 16:49
GASOLINE RANGE ORGANICS - SW80	015C	Me	thod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 03:43
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	5/24/2013 03:43
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	0.0000460	J	0.000042	0.000200	mg/L	1	5/20/2013 14:35
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.349		0.0040	0.0100	mg/L	1	5/22/2013 08:21
Arsenic	0.00502		0.0010	0.00500	mg/L	1	5/22/2013 08:21
Barium	0.0111		0.00090	0.00500	mg/L	1	5/22/2013 08:21
Boron	0.238		0.040	0.100	mg/L	2	5/22/2013 16:31
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 08:21
Calcium	578		0.86	5.00	mg/L	10	5/22/2013 05:47
Chromium	0.00119	J	0.0010	0.00500	mg/L	1	5/22/2013 08:21
Cobalt	U		0.00080	0.00500	mg/L	1	5/22/2013 08:21
Copper	0.00176	J	0.0010	0.00500	mg/L	1	5/22/2013 08:21
Iron	0.201		0.078	0.200	mg/L	1	5/22/2013 08:21
Lead	U		0.0014	0.0100	mg/L	2	5/22/2013 16:31
Manganese	0.0342		0.0025	0.00500	mg/L	1	5/22/2013 08:21
Molybdenum	0.00308	J	0.0015	0.00500	mg/L	1	5/22/2013 08:21
Nickel	0.00204	J	0.0010	0.00500	mg/L	1	5/22/2013 08:21
Potassium	1.38		0.084	0.200	mg/L	1	5/22/2013 08:21
Selenium	0.00733		0.0010	0.00500	mg/L	1	5/22/2013 08:21
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 08:21
Sodium	194		0.85	2.00	mg/L	10	5/22/2013 05:47
Uranium	0.0343		0.010	0.0100	mg/L	2	5/22/2013 16:31
Zinc	U		0.0025	0.00500	mg/L	1	5/22/2013 08:21
LOW-LEVEL SEMIVOLATILES		Me	:hod: SW8270		Prep: SW3	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:39
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:39
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:39
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:39
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 10:39
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 10:39

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: MW-116

Collection Date: 5/16/2013 10:15 AM

Work Order: 1305797

Lab ID: 1305797-07

Matrix: WATER

Date: 12-Jun-13

Analyses	Result Qua	al MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0		20-120	%REC	1	5/21/2013 10:39
Surr: 4-Terphenyl-d14	0		40-135	%REC	1	5/21/2013 10:39
Surr: Nitrobenzene-d5	0		41-120	%REC	1	5/21/2013 10:39
Surr: Phenol-d6	0		20-120	%REC	1	5/21/2013 10:39
LOW LEVEL VOLATILES - SW82600		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/21/2013 19:50
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/21/2013 19:50
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Benzene	U	0.00020	0.0010	mg/L	1	5/21/2013 19:50
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Chloroform	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/21/2013 19:50
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/21/2013 19:50
Toluene	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/21/2013 19:50
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/21/2013 19:50
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/21/2013 19:50
Surr: 1,2-Dichloroethane-d4	107		71-125	%REC	1	5/21/2013 19:50
Surr: 4-Bromofluorobenzene	100		70-125	%REC	1	5/21/2013 19:50
Surr: Dibromofluoromethane	100		74-125	%REC	1	5/21/2013 19:50
Surr: Toluene-d8	97.1		78-123	%REC	1	5/21/2013 19:50
MISCELLANEOUS ANALYSIS		Method: NA				Analyst: SUB
Miscellaneous Analysis	See Attached	0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Method: E300				Analyst: JKP
Chloride	330	20	50.0	mg/L	100	5/23/2013 23:24
Fluoride	1.19	0.050	0.100	mg/L	1	5/24/2013 12:54
Sulfate	2,080	20	50.0	mg/L	100	5/23/2013 23:24
Nitrate/Nitrite (as N)	U	0.30	2.00	mg/L	10	5/22/2013 19:43
Surr: Selenate (surr)	105		85-115	%REC	10	5/22/2013 19:43
Surr: Selenate (surr)	97.2		85-115	%REC	100	5/23/2013 23:24
Surr: Selenate (surr)	92.1		85-115	%REC	1	5/24/2013 12:54
CYANIDE - SM4500CN E		Method: M4500CN	E&G			Analyst: EDG
Cyanide	U	0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823 Work Order: 1305797

Sample ID: MW-116 **Lab ID:** 1305797-07

Collection Date: 5/16/2013 10:15 AM Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

TOTAL DISSOLVED SOLIDS Method: M2540C Analyst: KAH

Total Dissolved Solids (Residue, 4,480 5.0 10.0 mg/L 1 5/22/2013 09:55 Filterable)

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: EQB-03

Collection Date: 5/16/2013 11:40 AM

Work Order: 1305797

Lab ID: 1305797-08

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	ethod: SW8015N	1	Prep: SW	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	5/22/2013 13:41
TPH (Oil Range)	U		0.042	0.11	mg/L	1	5/22/2013 13:41
Surr: 2-Fluorobiphenyl	95.2			60-135	%REC	1	5/22/2013 13:41
GASOLINE RANGE ORGANICS - SW8015	С	Мє	ethod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 04:01
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	5/24/2013 04:01
DISSOLVED MERCURY BY 7470A		Мє	ethod: SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:37
DISSOLVED METALS		Мє	ethod: SW6020		Prep: SW	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00413	J	0.0040	0.0100	mg/L	1	5/22/2013 06:03
Arsenic	U		0.0010	0.00500	mg/L	1	5/22/2013 06:03
Barium	U		0.00090	0.00500	mg/L	1	5/22/2013 06:03
Boron	U		0.020	0.0500	mg/L	1	5/22/2013 15:46
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 06:03
Calcium	U		0.086	0.500	mg/L	1	5/22/2013 06:03
Chromium	U		0.0010	0.00500	mg/L	1	5/22/2013 06:03
Cobalt	U		0.00080	0.00500	mg/L	1	5/22/2013 06:03
Copper	U		0.0010	0.00500	mg/L	1	5/22/2013 06:03
Iron	U		0.078	0.200	mg/L	1	5/22/2013 06:03
Lead	U		0.00070	0.00500	mg/L	1	5/22/2013 06:03
Manganese	U		0.0025	0.00500	mg/L	1	5/22/2013 06:03
Molybdenum	U		0.0015	0.00500	mg/L	1	5/22/2013 06:03
Nickel	U		0.0010	0.00500	mg/L	1	5/22/2013 06:03
Potassium	U		0.084	0.200	mg/L	1	5/22/2013 06:03
Selenium	0.00116	J	0.0010	0.00500	mg/L	1	5/22/2013 06:03
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 06:03
Sodium	U		0.085	0.200	mg/L	1	5/22/2013 06:03
Uranium	U		0.0050	0.00500	mg/L	1	5/22/2013 06:03
Zinc	0.00463	J	0.0025	0.00500	mg/L	1	5/22/2013 06:03
LOW-LEVEL SEMIVOLATILES		Мє	ethod: SW8270		Prep: SW	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:59
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:59
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:59
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 10:59
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 10:59
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 10:59

Client: Navajo Refining Company

RO Discharge Sampling 128823 **Project:**

EQB-03 Sample ID:

Collection Date: 5/16/2013 11:40 AM

Work Order: 1305797

Lab ID: 1305797-08

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/21/2013 10:59
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/21/2013 10:59
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/21/2013 10:59
Surr: Phenol-d6	0			20-120	%REC	1	5/21/2013 10:59
LOW LEVEL VOLATILES - SW82600	;	Metl	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/22/2013 01:03
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/22/2013 01:03
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
Benzene	U		0.00020	0.0010	mg/L	1	5/22/2013 01:03
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
Chloroform	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/22/2013 01:03
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/22/2013 01:03
Toluene	0.00039	J	0.00030	0.0010	mg/L	1	5/22/2013 01:03
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/22/2013 01:03
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/22/2013 01:03
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/22/2013 01:03
Surr: 1,2-Dichloroethane-d4	103			71-125	%REC	1	5/22/2013 01:03
Surr: 4-Bromofluorobenzene	101			70-125	%REC	1	5/22/2013 01:03
Surr: Dibromofluoromethane	101			74-125	%REC	1	5/22/2013 01:03
Surr: Toluene-d8	97.7			78-123	%REC	1	5/22/2013 01:03
MISCELLANEOUS ANALYSIS		Metl	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Metl	hod: E300				Analyst: JKP
Chloride	U		0.20	0.500	mg/L	1	5/23/2013 23:38
Fluoride	U		0.050	0.100	mg/L	1	5/23/2013 23:38
Sulfate	0.329	J	0.20	0.500	mg/L	1	5/23/2013 23:38
Nitrate/Nitrite (as N)	U		0.30	2.00	mg/L	10	5/22/2013 19:58
Surr: Selenate (surr)	87.7			85-115	%REC	10	5/22/2013 19:58
Surr: Selenate (surr)	98.0			85-115	%REC	1	5/23/2013 23:38
CYANIDE - SM4500CN E		Meti	hod: M4500CN	I E&G			Analyst: EDG
Cyanide	U		0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: EQB-03

Collection Date: 5/16/2013 11:40 AM

Work Order: 1305797

Lab ID: 1305797-08

Matrix: WATER

Report Dilution

Analyses Result Qual MDL Limit Units Factor Date Analyzed

TOTAL DISSOLVED SOLIDS	Met		Analyst: KAH		
Total Dissolved Solids (Residue, Filterable)	50.0	5.0	10.0 mg/L	1	5/23/2013 09:05

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: RO Discharge

Collection Date: 5/16/2013 08:30 AM Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO		Me	ethod: SW8015N	Λ	Prep: SW3	3511 / 5/20/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	5/22/2013 15:01
TPH (Oil Range)	U		0.042	0.11	mg/L	1	5/22/2013 15:01
Surr: 2-Fluorobiphenyl	106			60-135	%REC	1	5/22/2013 15:01
GASOLINE RANGE ORGANICS - SW801	5C	Ме	ethod: SW8015				Analyst: RPM
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	5/24/2013 04:19
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	5/24/2013 04:19
DISSOLVED MERCURY BY 7470A		Ме	ethod:SW7470		Prep: SW	7470 / 5/20/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	5/20/2013 14:39
DISSOLVED METALS		Мє	ethod: SW6020		Prep: SW3	3010A / 5/20/13	Analyst: ALR
Aluminum	0.00529	J	0.0040	0.0100	mg/L	1	5/22/2013 08:27
Arsenic	0.00250	J	0.0020	0.0100	mg/L	2	5/22/2013 16:36
Barium	0.0464		0.00090	0.00500	mg/L	1	5/22/2013 08:27
Boron	0.104		0.040	0.100	mg/L	2	5/22/2013 16:36
Cadmium	U		0.00080	0.00200	mg/L	1	5/22/2013 08:27
Calcium	397		0.86	5.00	mg/L	10	5/22/2013 06:09
Chromium	U		0.0020	0.0100	mg/L	2	5/22/2013 16:36
Cobalt	U		0.0016	0.0100	mg/L	2	5/22/2013 16:36
Copper	U		0.0020	0.0100	mg/L	2	5/22/2013 16:36
Iron	U		0.16	0.400	mg/L	2	5/22/2013 16:36
Lead	U		0.0014	0.0100	mg/L	2	5/22/2013 16:36
Manganese	U		0.0050	0.0100	mg/L	2	5/22/2013 16:36
Molybdenum	0.00622		0.0015	0.00500	mg/L	1	5/22/2013 08:27
Nickel	U		0.0020	0.0100	mg/L	2	5/22/2013 16:36
Potassium	2.91		0.084	0.200	mg/L	1	5/22/2013 08:27
Selenium	0.00750	J	0.0020	0.0100	mg/L	2	5/22/2013 16:36
Silver	U		0.00080	0.00500	mg/L	1	5/22/2013 08:27
Sodium	40.4		0.085	0.200	mg/L	1	5/22/2013 08:27
Uranium	U		0.010	0.0100	mg/L	2	5/22/2013 16:36
Zinc	0.00516	J	0.0050	0.0100	mg/L	2	5/22/2013 16:36
LOW-LEVEL SEMIVOLATILES		Method: SW8270			Prep: SW3	3510 / 5/20/13	Analyst: ACN
1-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 11:20
2-Methylnaphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 11:20
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	5/21/2013 11:20
Naphthalene	U		0.000050	0.00020	mg/L	1	5/21/2013 11:20
Surr: 2,4,6-Tribromophenol	0			34-129	%REC	1	5/21/2013 11:20
Surr: 2-Fluorobiphenyl	0			40-125	%REC	1	5/21/2013 11:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. Date: 12-Jun-13

Lab ID: 1305797-09

Work Order: 1305797

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: RO Discharge **Collection Date:** 5/16/2013 08:30 AM

Work Order: 1305797

Lab ID: 1305797-09

Date: 12-Jun-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	0			20-120	%REC	1	5/21/2013 11:20
Surr: 4-Terphenyl-d14	0			40-135	%REC	1	5/21/2013 11:20
Surr: Nitrobenzene-d5	0			41-120	%REC	1	5/21/2013 11:20
Surr: Phenol-d6	0			20-120	%REC	1	5/21/2013 11:20
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 20:16
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 20:16
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 20:16
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 20:16
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 20:16
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 20:16
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 20:16
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 20:16
Surr: 1,2-Dichloroethane-d4	107			71-125	%REC	1	5/21/2013 20:16
Surr: 4-Bromofluorobenzene	99.9			70-125	%REC	1	5/21/2013 20:16
Surr: Dibromofluoromethane	99.6			74-125	%REC	1	5/21/2013 20:16
Surr: Toluene-d8	97.1			78-123	%REC	1	5/21/2013 20:16
MISCELLANEOUS ANALYSIS		Met	hod:NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	6/12/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	38.2		0.20	0.500	mg/L	1	5/24/2013 13:08
Fluoride	2.15		0.050	0.100	mg/L	1	5/24/2013 13:08
Sulfate	1,080		20	50.0	mg/L	100	5/23/2013 20:15
Nitrate/Nitrite (as N)	2.11		0.30	2.00	mg/L	10	5/22/2013 20:12
Surr: Selenate (surr)	99.2				%REC	10	5/22/2013 20:12
Surr: Selenate (surr)	101			85-115	%REC	100	5/23/2013 20:15
Surr: Selenate (surr)	92.1			85-115	%REC	1	5/24/2013 13:08
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	0.00487	J	0.0040	0.0200	mg/L	1	5/22/2013 13:00

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: RO Discharge **Collection Date:** 5/16/2013 08:30 AM

Work Order: 1305797

Lab ID: 1305797-09

Matrix: WATER

Analyses Result Qual MDL Limit Units Factor Date Analyzed

		thod: M2540C			A 1 (17A11
TOTAL DISSOLVED SOLIDS	IVIE		Analyst: KAH		
Total Dissolved Solids (Residue, Filterable)	2,410	5.0	10.0 mg/L	1	5/23/2013 09:05

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-36

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-10

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Q	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/21/2013 15:27
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/21/2013 15:27
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Benzene	U	0.00020	0.0010	mg/L	1	5/21/2013 15:27
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Chloroform	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/21/2013 15:27
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/21/2013 15:27
Toluene	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/21/2013 15:27
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/21/2013 15:27
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/21/2013 15:27
Surr: 1,2-Dichloroethane-d4	104		71-125	%REC	1	5/21/2013 15:27
Surr: 4-Bromofluorobenzene	103		70-125	%REC	1	5/21/2013 15:27
Surr: Dibromofluoromethane	102		74-125	%REC	1	5/21/2013 15:27
Surr: Toluene-d8	97.5		78-123	%REC	1	5/21/2013 15:27

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-33

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-11

Matrix: WATER

Date: 12-Jun-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Metho	d: SW8260				Analyst: PC
1,1,1-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	5/21/2013 15:50
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
1,1-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
1,1-Dichloroethene	U		0.00050	0.0010	mg/L	1	5/21/2013 15:50
1,2-Dibromoethane	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
1,2-Dichloroethane	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Benzene	U		0.00020	0.0010	mg/L	1	5/21/2013 15:50
Carbon tetrachloride	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Chloroform	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Ethylbenzene	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Methylene chloride	U		0.00040	0.0020	mg/L	1	5/21/2013 15:50
Tetrachloroethene	U		0.00040	0.0010	mg/L	1	5/21/2013 15:50
Toluene	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Trichloroethene	U		0.00020	0.0010	mg/L	1	5/21/2013 15:50
Vinyl chloride	U		0.00040	0.0010	mg/L	1	5/21/2013 15:50
Xylenes, Total	U		0.00030	0.0010	mg/L	1	5/21/2013 15:50
Surr: 1,2-Dichloroethane-d4	105			71-125	%REC	1	5/21/2013 15:50
Surr: 4-Bromofluorobenzene	101			70-125	%REC	1	5/21/2013 15:50
Surr: Dibromofluoromethane	103			74-125	%REC	1	5/21/2013 15:50
Surr: Toluene-d8	98.6			78-123	%REC	1	5/21/2013 15:50

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-49

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-12

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Q	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/21/2013 16:15
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/21/2013 16:15
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Benzene	U	0.00020	0.0010	mg/L	1	5/21/2013 16:15
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Chloroform	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/21/2013 16:15
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/21/2013 16:15
Toluene	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/21/2013 16:15
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/21/2013 16:15
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/21/2013 16:15
Surr: 1,2-Dichloroethane-d4	106		71-125	%REC	1	5/21/2013 16:15
Surr: 4-Bromofluorobenzene	98.3		70-125	%REC	1	5/21/2013 16:15
Surr: Dibromofluoromethane	101		74-125	%REC	1	5/21/2013 16:15
Surr: Toluene-d8	95.9		78-123	%REC	1	5/21/2013 16:15

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-43

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-13

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Q	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/22/2013 01:29
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/22/2013 01:29
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Benzene	U	0.00020	0.0010	mg/L	1	5/22/2013 01:29
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Chloroform	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/22/2013 01:29
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/22/2013 01:29
Toluene	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/22/2013 01:29
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/22/2013 01:29
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/22/2013 01:29
Surr: 1,2-Dichloroethane-d4	103		71-125	%REC	1	5/22/2013 01:29
Surr: 4-Bromofluorobenzene	99.8		70-125	%REC	1	5/22/2013 01:29
Surr: Dibromofluoromethane	101		74-125	%REC	1	5/22/2013 01:29
Surr: Toluene-d8	98.9		78-123	%REC	1	5/22/2013 01:29

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-12

Collection Date: 5/16/2013

Date: 12-Jun-13

Work Order: 1305797

Lab ID: 1305797-14

Matrix: WATER

Analyses	Result Q	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/22/2013 01:55
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/22/2013 01:55
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Benzene	U	0.00020	0.0010	mg/L	1	5/22/2013 01:55
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Chloroform	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/22/2013 01:55
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/22/2013 01:55
Toluene	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/22/2013 01:55
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/22/2013 01:55
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/22/2013 01:55
Surr: 1,2-Dichloroethane-d4	103		71-125	%REC	1	5/22/2013 01:55
Surr: 4-Bromofluorobenzene	102		70-125	%REC	1	5/22/2013 01:55
Surr: Dibromofluoromethane	98.1		74-125	%REC	1	5/22/2013 01:55
Surr: Toluene-d8	98.3		78-123	%REC	1	5/22/2013 01:55

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-34

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-15

Date: 12-Jun-13

Matrix: WATER

Analyses	Result (Qual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/22/2013 02:21
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/22/2013 02:21
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Benzene	U	0.00020	0.0010	mg/L	1	5/22/2013 02:21
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Chloroform	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/22/2013 02:21
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/22/2013 02:21
Toluene	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/22/2013 02:21
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/22/2013 02:21
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/22/2013 02:21
Surr: 1,2-Dichloroethane-d4	107		71-125	%REC	1	5/22/2013 02:21
Surr: 4-Bromofluorobenzene	101		70-125	%REC	1	5/22/2013 02:21
Surr: Dibromofluoromethane	103		74-125	%REC	1	5/22/2013 02:21
Surr: Toluene-d8	96.3		78-123	%REC	1	5/22/2013 02:21

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-14

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-16

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Q	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/22/2013 02:47
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/22/2013 02:47
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Benzene	U	0.00020	0.0010	mg/L	1	5/22/2013 02:47
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Chloroform	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/22/2013 02:47
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/22/2013 02:47
Toluene	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/22/2013 02:47
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/22/2013 02:47
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/22/2013 02:47
Surr: 1,2-Dichloroethane-d4	104		71-125	%REC	1	5/22/2013 02:47
Surr: 4-Bromofluorobenzene	99.3		70-125	%REC	1	5/22/2013 02:47
Surr: Dibromofluoromethane	99.5		74-125	%REC	1	5/22/2013 02:47
Surr: Toluene-d8	96.3		78-123	%REC	1	5/22/2013 02:47

Client: Navajo Refining Company

Project: RO Discharge Sampling 128823

Sample ID: Trip Blank 050313-24

Collection Date: 5/16/2013

Work Order: 1305797

Lab ID: 1305797-17

Date: 12-Jun-13

Matrix: WATER

Analyses	Result Qu	ual MDL	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: SW8260				Analyst: PC
1,1,1-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	5/22/2013 03:13
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
1,1-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
1,1-Dichloroethene	U	0.00050	0.0010	mg/L	1	5/22/2013 03:13
1,2-Dibromoethane	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
1,2-Dichloroethane	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Benzene	U	0.00020	0.0010	mg/L	1	5/22/2013 03:13
Carbon tetrachloride	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Chloroform	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Ethylbenzene	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Methylene chloride	U	0.00040	0.0020	mg/L	1	5/22/2013 03:13
Tetrachloroethene	U	0.00040	0.0010	mg/L	1	5/22/2013 03:13
Toluene	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Trichloroethene	U	0.00020	0.0010	mg/L	1	5/22/2013 03:13
Vinyl chloride	U	0.00040	0.0010	mg/L	1	5/22/2013 03:13
Xylenes, Total	U	0.00030	0.0010	mg/L	1	5/22/2013 03:13
Surr: 1,2-Dichloroethane-d4	103		71-125	%REC	1	5/22/2013 03:13
Surr: 4-Bromofluorobenzene	101		70-125	%REC	1	5/22/2013 03:13
Surr: Dibromofluoromethane	102		74-125	%REC	1	5/22/2013 03:13
Surr: Toluene-d8	97.4		78-123	%REC	1	5/22/2013 03:13

Navajo Refining Company

Work Order: 1305797

Client:

Note:

Project: RO Discharge Sampling 128823

Date: 12-Jun-13

QC BATCH REPORT

Batch ID: 70151		Instrument ID FID-16		Method	d: SW80 1	5M						
MBLK San	mple ID:	LBLKW-130520-70151				ι	Jnits: mg /	L	Analys	is Date: 5 /	22/2013 1	0:34 AN
Client ID:		Run II	D: FID-16	_130520A		Se	qNo: 322 8	3675	Prep Date: 5/20	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Rang	ge)	U	0.050									
TPH (Oil Range)		U	0.10									
Surr: 2-Fluorob	iphenyl	0.06089	0.0050	0.06061		0	100	60-135	0			
LCS San	mple ID:	LLCSW-130520-70151				ι	Jnits: mg/	L	Analys	is Date: 5 /	22/2013 1	1:01 AM
Client ID:		Run II	D: FID-16	_130520A		Se	qNo: 322 8	3676	Prep Date: 5/20	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Rang	ge)	0.693	0.050	0.6061		0	114	70-130				
TPH (Oil Range)		0.5582	0.10	0.6061		0	92.1	70-130				
Surr: 2-Fluorob	piphenyl	0.04578	0.0050	0.06061		0	75.5	60-135	0			
LCSD San	nple ID:	LLCSDW-130520-70151				Ĺ	Jnits: mg/	L	Analys	is Date: 5 /	22/2013 1	1:27 AM
Client ID:		Run II	D: FID-16	_130520A		Se	qNo: 322 8	3677	Prep Date: 5/20	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Rang	ge)	0.7029	0.050	0.6061		0	116	70-130	0.693	1.43	20	
TPH (Oil Range)		0.5517	0.10	0.6061		0	91	70-130	0.5582	1.17	20	
Surr: 2-Fluorob	iphenyl	0.04636	0.0050	0.06061		0	76.5	60-135	0.04578	1.25	20	
The following sa	mples w	vere analyzed in this batch:	1:	305797-01C 305797-04C 305797-07C	13	3057	797-02C 797-05C 797-08C	13	05797-03C 05797-06C 05797-09C			

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147859 Ins	strument ID FID-9		Method	: SW801	5						
MBLK Sample ID: GBL	.KW-130523-R147859				ι	Jnits: mg/	L	Analys	is Date: 5/	23/2013 0	4:46 PM
Client ID:	Run II	D: FID-9 _	130523A		Se	qNo: 322 8	8332	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	0.1047	0.0050	0.1		0	105	70-130	0)		
LCS Sample ID: GLC	SW-130523-R147859				Ĺ	Jnits: mg/	L	Analys	is Date: 5/	23/2013 0	4:07 PM
Client ID:	Run II	D: FID-9 _	130523A		Se	qNo: 322 8	8331	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	0.8025	0.050	1		0	80.3	70-130				
Surr: 4-Bromofluorobenzene	0.109	0.0050	0.1		0	109	70-130	0)		
MS Sample ID: 1305	5797-01BMS				ι	Jnits: mg/	L	Analys	is Date: 5/	24/2013 0	1:01 AM
Client ID: MW-114	Run II	D: FID-9 _	130523A		Se	qNo: 322 8	8334	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	0.7048	0.050	1		0	70.5	70-130				
Surr: 4-Bromofluorobenzene	0.1144	0.0050	0.1		0	114	70-130	0			
MSD Sample ID: 1305	5797-01BMSD				ι	Jnits: mg/	L	Analys	is Date: 5/	24/2013 0	1:19 AM
Client ID: MW-114	Run II	D: FID-9 _	130523A		Se	qNo: 322 8	8335	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	0.707	0.050	1		0	70.7	70-130	0.7048	0.314	30	
Surr: 4-Bromofluorobenzene	0.1155	0.0050	0.1		0	115	70-130	0.1144	0.892	30	
The following samples were	analyzed in this batch:	1	305797-01B 305797-04B 305797-07B	13	057	97-02B 97-05B 97-08B	130	05797-03B 05797-06B 05797-09B			

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 70	Instrument ID Mercury	'	Method	: SW747	0	(Dissolve	e)			
MBLK	Sample ID: GBLKW1-052013-70093	3			Units: mg/	L	Analys	s Date: 5	/20/2013 0	1:31 PN
Client ID:	R	Run ID: MER	CURY_130520	Α	SeqNo: 322	2135	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	t PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.0002	0							
LCS	Sample ID: GLCSW1-052013-70093	}			Units: mg/	L	Analys	s Date: 5	/20/2013 0	1:45 PM
Client ID:	R	Run ID: MER	CURY_130520	Α	SeqNo: 322	2136	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	t PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.0002	0.005		0 102	80-120				
MS	Sample ID: 1305631-01CMS				Units: mg/	L	Analys	s Date: 5	/20/2013 0	1:56 PM
Client ID:	R	Run ID: MER	CURY_130520	Α	SeqNo: 322	2139	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	t PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00505	0.0002	0.005	0.0000	18 101	80-120				
MSD	Sample ID: 1305631-01CMSD				Units: mg/	L	Analys	s Date: 5	/20/2013 0	1:58 PM
Client ID:	R	Run ID: MER	CURY_130520	Α	SeqNo: 322	2140	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	t PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00503	0.0002	0.005	0.0000	18 100	80-120	0.00505	0.397	20	
DUP	Sample ID: 1305631-01CDUP				Units: mg/	L	Analys	s Date: 5	/20/2013 0	1:48 PM
Client ID:	R	Run ID: MER	CURY_130520	Α	SeqNo: 322 :	2138	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	t PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.0002	0				0.000018	0	20	
The followi	ng samples were analyzed in this ba		1305797-01E 1305797-04E 1305797-07E	13	05797-02E 05797-05E 05797-08E	13	05797-03E 05797-06E 05797-09E			

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 70	138 Instrument ID ICP7500		Method	SW602	0 (Dissolve	e)			
MBLK	Sample ID: MBLKW4-052013-70138				Units: mg/l		Analy	sis Date: 5	/20/2013 1	10:19 PM
Client ID:	Rur	ID: ICP750	0_130520A		SeqNo: 3222	965	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Calcium	U	0.50								
Chromium	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Lead	U	0.0050								
Manganese	U	0.0050								
Nickel	U	0.0050								
Selenium	U	0.0050								
MBLK	Sample ID: MBLKW4-052013-70138				Units: mg/l	L	Analy	sis Date: 5	/21/2013 ()2:58 PM
Client ID:	Rur	ID: ICP750	0_130521A		SeqNo: 3223	3790	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.00464	0.010								J
Boron	U	0.050								
Molybdenum		0.0050								
Potassium	U	0.20								
Silver	U	0.0050								
Sodium	U	0.20								
	U	0.0050								
Uranium										

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 701	Instrument ID ICP7500		Method:	SW602	0	((Dissolve)			
LCS	Sample ID: MLCSW4-052013-70138				Ĺ	Jnits: mg /l	L	Analy	sis Date: 5	/20/2013 1	10:24 PM
Client ID:	Rui	n ID: ICP750	0_130520A		Se	qNo: 322 2	2969	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05045	0.0050	0.05		0	101	80-120				
Barium	0.0525	0.0050	0.05		0	105	80-120				
Cadmium	0.04981	0.0020	0.05		0	99.6	80-120				
Calcium	5.25	0.50	5		0	105	80-120				
Chromium	0.05135	0.0050	0.05		0	103	80-120				
Cobalt	0.05146	0.0050	0.05		0	103	80-120				
Copper	0.05218	0.0050	0.05		0	104	80-120				
Iron	5.323	0.20	5		0	106	80-120				
Lead	0.04737	0.0050	0.05		0	94.7	80-120				
Manganese	0.052	0.0050	0.05		0	104	80-120				
Nickel	0.05069	0.0050	0.05		0	101	80-120				
Selenium	0.05101	0.0050	0.05		0	102	80-120				
LCS	Sample ID: MLCSW4-052013-70138				Ĺ	Jnits: mg/ l	L	Analy	sis Date: 5	/21/2013 ()2:53 PM
Client ID:	Rui	n ID: ICP750	0_130521A		Se	qNo: 322 3	3789	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1153	0.010	0.1		0	115	80-120				
Boron	0.4901	0.010	0.1		0	98	80-120				
Molybdenum	0.04916	0.0050	0.05		0	98.3	80-120				
Potassium	5.131	0.0030	5		0	103	80-120				
Silver	0.0508	0.0050	0.05		0	103	80-120				
011401	5.159	0.0030	5		0	102	80-120				
Sodium							00-120				
Sodium Uranium	0.09877	0.0050	0.1		0	98.8	80-120				

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 70	138 Instrument ID ICP7500		Method	: SW6020	-	(Dissolve	e)			
MS	Sample ID: 1305631-07CMS				Units: mg /	L	Analy	sis Date: 5	/20/2013 1	10:44 PM
Client ID:	R	un ID: ICP750	0_130520A	S	eqNo: 322 2	2974	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05694	0.0050	0.05	0.002342	109	75-125				
Barium	0.06849	0.0050	0.05	0.01582	105	75-125				
Cadmium	0.04942	0.0020	0.05	0.000278	98.3	75-125				
Calcium	622.4	0.50	5	642.3	-398	75-125				SEO
Chromium	0.04974	0.0050	0.05	0.0009524	97.6	75-125				
Cobalt	0.05029	0.0050	0.05	0.00002101	101	75-125				
Copper	0.04902	0.0050	0.05	0.0005997	96.8	75-125				
Iron	5.278	0.20	5	0.01389	105	75-125				
Lead	0.04983	0.0050	0.05	0.0003501	99	75-125				
Manganese	0.08107	0.0050	0.05	0.03229	97.6	75-125				
Nickel	0.05048	0.0050	0.05	0.002087	96.8	75-125				
Selenium	0.0626	0.0050	0.05	0.0009735	123	75-125				
MS	Sample ID: 1305631-07CMS				Units: mg /	L	Analy	sis Date: 5	/21/2013 (3:28 PM
Client ID:	R	un ID: ICP750	0_130521A	S	eqNo: 322 4	4005	Prep Date: 5/2	20/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1547	0.010	0.1	0.04429	110	75-125				
Boron	1.364	0.050	0.5	0.8347	106	75-125				
Molybdenum	0.05301	0.0050	0.05	0.002711	101	75-125				
Potassium	9.398	0.20	5	4.601	95.9	75-125				
Silver	0.04896	0.0050	0.05	-0.0001468	98.2	75-125				
Sodium	76.78	0.20	5	72.1	93.6	75-125				0
Uranium	0.104	0.0050	0.1	0.00107	103	75-125				
Zinc	0.05437	0.0050	0.05	0.005404	97.9	75-125				

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 70	138 Instrument ID ICP7	500	Metho	d: SW6020		(Dissolve	e)			
MSD	Sample ID: 1305631-07CMSD				Units: mg/	L	Analysi	s Date: 5 /	20/2013 1	0:49 PM
Client ID:		Run ID: ICP7	500_130520A	s s	eqNo: 322	2976	Prep Date: 5/20	/2013	DF: 1	
Analyte	Re	sult PQ	L SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06	137 0.005	0 0.05	0.002342	118	75-125	0.05694	7.49	25	
Barium	0.07	0.005	0.05	0.01582	109	75-125	0.06849	2.51	25	
Cadmium	0.04	904 0.002	0.05	0.000278	97.5	75-125	0.04942	0.772	25	
Calcium	60	9.9 0.5	0 5	642.3	-648	75-125	622.4	2.03	25	SEO
Chromium	0.05	0.005	0.05	0.0009524	98.4	75-125	0.04974	0.801	25	
Cobalt	0.04	994 0.005	0.05	0.00002101	99.8	75-125	0.05029	0.698	25	
Copper	0.05	0.005	0.05	0.0005997	100	75-125	0.04902	3.23	25	
Iron	5.	229 0.2	0 5	0.01389	104	75-125	5.278	0.933	25	
Lead	0.04	982 0.005	0.05	0.0003501	98.9	75-125	0.04983	0.0201	25	
Manganese	0.07	971 0.005	0.05	0.03229	94.8	75-125	0.08107	1.69	25	
Nickel	0.05	0.005	0 0.05	0.002087	97.2	75-125	0.05048	0.376	25	
MSD	Sample ID: 1305631-07CMSD				Units: mg/	L	Analysi	s Date: 5 /	21/2013 0	3:33 PM
Client ID:		D ID. IOD3	500 1305214	c	eaNo: 322 /	4006	Pren Date: 5/20	/2042	DE: 1	

Client ID:	Run	ID: ICP750	0_130521 <i>A</i>	. Se	eqNo: 322	4006	Prep Date: 5/20	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1652	0.010	0.1	0.04429	121	75-125	0.1547	6.56	25	
Boron	1.448	0.050	0.5	0.8347	123	75-125	1.364	5.97	25	
Molybdenum	0.05394	0.0050	0.05	0.002711	102	75-125	0.05301	1.74	25	
Potassium	9.774	0.20	5	4.601	103	75-125	9.398	3.92	25	
Selenium	0.05684	0.0050	0.05	-0.00005637	114	75-125	0.05635	0.866	25	
Silver	0.04969	0.0050	0.05	-0.0001468	99.7	75-125	0.04896	1.48	25	
Sodium	78.22	0.20	5	72.1	122	75-125	76.78	1.86	25	0
Uranium	0.1055	0.0050	0.1	0.00107	104	75-125	0.104	1.43	25	
Zinc	0.05742	0.0050	0.05	0.005404	104	75-125	0.05437	5.46	25	

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: 701	138	Instrument ID ICP7500		Method	SW602	20	(Dissolve	e)			
DUP	Sample ID:	1305631-07CDUP				Units: mg/	'L	Analysi	s Date: 5 /	20/2013 1	0:34 PM
Client ID:		Run II	D: ICP75	00_130520A		SeqNo: 322	2971	Prep Date: 5/20	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic		0.002346	0.0050					0.002342	0	25	J
Barium		0.01622	0.0050					0.01582	2.5		
Cadmium		U	0.0020					0.000278	0		
Chromium		U	0.0050					0.0009524	0	25	
Cobalt		U	0.0050					0.00002101	0	25	
Copper		U	0.0050					0.0005997	0	25	
Iron		U	0.20					0.01389	0	25	
Lead		U	0.0050					0.0003501	0	25	
Manganese		0.03261	0.0050					0.03229	0.986	25	
Nickel		0.002229	0.0050					0.002087	0	25	J
Selenium		U	0.0050					0.0009735	0	25	
DUP	Sample ID:	1305631-07CDUP				Units: mg/	s: mg/L Analysis Date:				3:18 PN
Client ID:		Run II	D: ICP75	00_130521A		SeqNo: 322	4003	003 Prep Date: 5/20/2013			
					SPK Ref		Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Aluminum		0.04555	0.010					0.04429	2.8	25	
Boron		0.859	0.050					0.8347	2.87	25	
Molybdenum		0.002438	0.0050					0.002711	0	25	J
Potassium		4.562	0.20					4.601	0.851	25	
Silver		U	0.0050					-0.0001468	0	25	
Sodium		73	0.20					72.1	1.24	25	
Uranium		U	0.0050					0.00107	0	25	
Zinc		0.004553	0.0050					0.005404	0	25	J
DUP	Sample ID:	1305631-07CDUP				Units: mg/	'L	Analysi	s Date: 5 /	21/2013 0	4:08 PN
Client ID:		Run II	D: ICP75	00_130521A		SeqNo: 322	4013	Prep Date: 5/20	/2013	DF: 10	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium		582.5	5.0					573.3	1.59	25	
	g samples v	were analyzed in this batch:	1	305797-01E 305797-04E		05797-02E 05797-05E		05797-03E 05797-06E			

Client: Navajo Refining Company

Work Order: 1305797

Surr: 2-Fluorobiphenyl

Surr: 2-Fluorophenol

Surr: 4-Terphenyl-d14

Surr: Nitrobenzene-d5

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling 128823

Batch ID: 70117	nstrument ID SV-4		Metho	d: SW827	70						
MBLK Sample ID: SB	LKW1-130520-70117				ι	Jnits: µg/L	-	Analy	sis Date: 5	/21/2013 1	2:21 AM
Client ID:	Run	ID: SV-4_1	30520A		Se	qNo: 322	7420	Prep Date: 5/2	0/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromopheno	4.324	0.20	5		0	0	34-129	(0		
Surr: 2-Fluorobiphenyl	3.77	0.20	5		0	0	40-125	(0		
Surr: 2-Fluorophenol	3.455	0.20	5		0	0	20-120	(0		
Surr: 4-Terphenyl-d14	3.896	0.20	5		0	0	40-135	(0		
Surr: Nitrobenzene-d5	3.381	0.20	5		0	0	41-120	(0		
Surr: Phenol-d6	3.62	0.20	5		0	0	20-120	(0		
LCS Sample ID: SL	CSW1-130520-70117				Ĺ	Jnits: µg/L	_	Analy	sis Date: 5	/21/2013 1	2:42 AM
Client ID:	Run	ID: SV-4_1	30520A		Se	qNo: 322	7421	Prep Date: 5/2	0/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.72	0.20	5		0	0	45-120				
2-Methylnaphthalene	3.782	0.20	5		0	0	50-120				
Benzo(a)pyrene	3.858	0.20	5		0	0	45-120				
Naphthalene	3.35	0.20	5		0	0	45-120				
Surr: 2,4,6-Tribromopheno	l 4.147	0.20	5		0	0	34-129		0		

0.20

0.20

0.20

0.20

0.20

3.819

3.726

3.895

3.365

3.621

5

5

5

5

0

0

0

0

0

0

0

0

40-125

20-120

40-135

41-120

20-120

0

0

0

0

Navajo Refining Company **Client:**

Work Order: 1305797

Project: RO Discharge Sampling 128823

> Instrument ID SV-4 Method: SW8270

Batch ID: 701 1	17 Instrume	nt ID SV-4		Metho	d: SW8270						
LCSD S	Sample ID: SLCSDW1	-130520-70117				Units: µ	g/L	Analys	is Date:	5/21/2013	01:03 AM
Client ID:		Run ID	: SV-4_1	30520A	5	SeqNo: 3	227422	Prep Date: 5/20	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphtl	halene	3.727	0.20	5	0)	0 45-120	3.72		0 20	
2-Methylnaphtl	halene	3.881	0.20	5	0)	0 50-120	3.782		0 20	
Benzo(a)pyren	ne	3.791	0.20	5	0)	0 45-120	3.858		0 20	
Naphthalene		3.486	0.20	5	0)	0 45-120	3.35		0 20	
Surr: 2,4,6-	Tribromophenol	4.081	0.20	5	C)	0 34-129	9 4.147		0 0	
Surr: 2-Fluo	probiphenyl	3.682	0.20	5	C)	0 40-12	3.819		0 0	
Surr: 2-Fluo	prophenol	3.649	0.20	5	C)	0 20-120	3.726		0 0	
Surr: 4-Terp	ohenyl-d14	3.815	0.20	5	C)	0 40-13	3.895		0 0	
Surr: Nitrobe	enzene-d5	3.368	0.20	5	C)	0 41-120	3.365		0 0	
Surr: Pheno	ol-d6	3.654	0.20	5	C)	0 20-120	3.621		0 0	

The following samples were analyzed in this batch:

1305797-01H	1305797-02H	1305797-03H	
1305797-04H	1305797-05H	1305797-06H	
1305797-07H	1305797-08H	1305797-09H	

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147734	Instrument ID VOA6		Metho	d: SW82 6	60						
MBLK Sample ID: V	/BLKW-130521-R147734				Uni	ts: µg/L		Analy	/sis Date: 5	/21/2013	11:45 AM
Client ID:	Run I	D: VOA6_	130521B		SeqN	lo: 322 5	5043	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	3.0									
Surr: 1,2-Dichloroethane	e-d4 51.94	1.0	50		0	104	71-125		0		
Surr: 4-Bromofluorobenz	zene 50.79	1.0	50		0	102	70-125		0		
Surr: Dibromofluorometh	nane 50.85	1.0	50		0	102	74-125		0		
Surr: Toluene-d8	49.13	1.0	50		0	98.3	78-123		0		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147734	Instrument ID VOA6		Metho	d: SW8260						
LCS Sample ID: V	/LCSW-130521-R147734				Units: µg/	′L	Analy	sis Date: 5	/21/2013	10:32 AM
Client ID:	Run II	D: VOA6_	130521B	5	SeqNo: 32 2	25042	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	51.32	1.0	50	0	103	75-130				
1,1,2,2-Tetrachloroethane	51.63	1.0	50	0	103	74-123				
1,1,2-Trichloroethane	47.13	1.0	50	0	94.3	80-120				
1,1-Dichloroethane	50.8	1.0	50	0	102	80-120				
1,1-Dichloroethene	51.96	1.0	50	0	104	75-130				
1,2-Dibromoethane	48.2	1.0	50	0	96.4	80-120				
1,2-Dichloroethane	48.3	1.0	50	0	96.6	79-120				
Benzene	49.74	1.0	50	0	99.5	80-120				
Carbon tetrachloride	49.95	1.0	50	0	99.9	75-125				
Chloroform	50.88	1.0	50	0	102	70-130				
Ethylbenzene	48.66	1.0	50	0	97.3	80-120				
Methylene chloride	52.07	2.0	50	0	104	75-125				
Tetrachloroethene	49.84	1.0	50	0	99.7	75-130				
Toluene	48.77	1.0	50	0	97.5	80-121				
Trichloroethene	50.89	1.0	50	0	102	75-125				
Vinyl chloride	49.87	1.0	50	0	99.7	70-135				
Xylenes, Total	147.2	3.0	150	0	98.1	80-124				
Surr: 1,2-Dichloroethane	-d4 50.68	1.0	50	0	101	71-125		0		
Surr: 4-Bromofluorobenz	rene 50.36	1.0	50	0	101	70-125		0		
Surr: Dibromofluorometh	ane 50.97	1.0	50	0	102	74-125		0		
Surr: Toluene-d8	49.04	1.0	50	0	98.1	78-123		0		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147734	Instrument ID VOA6		Method	: SW8260						
MS Sample ID: 1	305842-01AMS				Units: µg/L	_	Analy	/sis Date: 5	/21/2013	01:21 PM
Client ID:	Ru	n ID: VOA6_	130521B	S	eqNo: 322	5045	Prep Date:		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	212.9	5.0	250	0	85.2	75-130				
1,1,2,2-Tetrachloroethane	261.3	5.0	250	0	105	74-123				
1,1,2-Trichloroethane	235	5.0	250	0	94	80-120				
1,1-Dichloroethane	218.5	5.0	250	0	87.4	80-120				
1,1-Dichloroethene	196.9	5.0	250	0	78.8	75-130				
1,2-Dibromoethane	237.2	5.0	250	0	94.9	80-120				
1,2-Dichloroethane	231.2	5.0	250	0	92.5	79-120				
Benzene	219	5.0	250	0	87.6	80-120				
Carbon tetrachloride	197.5	5.0	250	0	79	79-120				S
Chloroform	233.1	5.0	250	0	93.2	70-130				
Ethylbenzene	210.8	5.0	250	0	84.3	80-120				
Methylene chloride	240.2	10	250	7.578	93.1	75-125				
Tetrachloroethene	210	5.0	250	0	84	75-130				
Toluene	216.5	5.0	250	2.728	85.5	80-121				
Trichloroethene	618.7	5.0	250	429.6	75.7	75-125				
Vinyl chloride	162.7	5.0	250	0	65.1	70-135				S
Xylenes, Total	632	15	750	0	84.3	80-124				
Surr: 1,2-Dichloroethane-	d4 260.9	5.0	250	0	104	71-125		0		
Surr: 4-Bromofluorobenze	ene 251.5	5.0	250	0	101	70-125		0		
Surr: Dibromofluorometha	ane 251.2	5.0	250	0	100	74-125		0		
Surr: Toluene-d8	245.9	5.0	250	0	98.4	78-123		0		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147734	Instrument ID VOA6	Method:	SW8260
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MSD Sample ID: 1305842-0	1AMSD				Units: µg/I	-	Analysis Date: 5/21/2013 01:47 PN			
Client ID:	Run II	D: VOA6_	130521B	Se	eqNo: 322	5046	Prep Date:		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	227.5	5.0	250	0	91	75-130	212.9	6.64	20	
1,1,2,2-Tetrachloroethane	268.7	5.0	250	0	107	74-123	261.3	2.78	20	
1,1,2-Trichloroethane	241.6	5.0	250	0	96.7	80-120	235	2.77	20	
1,1-Dichloroethane	226.5	5.0	250	0	90.6	80-120	218.5	3.57	20	
1,1-Dichloroethene	211.3	5.0	250	0	84.5	75-130	196.9	7.05	20	
1,2-Dibromoethane	243.2	5.0	250	0	97.3	80-120	237.2	2.49	20	
1,2-Dichloroethane	242.8	5.0	250	0	97.1	79-120	231.2	4.9	20	
Benzene	232.6	5.0	250	0	93	80-120	219	6.05	20	
Carbon tetrachloride	222.4	5.0	250	0	89	75-125	197.5	11.9	20	
Chloroform	237.4	5.0	250	0	94.9	70-130	233.1	1.83	20	
Ethylbenzene	228	5.0	250	0	91.2	80-120	210.8	7.86	20	
Methylene chloride	245.1	10	250	7.578	95	75-125	240.2	1.99	20	
Tetrachloroethene	224.6	5.0	250	0	89.8	75-130	210	6.67	20	
Toluene	225.8	5.0	250	2.728	89.2	80-121	216.5	4.18	20	
Trichloroethene	634.3	5.0	250	429.6	81.9	75-120	618.7	2.48	20	
Vinyl chloride	169.4	5.0	250	0	67.7	70-135	162.7	4.01	20	S
Xylenes, Total	683.5	15	750	0	91.1	80-124	632	7.83	20	
Surr: 1,2-Dichloroethane-d4	252	5.0	250	0	101	71-125	260.9	3.49	20	
Surr: 4-Bromofluorobenzene	251.4	5.0	250	0	101	70-125	251.5	0.0386	20	
Surr: Dibromofluoromethane	249.3	5.0	250	0	99.7	74-125	251.2	0.757	20	
Surr: Toluene-d8	243.2	5.0	250	0	97.3	78-123	245.9	1.11	20	

The following samples were analyzed in this batch:

1305797-01A	1305797-02A	1305797-03A	
1305797-04A	1305797-05A	1305797-06A	
1305797-07A	1305797-09A	1305797-10A	
1305707-114	1305707-124		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147736	Instrument ID VOA6		Metho	d: SW82 6	60					
MBLK Sample ID: \	/BLKW-130521-R147736				Units: µg/l	L	Analy	/sis Date: 5	/22/2013	12:37 AM
Client ID:	Run II	D: VOA6_	130521D		SeqNo: 322	5137	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	3.0								
Surr: 1,2-Dichloroethane	-d4 52.1	1.0	50		0 104	71-125		0		
Surr: 4-Bromofluorobenz	rene 50.43	1.0	50		0 101	70-125		0		
Surr: Dibromofluorometh	ane 51.79	1.0	50		0 104	74-125		0		
Surr: Toluene-d8	49.01	1.0	50		0 98	78-123		0		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147736	Instrument ID VOA6		Method	: SW8260						
LCS Sample ID: V	/LCSW-130521-R147736				Units: µg/	L	Analy	/sis Date: 5	/21/2013	11:19 PM
Client ID:	Run II	D: VOA6_	130521D	S	eqNo: 322	5136	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	50.46	1.0	50	0	101	75-130				
1,1,2,2-Tetrachloroethane	49.77	1.0	50	0	99.5	74-123				
1,1,2-Trichloroethane	46.9	1.0	50	0	93.8	80-120				
1,1-Dichloroethane	49.05	1.0	50	0	98.1	80-120				
1,1-Dichloroethene	50.38	1.0	50	0	101	75-130				
1,2-Dibromoethane	47.45	1.0	50	0	94.9	80-120				
1,2-Dichloroethane	47.39	1.0	50	0	94.8	79-120				
Benzene	48.8	1.0	50	0	97.6	80-120				
Carbon tetrachloride	49.7	1.0	50	0	99.4	75-125				
Chloroform	49.77	1.0	50	0	99.5	70-130				
Ethylbenzene	48.51	1.0	50	0	97	80-120				
Methylene chloride	50.04	2.0	50	0	100	75-125				
Tetrachloroethene	49.23	1.0	50	0	98.5	75-130				
Toluene	47.9	1.0	50	0	95.8	80-121				
Trichloroethene	50.81	1.0	50	0	102	75-125				
Vinyl chloride	47.34	1.0	50	0	94.7	70-135				
Xylenes, Total	144.9	3.0	150	0	96.6	80-124				
Surr: 1,2-Dichloroethane	-d4 49.74	1.0	50	0	99.5	71-125		0		
Surr: 4-Bromofluorobenz	ene 49.76	1.0	50	0	99.5	70-125		0		
Surr: Dibromofluorometh	ane 50.14	1.0	50	0	100	74-125		0		
Surr: Toluene-d8	49.32	1.0	50	0	98.6	78-123		0		

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R147736	Instrument ID VOA6		Method	: SW8260							
MS Sample ID: 1	305818-01AMS				Units: µg/L			Analysis Date: 5/22/2013 04:33 AM			
Client ID:	Run ID: VOA6_130521D		130521D	SeqNo: 3225145			Prep Date: DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	202.6	5.0	250	0	81	75-130					
1,1,2,2-Tetrachloroethane	249.8	5.0	250	0	99.9	74-123					
1,1,2-Trichloroethane	232.1	5.0	250	0	92.8	80-120					
1,1-Dichloroethane	221.1	5.0	250	0	88.4	80-120					
1,1-Dichloroethene	182.1	5.0	250	0	72.8	75-130				S	
1,2-Dibromoethane	233.2	5.0	250	0	93.3	80-120					
1,2-Dichloroethane	231.3	5.0	250	0	92.5	79-120					
Benzene	218.6	5.0	250	0	87.4	80-120					
Carbon tetrachloride	182.7	5.0	250	0	73.1	79-120				S	
Chloroform	233.4	5.0	250	0	93.4	70-130					
Ethylbenzene	203.5	5.0	250	0	81.4	80-120					
Methylene chloride	236.1	10	250	3.798	92.9	75-125					
Tetrachloroethene	188.3	5.0	250	0	75.3	75-130					
Toluene	210.4	5.0	250	0	84.2	80-121					
Trichloroethene	215.4	5.0	250	0	86.2	75-125					
Vinyl chloride	153.7	5.0	250	0	61.5	70-135				S	
Xylenes, Total	617.1	15	750	0	82.3	80-124					
Surr: 1,2-Dichloroethane	-d4 254.5	5.0	250	0	102	71-125		0			
Surr: 4-Bromofluorobenz	ene 250.7	5.0	250	0	100	70-125		0			
Surr: Dibromofluorometh	ane 254.8	5.0	250	0	102	74-125		0			
Surr: Toluene-d8	247.6	5.0	250	0	99	78-123		0			

Client: Navajo Refining Company

Work Order: 1305797

Trichloroethene

Vinyl chloride

Xylenes, Total

Note:

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Project: RO Discharge Sampling 128823

Batch ID: R147736 Instrument ID VOA6 Method: SW8260 **MSD** Sample ID: 1305818-01AMSD Units: µg/L Analysis Date: 5/22/2013 04:59 AM Client ID: Prep Date: DF: 5 Run ID: VOA6_130521D SeqNo: 3225146 RPD SPK Ref RPD Ref Control Value Value Limit Limit PQL SPK Val %REC %RPD Qual Analyte Result 227.9 5.0 0 1,1,1-Trichloroethane 250 91.1 75-130 202.6 11.8 20 264.9 5.0 250 0 106 74-123 5.84 20 1,1,2,2-Tetrachloroethane 249.8 1,1,2-Trichloroethane 241.4 5.0 250 0 96.6 80-120 232.1 3.96 20 1,1-Dichloroethane 226 5.0 250 0 90.4 2.17 20 80-120 221.1 5.0 250 0 1,1-Dichloroethene 211.8 84.7 75-130 182.1 15.1 20 1,2-Dibromoethane 241.2 5.0 250 0 80-120 233.2 3.35 96.5 20 1,2-Dichloroethane 234.4 5.0 250 0 93.7 79-120 231.3 1.33 20 5.0 Benzene 225.6 250 0 90.2 80-120 218.6 3.14 20 Carbon tetrachloride 219 5.0 250 0 20 87.6 75-125 182.7 18.1 Chloroform 237.8 5.0 250 0 95.1 70-130 233.4 20 1.89 5.0 0 Ethylbenzene 228.8 250 91.5 80-120 203.5 11.7 20 Methylene chloride 233.9 10 250 3.798 92 75-125 236.1 0.933 20 Tetrachloroethene 223.7 5.0 250 0 89.5 75-130 188.3 17.2 20 Toluene 224.6 5.0 250 0 89.8 6.53 20 80-121 210.4

250

250

750

250

250

250

250

5.0

5.0

15

5.0

5.0

5.0

5.0

The following samples were analyzed in this batch:

1305797-08A	1305797-13A	1305797-14A
1305797-15A	1305797-16A	1305797-17A

92.3

66.6

90.4

103

98.5

100

99.3

75-120

70-135

80-124

71-125

70-125

74-125

78-123

215.4

153.7

617.1

254.5

250.7

254.8

247.6

6.91

9.39

0.933

1.76

1.54

0.286

8

20

20

20

20

20

20

20

S

0

0

0

0

0

0

0

230.9

166.5

677.9

256.8

246.3

250.9

248.3

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

QC BATCH REPORT

Batch ID: R1	I47754 Instrument I	D Balance1		Metho	d: M2540	С	(Dissolv	e)			
MBLK	7754		Units: mg/L			Analysis Date: 5/21/2013 10:00 AN					
Client ID:		Run II	D: Balan	BALANCE1_130521F		SeqNo: 3225483		Prep Date:	DF: 1		
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	U	10								
LCS	Sample ID: WLCSW-R147	7754				Units: mg/L		Analysis Date: 5/21/2013 10:00 AM			
Client ID:		Run II	Run ID: BALANCE1_130521F			SeqNo: 3225484		Prep Date:	DF: 1		
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	958	10	1000		0 95.8	85-115	i			
DUP	Sample ID: 1305797-06FE	DUP			Units: mg/L		Analys	Analysis Date: 5/21/2013 10:00 AM			
Client ID: DUP-03 Run ID		D: BALANCE1_130521F			SeqNo: 3225482		Prep Date:	e: DF: 1			
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	5310	10					4990	6.21	1 20	
The following	ng samples were analyzed	in this batch:	13	305797-06F							

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R	147779	Instrument ID G	Sall01		Method	d: M4500	CN E&G	(Dissolve	e)			
MBLK	Sample ID	: WBLKW1-05221	3-R147779				Units: mg	/L	Analys	is Date: 5 /	22/2013 0	1:00 PN
Client ID:			Run I	D: GALLO	1_130522A		SeqNo: 322	25998	Prep Date:		DF: 1	
Analyte			Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide			U	0.020								
LCS	Sample ID	: WLCSW1-052213	3-R147779				Units: mg	/L	Analys	is Date: 5/	22/2013 0	1:00 PM
Client ID:			Run I	D: GALLO	1_130522A		SeqNo: 322	25999	Prep Date:		DF: 1	
Analyte			Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide			0.197	0.020	0.2		0 98.5	80-120				
MS	Sample ID	: 1305797-01DMS					Units: mg	/L	Analys	is Date: 5 /	22/2013 0	1:00 PM
Client ID: M	IW-114		Run I	D: GALLO	1_130522A		SeqNo: 322	26009	Prep Date:		DF: 1	
Analyte			Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide			0.2068	0.020	0.2	0.0043	32 101	80-120				
MSD	Sample ID	: 1305797-01DMSI	D				Units: mg	/L	Analys	is Date: 5/	22/2013 0	1:00 PM
Client ID: M	IW-114		Run I	D: GALLO	1_130522A		SeqNo: 322	26010	Prep Date:		DF: 1	
Analyte			Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide			0.1883	0.020	0.2	0.0043	32 92	80-120	0.2068	9.36	20	
The followi	ing samples	were analyzed in t	this batch:	1	305797-01D 305797-04D 305797-07D	13	05797-02D 05797-05D 05797-08D	13	05797-03D 05797-06D 05797-09D			

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R	147841 Instrument II	D Balance1		Method	d: M2540	c ((Dissolv	e)			
MBLK	Sample ID: WBLK-052213	3-R147841				Units: mg/	L	Analysi	s Date: 5	/22/2013 0	9:55 AN
Client ID:		Run I	D: Balan	CE1_13052	2E	SeqNo: 322 7	7706	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	U	10								
LCS	Sample ID: WLCS-052213	3-R147841				Units: mg/	L	Analysi	s Date: 5	/22/2013 0	9:55 AM
Client ID:		Run I	D: Balan	CE1_13052	2E	SeqNo: 3227	7707	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	1008	10	1000		0 101	85-115				
DUP	Sample ID: 1305730-08D	DUP				Units: mg/	L	Analysi	s Date: 5	/22/2013 0	9:55 AM
Client ID:		Run I	D: Balan	CE1_13052	2E	SeqNo: 322 7	7685	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	802	10					808	0.745	20	
DUP	Sample ID: 1305797-07FD	OUP				Units: mg/	L	Analysi	s Date: 5	/22/2013 0	9:55 AM
Client ID: M	IW-116	Run I	D: Balan	CE1_13052	2E	SeqNo: 322 7	7705	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	4520	10					4480	0.889	20	
The followi	ing samples were analyzed	in this batch:		305797-01F 305797-04F		05797-02F 05797-05F		05797-03F 05797-07F			

Navajo Refining Company

Work Order: 1305797

Client:

Project: RO Discharge Sampling 128823

QC BATCH REPORT

Batch ID: R	147881 Instrument I	D Balance1		Method	: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-05231	3-R147881				Units: mg/	L	Analy	/sis Date: 5	/23/2013	09:05 AN
Client ID:		Run I	D: BALAN	ICE1_13052	3C	SeqNo: 3228	3897	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Filt	U	10								
LCS	Sample ID: WLCS-05231	3-R147881				Units: mg/	L	Analy	sis Date: 5	/23/2013	09:05 AM
Client ID:		Run I	D: BALAN	ICE1_13052	3C	SeqNo: 3228	3898	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	1074	10	1000		0 107	85-115				
Total Dissol	ved Solids (Residue, Filt Sample ID: 1305797-08FI		10	1000		0 107 Units: mg /			/sis Date: 5	/23/2013	09:05 AM
DUP	Sample ID: 1305797-08F [DUP		1000 ICE1_13052	3C		L		vsis Date: 5	/23/2013 (DF: 1	09:05 AM
	Sample ID: 1305797-08F [DUP			3C SPK Ref Value	Units: mg/	L	Analy	/sis Date: 5 %RPD		09:05 AM Qual
DUP Client ID: E	Sample ID: 1305797-08F [DUP Run I	D: BALAN	ICE1_13052	SPK Ref	Units: mg/ SeqNo: 3228	L 3887 Control	Analy Prep Date: RPD Ref	%RPD	DF: 1 RPD Limit	
DUP Client ID: E Analyte Total Dissol	Sample ID: 1305797-08F [QB-03	Run I Result 46	D: BALAN PQL	ICE1_13052	SPK Ref	Units: mg/ SeqNo: 3228	L 3887 Control Limit	Analy Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
DUP Client ID: E Analyte Total Dissol	Sample ID: 1305797-08F0 QB-03 Ived Solids (Residue, Filt	Result 46	D: BALAN PQL 10	ICE1_13052	SPK Ref Value	Units: mg/ SeqNo: 3226 %REC	L 3887 Control Limit	Analy Prep Date: RPD Ref Value	%RPD 0 8.33	DF: 1 RPD Limit	Qual
DUP Client ID: E	Sample ID: 1305797-08F0 QB-03 Ived Solids (Residue, Filt	Result 46	D: BALAN PQL 10	I CE1_13052 SPK Val	SPK Ref Value	Units: mg/ SeqNo: 3226 %REC Units: mg/	L 3887 Control Limit	Analy Prep Date: RPD Ref Value 5	%RPD 0 8.33	DF: 1 RPD Limit 3 20 /23/2013	Qual

Note:

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R1	147882	Instrument ID ICS2100		Method	: E300		((Dissolve)			
MBLK	Sample ID:	WBLKW1-R147882				Uı	nits: mg/ l	L	Analy	/sis Date: 5 /	23/2013 0	4:29 PN
Client ID:		Run	ID: ICS210	0_130523A		Seq	No: 322 8	3922	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate Surr: Sele	enate (surr)	U 5.018	0.50 0.10	5		0	100	85-115		0		
LCS	Sample ID:	WLCSW1-R147882				Uı	nits: mg/ l	L	Analy	/sis Date: 5 /	23/2013 0	4:15 PI
Client ID:		Run	ID: ICS210	0_130523A		Seq	No: 322 8	3921	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate		21.24	0.50	20		0	106	90-110				
Surr: Sele	enate (surr)	5.249	0.10	5		0	105	85-115		0		
MS	Sample ID:	1305966-06EMS				Uı	nits: mg/ l	L	Analy	/sis Date: 5/	23/2013 0	2:48 PM
Client ID:		Run	ID: ICS210	0_130523A		Seq	No: 322 8	3915	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate		475.4	0.50	10	474	.2	12.8	80-120				SEO
Surr: Sele	enate (surr)	5.329	0.10	5		0	107	85-115		0		
	Sample ID:	1305966-06EMSD				Uı	nits: mg/l	L	Analy	/sis Date: 5 /	23/2013 0	3:02 PN
MSD						_	No: 322 8	1916	Prep Date:		DF: 1	
		Run	ID: ICS210	0_130523A		Seq	110.0220	,510	r rop Bato.			
MSD Client ID: Analyte		Run Result	ID: ICS210 PQL	0_130523A SPK Val	SPK Ref Value	Seq	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Client ID:								Control	RPD Ref		RPD	Qual
Client ID: Analyte Sulfate	enate (surr)	Result	PQL	SPK Val	Value		%REC	Control Limit	RPD Ref Value	4 5.94	RPD Limit	

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R	147891	Instrument ID ICS2100		Method	E300		(Dissolve	e)			
MBLK	Sample ID:	WBLKW2-R147891				U	Inits: mg /I	L	Analys	sis Date: 5/	23/2013 0	9:27 PN
Client ID:		Run ID	ICS210	0_130523C		Se	qNo: 322 9	137	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.50									
Fluoride		U	0.10									
Sulfate		U	0.50									
Surr: Sel	lenate (surr)	5.183	0.10	5		0	104	85-115	C)		
LCS	Sample ID:	WLCSW2-R147891				U	Inits: mg /l	<u> </u>	Analys	sis Date: 5/	23/2013 0	9:42 PN
Client ID:		Run ID	ICS210	0_130523C		Se	qNo: 322 9	138	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		20.17	0.50	20		0	101	90-110				
Fluoride		3.957	0.10	4		0	98.9	90-110				
Sulfate		21.85	0.50	20		0	109	90-110				
Surr: Sel	lenate (surr)	5.56	0.10	5		0	111	85-115	C)		
MS	Sample ID:	1305830-07AMSZ				U	Inits: mg/ I	L	Analys	sis Date: 5/	24/2013 0	3:46 AN
Client ID:		Run ID	ICS210	0_130523C		Se	qNo: 322 9	169	Prep Date:		DF: 10	0
					SPK Ref Value			Control Limit	RPD Ref Value		RPD Limit	
Analyte		Result	PQL	SPK Val	value		%REC	LIIIII	value	%RPD	Liiiii	Qual
Chloride		2024	50	1000	102	29	99.5	80-120				
Fluoride		178.8	10	200		0	89.4	80-120				
Sulfate		1094	50	1000	96.3		99.8	80-120				
Surr: Sel	lenate (surr)	480.8	10	500		0	96.2	85-115	C)		
MSD	Sample ID:	1305830-07AMSDZ				U	Inits: mg/ I	L	Analys	sis Date: 5/	24/2013 0	4:00 AN
Client ID:		Run ID	ICS210	0_130523C		Se	qNo: 322 9	9170	Prep Date:		DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		2047	50	1000	102	29	102	80-120	2024	1.17	20	
Fluoride		182.2	10	200		0	91.1	80-120	178.8			
Sulfate		1111	50	1000	96.3	39	101	80-120	1094	1.55	20	
Surr: Sel	lenate (surr)	488.2	10	500		0	97.6	85-115	480.8	3 1.53	20	
The followi	ing samples v	vere analyzed in this batch:	13	805797-01F 805797-04F 805797-07F	13	8057	97-02F 97-05F 97-08F	13	05797-03F 05797-06F 05797-09F			

Note:

Client: Navajo Refining Company

Work Order: 1305797

Project: RO Discharge Sampling 128823

Batch ID: R1	47896	Instrument ID ICS2100		Method	: E300			(Dissolve)			
MBLK	Sample ID:	WBLKW-R147896				U	Inits: mg /	L	Anal	ysis Date: 5 /2	22/2013 0	2:34 PN
Client ID:		Run II	D: ICS210	0_130523D		Se	qNo: 322 :	9245	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	U	0.20									
Surr: Sele	nate (surr)	4.99	0.10	5		0	99.8	85-115		0		
LCS	Sample ID:	WLCSW-R147896				U	Inits: mg /	L	Anal	ysis Date: 5/	22/2013 0	2:19 PN
Client ID:		Run II	D: ICS210	0_130523D		Se	qNo: 322 :	9244	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	7.5	0.20	8		0	93.8	90-110				
	nate (surr)	5.018	0.10	5		0	100	85-115		0		
MS	Sample ID:	1305797-09GMS				U	Inits: mg /	L	Anal	ysis Date: 5 /2	22/2013 0	8:27 PN
Client ID: RC	Discharge	Run II	D: ICS210	0_130523D		Se	qNo: 322	9257	Prep Date:		DF: 10	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	36.33	2.0	40	2.1	14	85.5	80-120				
Surr: Sele	nate (surr)	46.27	1.0	50		0	92.5	85-115		0		
MSD	Sample ID:	1305797-09GMSD				U	Inits: mg/	L	Anal	ysis Date: 5 /2	22/2013 0	8:41 PN
Client ID: RC	Discharge	Run II	D: ICS210	0_130523D		Se	qNo: 322	9258	Prep Date:		DF: 10	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	39.54	2.0	40	2.1	14	93.6	80-120	36.3	33 8.46	20	
Surr: Sele	nate (surr)	50.6	1.0	50		0	101	85-115	46.2	27 8.94	20	
The following	ng samples v	vere analyzed in this batch:	13	805797-01G 805797-04G 805797-07G	13	057	97-02G 97-05G 97-08G	130	05797-03G 05797-06G 05797-09G			

ALS Environmental Date: 12-Jun-13

Client: Navajo Refining Company **QUALIFIERS,** RO Discharge Sampling 128823 **Project:** ACRONYMS, UNITS

WorkOrder: 1305797

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

mg/LMilligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			Date/Time F	Received:	<u>17-N</u>	<u>lay-13 09:</u>	<u>00</u>	
Work Order:	1305797			Received by	y:	RDH	<u>l</u>		
Checklist comp	eleted by <u>Robert D. Harris</u> eSignature	18-May-	13	Reviewed by:	Sonia eSignature				21-May-13 Date
Matrices: Carrier name:	<u>waters</u> <u>FedEx</u>								
Shipping conta	iner/cooler in good condition?	Ye	s 🗸	No 🗌	Not P	resent			
Custody seals i	intact on shipping container/coole	er? Ye	s 🗸	No 🗌	Not P	resent			
Custody seals	intact on sample bottles?	Ye	s \square	No 🗆	Not P	resent	✓		
Chain of custoo	dy present?	Ye	s V	No 🗆					
Chain of custoo	dy signed when relinquished and	received? Ye	s 🗸	No 🗆					
Chain of custoo	dy agrees with sample labels?	Ye	s 🗸	No 🗌					
Samples in pro	per container/bottle?	Ye	s 🗸	No 🗆					
Sample contain	ners intact?	Ye	s 🗸	No 🗆					
Sufficient samp	le volume for indicated test?	Ye	s 🗸	No 🗆					
All samples rec	eived within holding time?	Ye	s 🗸	No 🗆					
Container/Tem	p Blank temperature in compliand	ce? Ye	s 🗸	No 🗆					
Temperature(s))/Thermometer(s):	<u>5.6c</u>	/5.6c,5	.3c/5.3c,4.2c/4.2	c,4.1c/4	IR1			
		. 10,5 1c	0.8C/5.8	3c,5.6c/5.6c,1.5c	/1.5C,Z.				
Cooler(s)/Kit(s)	:	4611	,3112,	5160,3095,3192	,3178,3160	<u>),4051</u>			
	ple(s) sent to storage: als have zero headspace?	<u>5/18</u> Ye	/13 12: s		No VOA v	ials subn	nitted		
Water - pH acc	eptable upon receipt?	Ye	s 🔳	No 🔲	N/A				
pH adjusted? pH adjusted by	:	Ye _	s 🔳	No 🔳	N/A				
Login Notes:									
Client Contacte	ed:	Date Contacted:		Person	Contacted	:			
Contacted By:		Regarding:							
Comments:									
CorrectiveActio	n:							ene n	aga 1 of 1

Cincinnati, OH +1 513 733 5336

Fort Collins, CO +1 970 490 1511 Holland, MI +1 616 399 6070 Everett, WA +1 425 356 2600

Chain of Custody Form

Page / of |

coc 115: 81090

ALS Project Manager:

1305797

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

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Cust	Customer Information		Project Information	
Purchase Order		Project Name	RO Discharge/Sampling	A VOC (8260) NW GW/ List
Work Order	The state of the s	Project Number	123823	B GRO (8015M)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C DRO (8015M) ORO (8015M)
Send Report To	Robert Combs	Invoice Attn	Robert Combs	D LL SVOC (8270) NM GW List
11.4	501 East Main	11.57	501 East Main	E Dissolved Metals (6020/7000) Al, As, Ba, B, Cd, Ca, Cr, Co, Cu, Fe, Pb,
Address		Address		F Mn,Hg,Mo,Ni,K,Se,Ag,Na,U,Zn
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesía, NM 88211	G Anions (300) Cl.F.SO4, Mtrate, Nitrite
Phone	(575) 748-6733	Phone	(575) 748-6733	H Total Cyanide (SM 4500)
Fax	(575) 746-5421	Fax	(575) 746-5421	SQL
e-Mail Address		e-Mail Address		J Radiun 226/228
.co	Sample Description	Date	Time Matrix Pres. # Bottles	A B C D E F G H 1 J Hold
- MW 1- 66 of	7	5/15/13 13	350 WATER BETHER 10	X
2 MW - 1	5	5/15/13 15	1550 WATER SETTES 10	
3 MW - 11		5/15/13 10	030 WAREP BOTHER 16	XXXX
4 MW/ 119		5/15/13 119	1830 WATER SETUS 17	× × × × × × × × ×
5 MW - 119		5/15/13 18	1810 WARK 88 TELL 2817	× × × × × × × ×
D → D ∪ P → D	~	5/15/13 00	000 WATER SETTLES 16	<u>Х</u> ХХ
7 1 - MM 2		5/16/13 1C	15 WATER SECTES 17	X
* EQB-0	3	5/116/13 11	40 WAREN SETTE 17	× × × × × × × ×
• Ro Disci	HARGE	30 5/10/15	0830 WATER SECTION 17	X X X X X X X X X
OFFIP BY	SYNEY	5/10/13	- WA	<u> </u>
Sampler(s) Please Print & Sign MA (OPV B)	BALLEY MZ	Shipment Method	thod Required Turnaround Time: (Check Box)	Aheck Box) Other SWK Days 2 WK Days 2 WK Days 24 Hour
Relinquished by:	S116113	Time: 30 Rece		Notes: 10 Day TAT, CC Pan Krueger with Arcadis.
Relinquished by:	Date:		Received by Laboratory): CITY B	Cooler Temp. OC Package: (Check One Box Below) Cooler Temp. OC Package: (Check One Box Below) TRRP Check Is
ogged by (Laboratory):	Date:	1	Checked by (Laborathy):	OC/Row Date TRRP 846/CLP
Teservauve ney:	Z-TIVO3 6-112004	2-14d ₂ O ₂ O ₃	2 1 6	Julier FLUI

ote: 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 forms 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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FRI - 17 MAY 10:30A PRIORITY OVERNIGHT

AB SGRA

77099 TX-US IAH





ALS Environmental

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

Date: Corrpany: **CUSTODY SEAL**

FIN - 17 MAY 10:30A PRORITY OVERNIGHT







ALS Environmental

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



Name: Company:

CUSTODY SEAL 1(3/)3 ~ Time: 13(4

克克 5020 3307 1499

AB SGRA

FRI - 17 MAY 10:30A PRIORITY OVERNIGHT

77,099 TX-US



Empf 637368 16MAY13 ROWA 519C1/9983/936R



ALS Environmental

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

Date: 75 Name: Company: CUSTODY SEAL
Time: 13/5
PROPORT

FRI - 17 MAY 10 A PRIORITY OVERNIL IT Seaf Erriton By:

8 20 3307 1065

AB SGRA



ALS Environmental

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

317

CUSTODY SEAL

Seal Broken By:

Date: 4/10/13 Time: 13/5

Name: MANON

Company: PCAULS



FRI - 17 MA PRIORITY O



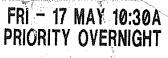


10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887



Name: N Company: **CUSTODY SEAL**

AB SGRA



77099 TX-US IAH





ALS Environmental

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



Date Nam Com

CUSTODY SEAL



June 12, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re:

ALS Workorder:

13-05-319

Project Name:

None Submitted

Project Number:

1305797

Dear Ms. West:

Nine water samples were received from ALS Environmental on May 21, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses are contained in the enclosed report.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environment
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



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.

STATEMENT STATEM	License or Certification
Accreditation Body	Number -
Alaska (AK)	UST-086
Alaska (AK)	CO00078
Arizona (AZ)*	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
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
Nebraska	NE-OS-24-13
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



1305319

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1305319

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1305797 Client PO Number: 10-1305797

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-114	1305319-1		WATER	15-May-13	13:50
MW-115	1305319-2		WATER	15-May-13	15:50
MW-117	1305319-3		WATER	15-May-13	10:30
DUP-03	1305319-4		WATER	15-May-13	
MW-118	1305319-5		WATER	15-May-13	18:30
MW-119	1305319-6		WATER	15-May-13	18:10
MW-116	1305319-7		WATER	16-May-13	10:15
EQB-03	1305319-8		WATER	16-May-13	11:40
RO Discharge	1305319-9		WATER	16-May-13	8:30

Subcontractor: ALS Environmental

TEL: FAX: Acct#:

225 Commerce Drive

Fort Collins, CO 80524

(800) 443-1511 (970) 490-1522

CHAIN-OF-CUSTODY RECORD

Date: <u>18-May-13</u> COC ID: <u>14099</u> Due Date <u>23-May-13</u>

1305319

\	Salesnerson	Houston House	Touse Acct										1,00001	ٽ ر	_
Cus	Customer Information			Project Information	tion			Para	Parameter/Method Request for Analysis	ethod Re	duest fo	or Analy	sis		
Purchase Order		Projec	Project Name	1305797		A Ra	A Radium 226 228 Sub to ALS Ft. Collins	228 Su	b to ALS	Ft. Collin	SI				
Work Order		Projec	Project Number			В			! :						
Company Name	ALS Group USA, Corp.	Bill To	Bill To Company	ALS Group USA, Corp.	JSA, Corp.	O									
Send Report To	Sonia West	Inv Attn	ţ	Accounts Payable	ayable	٥			 					İ	
Address	10450 Stancliff Rd, Suite 210	Address	SS	10450 Stancl	10450 Stancliff Rd, Suite 210	Ш	į								
						ш									
City/State/Zip	Houston, Texas 77099-4338	8 City/State/	tate/Zip	Houston, Tex	Houston, Texas 77099-4338	ŋ									:
Phone	(281) 530-5656	Рһопе	a	(281) 530-5656	556	I									
Fax	(281) 530-5887	Fax		(281) 530-5887	187	<u>-</u>									
eMail Address	Sonia. West@alsglobal.com	n eMail CC	ဗ	jumoke.lawal	jumoke.lawal@alsglobal.com	7									
Sample ID		Matrix	Collection Date 24hr	Date 24hr	Bottle	¥	В	၁	_	Ш	-	_ ე	I		ſ
1305797-011 (MW-114)	(14)	Water	15/May/20	5/May/2013 13:50	(1) 1LPHN03	×									
1305797-02I (MW-115)	(15)	Water	15/May/20	5/May/2013 15:50	(1) 1LPHNO3	×									
1305797-03I (MW-117)	(17)	Water	15/May/20	5/May/2013 10:30	(1) 1LPHNO3	×									
1305797-06I (DUP-03)	(3)	Water	15/May/2013	//2013	(1) 1LPHNO3	×			 					 	
1305797-04I (MW-118)	118)	Water	15/May/20	5/May/2013 18:30	(2) 1LPHNO3	×									
1305797-05I (MW-119)	(E)	Water	15/May/20	5/May/2013 18:10	(2) 1LPHNO3	×									
1305797-07I (MW-116)	116)	Water	16/May/20	6/May/2013 10:15	(2) 1LPHN03	×									
1305797-08I (EQB-03)	(8)	Water	16/May/20	6/May/2013 11:40	(2) 1LPHNO3	×									!
1305797-09I (RO Discharge)	ischarge)	Water	16/May/2	16/May/2013 8:30	(2) 1LPHNO3	×									

Please and Lawal jun	alyze for <u>Radium 226/2</u> 10ke.lawal <u>@</u> alsglobal <u>.c</u>	Please analyze for <u>Radium 226/228. Report is due on 5/23/13. Send report to Sonia West, Lawal jumoke lawal@alsglobal.com and Luke Hernandez luke.hernandez@alsglobal.com</u>	report to Sonia West, son andez@alsglobal.com	Please analyze for Radium 226/228. Report is due on 5/23/13. Send report to Sonia West, sonia west@alsglobal.com, and CC: results to Jumoke. Lawal jumoke.lawal@alsglobal.com and Luke Hernandez luke.hernandez@alsglobal.com	s to Jumoke
Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs Report/QC Level	CLevel
Refulshed by	5/2013	1300 Received by B	STATUS 6930	O.C.	-



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

	(ALS) 12 M	に2	9	
	Client: No: 13) <u>)</u>		
	Project Manager: Initials:	Date:	5[2]]	<u>13</u>
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?	MONE	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 of sediment: dusting moderateheavy	N/A	YES	(G)
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 #:			
	Temperature (°C): Am K	_		
	No. of custody seals on cooler:			
	DOT Survey/ Acceptance External µR/hr reading: [5			
	Background µR/hr reading: 13			
	Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES NO / NA (If no, see	Form 008.)		
A	dditional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX	CEPT#1 Al	ND #16.	
			·····	
				····
lf	applicable, was the client contacted? YES / NO / T Contact:	_ Date/Tir	ne:	
	roject Manager Signature / Date: M/ 5-22-0	_		
. 1	roject (ramager orginature) batte.	-		

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



80524 co-us DEA

19.6

(3053-19

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SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 MW-114
 Lab ID:
 1305319-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/15/2013 13:50 **Percent Moisture:**

Analyses	Result	Qual	Report Limit 1	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 5/29/201 :	3 PrepBy: PJW
Ra-226	ND (+/- 0.25)	U	0.36	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	97.2		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY O	SFPC		PAI 724		Prep Date: 5/28/201	3 PrepBy: JTL
Ra-228	ND (+/- 0.29)	U	0.55	pCi/l	NA	5/31/2013 10:39
Carr: BARIUM	97.2		40-110	%REC	NA	5/31/2013 10:39

SAMPLE SUMMARY REPORT

Date: 10-Jun-13 **Client:** ALS Environmental

1305797 **Project: Work Order:** 1305319 **Lab ID:** 1305319-2 **Sample ID:** MW-115 **Legal Location:** Matrix: WATER

Collection Date: 5/15/2013 15:50 **Percent Moisture:**

Analyses	Result	Qual	Report Limit 1	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 5/29/201 :	3 PrepBy: PJW
Ra-226	ND (+/- 0.31)	U	0.58	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	98		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY O	SFPC		PAI 724		Prep Date: 5/28/201	3 PrepBy: JTL
Ra-228	ND (+/- 0.33)	U	0.64	pCi/l	NA	5/31/2013 10:39
Carr: BARIUM	98		40-110	%REC	NA	5/31/2013 10:39

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 MW-117
 Lab ID:
 1305319-3

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/15/2013 10:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit 1	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 5/29/2013	B PrepBy: PJW
Ra-226	ND (+/- 0.24)	U	0.45	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	99.1		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 5/28/2013	B PrepBy: JTL
Ra-228	ND (+/- 0.29)	U	0.53	pCi/l	NA	5/31/2013 10:39
Carr: BARIUM	99.1		40-110	%REC	NA	5/31/2013 10:39

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 DUP-03
 Lab ID:
 1305319-4

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/15/2013 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANATION - M	METHOD 903.1		PAI 783		Prep Date: 5/2	29/2013 PrepBy: PJW
Ra-226	ND (+/- 0.3)	Y1,U	0.54	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	101	Y1	40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY GFPC			PAI 724		Prep Date: 5/2	28/2013 PrepBy: JTL
Ra-228	ND (+/- 0.29)	Y1,U	0.55	pCi/l	NA	5/31/2013 10:39
Carr: BARIUM	101	Y1	40-110	%REC	NA	5/31/2013 10:39

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 MW-118
 Lab ID:
 1305319-5

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/15/2013 18:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit 1	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANATION	ON - METHOD 903.1		PAI 783		Prep Date: 5/29/201	3 PrepBy: PJW
Ra-226	0.22 (+/- 0.18)	LT	0.2	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	96.6		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY G	FPC		PAI 724		Prep Date: 5/28/201	3 PrepBy: JTL
Ra-228	ND (+/- 0.25)	U	0.48	pCi/l	NA	5/31/2013 10:28
Carr: BARIUM	96.6		40-110	%REC	NA	5/31/2013 10:28

ALS Environmental -- FC
LIMS Version: 6.650

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 MW-119
 Lab ID:
 1305319-6

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/15/2013 18:10 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANATION	I - METHOD 903.1		PAI 783		Prep Date: 5/29/2	013 PrepBy: PJW
Ra-226	ND (+/- 0.19)	Y1,U	0.31	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	100	Y1	40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY GFP	С		PAI 724		Prep Date: 5/28/2	013 PrepBy: JTL
Ra-228	ND (+/- 0.21)	Y1,U	0.47	pCi/l	NA	5/31/2013 10:28
Carr: BARIUM	100	Y1	40-110	%REC	NA	5/31/2013 10:28

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 MW-116
 Lab ID:
 1305319-7

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/16/2013 10:15 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 5/29/2	013 PrepBy: PJW
Ra-226	ND (+/- 0.21)	U	0.36	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	97.2		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 5/28/2	013 PrepBy: JTL
Ra-228	ND (+/- 0.21)	U	0.46	pCi/l	NA	5/31/2013 10:28
Carr: BARIUM	97.2		40-110	%REC	NA	5/31/2013 10:28

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 EQB-03
 Lab ID:
 1305319-8

 Legal Location:
 Matrix:
 WATER

Collection Date: 5/16/2013 11:40 **Percent Moisture:**

Analyses	Result	Qual	Report Limit U	J nits	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 5/29/201 :	3 PrepBy: PJW
Ra-226	ND (+/- 0.13)	U	0.2	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	97.6		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 5/28/2013	3 PrepBy: JTL
Ra-228	ND (+/- 0.21)	U	0.45	pCi/l	NA	5/31/2013 10:28
Carr: BARIUM	97.6		40-110	%REC	NA	5/31/2013 10:28

ALS Environmental -- FC
LIMS Version: 6.650

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

Project:1305797Work Order:1305319Sample ID:RO DischargeLab ID:1305319-9Legal Location:Matrix:WATER

Collection Date: 5/16/2013 08:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit 1	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 5/29/201	3 PrepBy: PJW
Ra-226	0.49 (+/- 0.3)	LT	0.24	pCi/l	NA	6/7/2013 13:29
Carr: BARIUM	88.2		40-110	%REC	NA	6/7/2013 13:29
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 5/28/201	3 PrepBy: JTL
Ra-228	ND (+/- 0.25)	U	0.52	pCi/l	NA	5/31/2013 10:28
Carr: BARIUM	88.2		40-110	%REC	NA	5/31/2013 10:28

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 RO Discharge
 Lab ID:
 1305319-9

Legal Location: Matrix: WATER

Collection Date: 5/16/2013 08:30 **Percent Moisture:**

Report Dilution

Analyses Result Qual Limit Units 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.

LT - Result is less than requested MDC but greater than achieved MDC.

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
LIMS Version: 6.650

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SAMPLE SUMMARY REPORT

Matrix: WATER

Client: ALS Environmental Date: 10-Jun-13

 Project:
 1305797
 Work Order:
 1305319

 Sample ID:
 RO Discharge
 Lab ID:
 1305319-9

Collection Date: 5/16/2013 08:30 **Percent Moisture:**

Report Dilution
Analyses Result Qual Limit Units 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
- gasoline - JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent

Legal Location:

- bunker C

Client: ALS Environmental

Work Order: 1305319 **Project:** 1305797

Date: 6/10/2013 7:58:

QC BATCH REPORT

Batch ID: R	RE130529-2-1	Instrument ID:	: Alpha Scin		Method:	Ra-226 by	Radon E	Emanation - Me			
LCS	Sample ID: RE130529-	2				Units: pCi/	1	Analysi	s Date: 6/	6/7/2013 14:01	
Client ID:		Ru	un ID: RE130 !	529-2A			Prep Date: 5/29/2013		DF: NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		30.4 (+/- 7.7)	0.4	29.99		101	67-120				Р
Carr: BAF	RIUM	32650		33170		98.4	40-110				
LCSD	Sample ID: RE130529-	2				Units: pCi/	Ί	Analysi	/7/2013 14	/2013 14:01	
Client ID:	ient ID: Run I		un ID: RE130 !	n ID: RE130529-2A				Prep Date: 5/29/2013		DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		26.2 (+/- 6.7)	0.2	29.99		87.2	67-120	30.4	0.419	2.13	Р
Carr: BAF	RIUM	31570		33170		95.2	40-110	32650			
МВ	Sample ID: RE130529-	2				Units: pCi/	1	Analysis Date: 6,		6/7/2013 13:29	
Client ID:		Ru	un ID: RE130	529-2A				Prep Date: 5/29/2013		DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		ND	0.28								U
Carr: BAF	RIUM	31150		33170		93.9	40-110				
The following samples were analyzed in this batch:		1:	305319-1 305319-4 305319-7	130)5319-2)5319-5)5319-8	13	305319-3 305319-6 305319-9				

Client: ALS Environmental

Work Order: 1305319 **Project:** 1305797

Batch ID: R	RA130528-1-1	Instrument ID:	LB4100-B		Method:	Radium-2	28 Analy	sis by GFPC			
LCS	Sample ID: RA13052	8-1				Units: pCi/	71	Analysi	s Date: 5/	5/31/2013 10:31	
Client ID:		Run ID: RA130528-1A						Prep Date: 5/28/2013		DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		10.2 (+/- 2.5)	0.6	9.859		104	70-130				Р
Carr: BAF	RIUM	32650		33170		98.4	40-110				
LCSD	Sample ID: RA13052	Sample ID: RA130528-1 Units: pCi/I Analysis Da					s Date: 5/	e: 5/31/2013 10:31			
Client ID:		Ru	Run ID: RA130528-1A					Prep Date: 5/28/2013		DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		11 (+/- 2.7)	0.6	9.859		112	70-130	10.2	0.223	2.13	Р
Carr: BAF	RIUM	31570		33170		95.2	40-110	32650			
МВ	Sample ID: RA13052	.8-1				Units: pCi/	71	Analysis Date: 5/31/2013 10:3			0:39
Client ID:	Run ID: RA1		un ID: RA130	528-1A				Prep Date: 5/28	/2013	DF: N /	A
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		ND	0.39								U
Carr: BARIUM 31150			33170		93.9	40-110					
The following samples were analyzed in this batch:			1	305319-1 305319-4 305319-7	130	05319-2 05319-5 05319-8	13	305319-3 305319-6 305319-9			



08-Oct-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: 1309249

Dear Robert,

ALS Environmental received 12 samples on 06-Sep-2013 09:40 AM for the analyses presented in the following report.

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

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

Regards,

Electronically approved by: Sonia West

Sonie West

Sonia West Project Manager

Certificate No: T104704231-13-12

ALS Environmental Date: 08-Oct-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 1309249

Work Order Sample Summary

Lab Samp II	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
1309249-01	MW-114	Water		9/5/2013 09:30	9/6/2013 09:40	
1309249-02	MW-115	Water		9/4/2013 17:10	9/6/2013 09:40	
1309249-03	MW-116	Water		9/4/2013 15:20	9/6/2013 09:40	
1309249-04	MW-117	Water		9/4/2013 09:50	9/6/2013 09:40	
1309249-05	MW-118	Water		9/4/2013 12:00	9/6/2013 09:40	
1309249-06	MW-119	Water		9/4/2013 13:30	9/6/2013 09:40	
1309249-07	RO DISCHARGE	Water		9/5/2013 11:00	9/6/2013 09:40	
1309249-08	DUP-01	Water		9/4/2013	9/6/2013 09:40	
1309249-09	TRIP BLANKS-1	Water		9/4/2013	9/6/2013 09:40	
1309249-10	TRIP BLANKS-2	Water		9/4/2013	9/6/2013 09:40	
1309249-11	TRIP BLANKS-3	Water		9/4/2013	9/6/2013 09:40	
1309249-12	TRIP BLANKS	Water		9/4/2013	9/6/2013 09:40	

ALS Environmental

Date: 08-Oct-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling
Work Order: 1309249

Case Narrative

Ö ^Á Á ÁæÁæà[ˈæː ː Á ːːː ː ˈ£Áthis report has been revised to add Nitrate-Nitrite by method 300.0.

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Batch 72948, TPH DRO/ORO 8015M, Sample LLCSDW-130910: The LCSD surrogate RPD was outside of the control limits. However, the surrogate recoveries were within the control limits for the LCS and LCSD.

Batch 73040, Dissolved Metals 6020, Sample 1309411-01L: MS/MSD are for an unrelated sample.

Batch 72927, Semivolatile Organics 8270, Sample SLCSW3-130910: Insufficient sample for MS/MSD.

ALS Environmental

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 9/5/2013 09:30 AM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-01

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	thod: SW8015	Λ	Prep: SW3	3511 / 9/10/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 10:12
TPH (Oil Range)	U		0.041	0.10	mg/L	1	9/11/2013 10:12
Surr: 2-Fluorobiphenyl	62.9			60-135	%REC	1	9/11/2013 10:12
GASOLINE RANGE ORGANICS - SW8015	5C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 17:18
Surr: 4-Bromofluorobenzene	104			70-130	%REC	1	9/12/2013 17:18
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:49
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR
Aluminum	0.00848	J	0.0040	0.0100	mg/L	1	9/13/2013 23:53
Arsenic	0.00502		0.0010	0.00500	mg/L	1	9/13/2013 23:53
Barium	0.0170		0.00090	0.00500	mg/L	1	9/13/2013 23:53
Boron	0.132		0.020	0.0500	mg/L	1	9/13/2013 23:53
Cadmium	U		0.00080	0.00200	mg/L	1	9/13/2013 23:53
Calcium	672		0.86	5.00	mg/L	10	9/17/2013 13:34
Chromium	U		0.0010	0.00500	mg/L	1	9/13/2013 23:53
Cobalt	0.00718		0.00080	0.00500	mg/L	1	9/13/2013 23:53
Copper	0.00197	J	0.0010	0.00500	mg/L	1	9/13/2013 23:53
Iron	U		0.078	0.200	mg/L	1	9/13/2013 23:53
Lead	U		0.00070	0.00500	mg/L	1	9/13/2013 23:53
Manganese	1.42		0.0025	0.00500	mg/L	1	9/13/2013 23:53
Molybdenum	0.0116		0.0015	0.00500	mg/L	1	9/13/2013 23:53
Nickel	0.00558		0.0010	0.00500	mg/L	1	9/13/2013 23:53
Potassium	2.94		0.084	0.200	mg/L	1	9/13/2013 23:53
Selenium	0.00245	J	0.0010	0.00500	mg/L	1	9/13/2013 23:53
Silver	U		0.00080	0.00500	mg/L	1	9/13/2013 23:53
Sodium	138		0.085	0.200	mg/L	1	9/13/2013 23:53
Uranium	0.0138		0.0050	0.00500	mg/L	1	9/13/2013 23:53
Zinc	U		0.0025	0.00500	mg/L	1	9/13/2013 23:53
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 11:57
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 11:57
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 11:57
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 11:57
Surr: 2,4,6-Tribromophenol	84.9			34-129	%REC	1	9/13/2013 11:57
Surr: 2-Fluorobiphenyl	73.1			40-125	%REC	1	9/13/2013 11:57

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

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** MW-114

Collection Date: 9/5/2013 09:30 AM

Work Order: 1309249

Lab ID: 1309249-01

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	63.7			20-120	%REC	1	9/13/2013 11:57
Surr: 4-Terphenyl-d14	78.2			40-135	%REC	1	9/13/2013 11:57
Surr: Nitrobenzene-d5	75.9			41-120	%REC	1	9/13/2013 11:57
Surr: Phenol-d6	68.5			20-120	%REC	1	9/13/2013 11:57
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/9/2013 23:41
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/9/2013 23:41
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Benzene	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/9/2013 23:41
Chloroform	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/9/2013 23:41
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/9/2013 23:41
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/9/2013 23:41
Toluene	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/9/2013 23:41
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/9/2013 23:41
Surr: 1,2-Dichloroethane-d4	112			71-125	%REC	1	9/9/2013 23:41
Surr: 4-Bromofluorobenzene	90.5			70-125	%REC	1	9/9/2013 23:41
Surr: Dibromofluoromethane	113			74-125	%REC	1	9/9/2013 23:41
Surr: Toluene-d8	114			75-125	%REC	1	9/9/2013 23:41
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	198	Е	0.20	0.500	mg/L	1	9/16/2013 07:09
Chloride	199		10	25.0	mg/L	50	9/16/2013 12:13
Fluoride	1.82		0.050	0.100	mg/L	1	9/16/2013 07:09
Nitrogen, Nitrate (As N)	0.0550	JH	0.030	0.100	mg/L	1	9/16/2013 07:09
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 07:09
Sulfate	2,000	Е	0.20	0.500	mg/L	1	9/16/2013 07:09
Sulfate	1,950		10	25.0	mg/L	50	9/16/2013 12:13
Nitrate/Nitrite (as N)	0.0550	JH	0.030	0.200	mg/L	1	9/16/2013 07:09
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 9/5/2013 09:30 AM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-01

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15
PH - SM4500H+ B		Analyst: KL					
рН	7.07	Н	0.10	0.100	pH Units	1	9/8/2013 11:16
Temp Deg C @pH	23.7	Н	0		°C	1	9/8/2013 11:16
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	3,870		5.0	10.0	mg/L	1	9/11/2013 18:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 9/4/2013 05:10 PM

Work Order: 1309249

Lab ID: 1309249-02

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed	
TPH DRO/ORO 8015C		Me	thod: SW8015 N	Л	Prep: SW	3511 / 9/10/13	Analyst: RPM	
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 10:39	
TPH (Oil Range)	U		0.041	0.10	mg/L	1	9/11/2013 10:39	
Surr: 2-Fluorobiphenyl	60.4			60-135	%REC	1	9/11/2013 10:39	
GASOLINE RANGE ORGANICS - SW801	5C	Me	thod: SW8015				Analyst: KKP	
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 17:36	
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	9/12/2013 17:36	
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO	
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:51	
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR	
Aluminum	0.00648	J	0.0040	0.0100	mg/L	1	9/13/2013 23:58	
Arsenic	0.00467	J	0.0010	0.00500	mg/L	1	9/13/2013 23:58	
Barium	0.0106		0.00090	0.00500	mg/L	1	9/13/2013 23:58	
Boron	0.782		0.020	0.0500	mg/L	1	9/13/2013 23:58	
Cadmium	U		0.00080	0.00200	mg/L	1	9/13/2013 23:58	
Calcium	622		0.86	5.00	mg/L	10	9/17/2013 13:36	
Chromium	U		0.0010	0.00500	mg/L	1	9/13/2013 23:58	
Cobalt	U		0.00080	0.00500	mg/L	1	9/13/2013 23:58	
Copper	U		0.0010	0.00500	mg/L	1	9/13/2013 23:58	
Iron	U		0.078	0.200	mg/L	1	9/13/2013 23:58	
Lead	U		0.00070	0.00500	mg/L	1	9/13/2013 23:58	
Manganese	0.0362		0.0025	0.00500	mg/L	1	9/13/2013 23:58	
Molybdenum	0.00663		0.0015	0.00500	mg/L	1	9/13/2013 23:58	
Nickel	0.00208	J	0.0010	0.00500	mg/L	1	9/13/2013 23:58	
Potassium	0.782		0.084	0.200	mg/L	1	9/13/2013 23:58	
Selenium	0.00568		0.0010	0.00500	mg/L	1	9/13/2013 23:58	
Silver	U		0.00080	0.00500	mg/L	1	9/13/2013 23:58	
Sodium	247		0.85	2.00	mg/L	10	9/17/2013 13:36	
Uranium	0.0936		0.0050	0.00500	mg/L	1	9/13/2013 23:58	
Zinc	U		0.0025	0.00500	mg/L	1	9/13/2013 23:58	
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG	
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:17	
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 12:17	
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:17	
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 12:17	
Surr: 2,4,6-Tribromophenol	47.8			34-129	%REC	1	9/13/2013 12:17	
Surr: 2-Fluorobiphenyl	49.8			40-125	%REC	1	9/13/2013 12:17	

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 9/4/2013 05:10 PM

Work Order: 1309249

Lab ID: 1309249-02

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	53.1			20-120	%REC	1	9/13/2013 12:17
Surr: 4-Terphenyl-d14	67.5			40-135	%REC	1	9/13/2013 12:17
Surr: Nitrobenzene-d5	70.6			41-120	%REC	1	9/13/2013 12:17
Surr: Phenol-d6	60.1			20-120	%REC	1	9/13/2013 12:17
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 00:06
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 00:06
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 00:06
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 00:06
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 00:06
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 00:06
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 00:06
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 00:06
Surr: 1,2-Dichloroethane-d4	112			71-125	%REC	1	9/10/2013 00:06
Surr: 4-Bromofluorobenzene	91.2			70-125	%REC	1	9/10/2013 00:06
Surr: Dibromofluoromethane	112			74-125	%REC	1	9/10/2013 00:06
Surr: Toluene-d8	111			75-125	%REC	1	9/10/2013 00:06
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	530		10	25.0	mg/L	50	9/16/2013 12:39
Fluoride	0.845		0.050	0.100	mg/L	1	9/16/2013 07:35
Nitrogen, Nitrate (As N)	0.174	Н	0.030	0.100	mg/L	1	9/16/2013 07:35
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 07:35
Sulfate	2,900		10	25.0	mg/L	50	9/16/2013 12:39
Nitrate/Nitrite (as N)	0.174	JH	0.030	0.200	mg/L	1	9/16/2013 07:35
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 9/4/2013 05:10 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-02

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Analyst: KL					
pH	7.07	Н	0.10	0.100	pH Units	1	9/8/2013 11:19
Temp Deg C @pH	23.6	Н	0		°C	1	9/8/2013 11:19
TOTAL DISSOLVED SOLIDS		Analyst: KAH					
Total Dissolved Solids (Residue, Filterable)	6,130		5.0	10.0	mg/L	1	9/11/2013 18:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 9/4/2013 03:20 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-03

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	thod: SW8015	Prep: SW3	3511 / 9/10/13	Analyst: RPM	
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 11:06
TPH (Oil Range)	U		0.042	0.10	mg/L	1	9/11/2013 11:06
Surr: 2-Fluorobiphenyl	63.6			60-135	%REC	1	9/11/2013 11:06
GASOLINE RANGE ORGANICS - SWE	015C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 17:54
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	9/12/2013 17:54
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO
Mercury	0.0000610	J	0.000042	0.000200	mg/L	1	9/13/2013 16:53
DISSOLVED METALS		Ме	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR
Aluminum	0.0126		0.0040	0.0100	mg/L	1	9/14/2013 00:03
Arsenic	0.00535		0.0010	0.00500	mg/L	1	9/14/2013 00:03
Barium	0.00928		0.00090	0.00500	mg/L	1	9/14/2013 00:03
Boron	0.304		0.020	0.0500	mg/L	1	9/14/2013 00:03
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:03
Calcium	588		0.86	5.00	mg/L	10	9/17/2013 13:39
Chromium	U		0.0010	0.00500	mg/L	1	9/14/2013 00:03
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:03
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:03
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:03
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:03
Manganese	0.00478	J	0.0025	0.00500	mg/L	1	9/14/2013 00:03
Molybdenum	0.00304	J	0.0015	0.00500	mg/L	1	9/14/2013 00:03
Nickel	0.00115	J	0.0010	0.00500	mg/L	1	9/14/2013 00:03
Potassium	1.21		0.084	0.200	mg/L	1	9/14/2013 00:03
Selenium	0.00493	J	0.0010	0.00500	mg/L	1	9/14/2013 00:03
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:03
Sodium	235		0.85	2.00	mg/L	10	9/17/2013 13:39
Uranium	0.0400		0.0050	0.00500	mg/L	1	9/14/2013 00:03
Zinc	U		0.0025	0.00500	mg/L	1	9/14/2013 00:03
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/10/2013 23:28
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/10/2013 23:28
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/10/2013 23:28
Naphthalene	U		0.000050	0.00020	mg/L	1	9/10/2013 23:28
Surr: 2,4,6-Tribromophenol	35.3			34-129	%REC	1	9/10/2013 23:28
Surr: 2-Fluorobiphenyl	47.6			40-125	%REC	1	9/10/2013 23:28

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 9/4/2013 03:20 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-03

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	38.3			20-120	%REC	1	9/10/2013 23:28
Surr: 4-Terphenyl-d14	58.1			40-135	%REC	1	9/10/2013 23:28
Surr: Nitrobenzene-d5	49.8			41-120	%REC	1	9/10/2013 23:28
Surr: Phenol-d6	39.8			20-120	%REC	1	9/10/2013 23:28
LOW LEVEL VOLATILES - SW8260C		Me	thod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 06:21
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 06:21
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 06:21
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 06:21
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 06:21
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 06:21
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 06:21
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 06:21
Surr: 1,2-Dichloroethane-d4	106			71-125	%REC	1	9/10/2013 06:21
Surr: 4-Bromofluorobenzene	91.4			70-125	%REC	1	9/10/2013 06:21
Surr: Dibromofluoromethane	107			74-125	%REC	1	9/10/2013 06:21
Surr: Toluene-d8	108			75-125	%REC	1	9/10/2013 06:21
MISCELLANEOUS ANALYSIS		Me	thod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Me	thod: E300				Analyst: JKP
Chloride	344		10	25.0	mg/L	50	9/16/2013 13:05
Fluoride	1.17		0.050	0.100	mg/L	1	9/16/2013 08:01
Nitrogen, Nitrate (As N)	0.418	Н	0.030	0.100	mg/L	1	9/16/2013 08:01
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 08:01
Sulfate	2,180		10	25.0	mg/L	50	9/16/2013 13:05
Nitrate/Nitrite (as N)	0.418	Н	0.030	0.200	mg/L	1	9/16/2013 08:01
CYANIDE - SM4500CN E		Me	thod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 9/4/2013 03:20 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-03

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Meth	nod: SM4500 F	I+ B			Analyst: KL
pH	7.20	Н	0.10	0.100	pH Units	1	9/8/2013 11:21
Temp Deg C @pH	23.5	Н	0		°C	1	9/8/2013 11:21
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,440		5.0	10.0	mg/L	1	9/11/2013 18:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 9/4/2013 09:50 AM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-04

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed	
TPH DRO/ORO 8015C		Me	ethod: SW8015N	1	Prep: SW3	3511 / 9/10/13	Analyst: RPM	
TPH (Diesel Range)	U		0.020	0.051	mg/L	1	9/11/2013 11:32	
TPH (Oil Range)	U		0.041	0.10	mg/L	1	9/11/2013 11:32	
Surr: 2-Fluorobiphenyl	62.7			60-135	%REC	1	9/11/2013 11:32	
GASOLINE RANGE ORGANICS - SW801	5C	Мє	ethod: SW8015				Analyst: KKP	
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 18:13	
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	9/12/2013 18:13	
DISSOLVED MERCURY BY 7470A		Ме	ethod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO	
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:54	
DISSOLVED METALS		Мє	ethod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR	
Aluminum	0.0169		0.0040	0.0100	mg/L	1	9/14/2013 00:08	
Arsenic	0.00559		0.0010	0.00500	mg/L	1	9/14/2013 00:08	
Barium	0.0108		0.00090	0.00500	mg/L	1	9/14/2013 00:08	
Boron	0.202		0.020	0.0500	mg/L	1	9/14/2013 00:08	
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:08	
Calcium	550		0.86	5.00	mg/L	10	9/17/2013 13:41	
Chromium	U		0.0010	0.00500	mg/L	1	9/14/2013 00:08	
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:08	
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:08	
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:08	
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:08	
Manganese	0.00502		0.0025	0.00500	mg/L	1	9/14/2013 00:08	
Molybdenum	0.0140		0.0015	0.00500	mg/L	1	9/14/2013 00:08	
Nickel	0.00189	J	0.0010	0.00500	mg/L	1	9/14/2013 00:08	
Potassium	8.92		0.084	0.200	mg/L	1	9/14/2013 00:08	
Selenium	0.00316	J	0.0010	0.00500	mg/L	1	9/14/2013 00:08	
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:08	
Sodium	118		0.085	0.200	mg/L	1	9/14/2013 00:08	
Uranium	0.0224		0.0050	0.00500	mg/L	1	9/14/2013 00:08	
Zinc	0.00266	J	0.0025	0.00500	mg/L	1	9/14/2013 00:08	
LOW-LEVEL SEMIVOLATILES		Ме	ethod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG	
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:36	
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 12:36	
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:36	
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 12:36	
Surr: 2,4,6-Tribromophenol	40.4			34-129	%REC	1	9/13/2013 12:36	
Surr: 2-Fluorobiphenyl	42.4			40-125	%REC	1	9/13/2013 12:36	

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 9/4/2013 09:50 AM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-04

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	40.1			20-120	%REC	1	9/13/2013 12:36
Surr: 4-Terphenyl-d14	65.4			40-135	%REC	1	9/13/2013 12:36
Surr: Nitrobenzene-d5	52.3			41-120	%REC	1	9/13/2013 12:36
Surr: Phenol-d6	46.3			20-120	%REC	1	9/13/2013 12:36
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 06:46
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 06:46
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 06:46
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 06:46
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 06:46
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 06:46
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 06:46
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 06:46
Surr: 1,2-Dichloroethane-d4	105			71-125	%REC	1	9/10/2013 06:46
Surr: 4-Bromofluorobenzene	88.1			70-125	%REC	1	9/10/2013 06:46
Surr: Dibromofluoromethane	106			74-125	%REC	1	9/10/2013 06:46
Surr: Toluene-d8	106			75-125	%REC	1	9/10/2013 06:46
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	71.0		0.20	0.500	mg/L	1	9/16/2013 08:27
Fluoride	2.80		0.050	0.100	mg/L	1	9/16/2013 08:27
Nitrogen, Nitrate (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 08:27
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 08:27
Sulfate	2,020		10	25.0	mg/L	50	9/16/2013 14:20
Nitrate/Nitrite (as N)	U	Н	0.030	0.200	mg/L	1	9/16/2013 08:27
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 9/4/2013 09:50 AM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-04

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Meth	nod: SM4500 F	I+ B			Analyst: KL
pH	7.10	Н	0.10	0.100	pH Units	1	9/8/2013 11:24
Temp Deg C @pH	23.5	Н	0		°C	1	9/8/2013 11:24
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	3,970		5.0	10.0	mg/L	1	9/9/2013 11:00

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 9/4/2013 12:00 PM

Work Order: 1309249

Lab ID: 1309249-05

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed	
TPH DRO/ORO 8015C	Method: SW8015M				Prep: SW3	3511 / 9/10/13	Analyst: RPM	
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 11:59	
TPH (Oil Range)	U		0.041	0.10	mg/L	1	9/11/2013 11:59	
Surr: 2-Fluorobiphenyl	60.7			60-135	%REC	1	9/11/2013 11:59	
GASOLINE RANGE ORGANICS - SW8015	С	Me	thod: SW8015				Analyst: KKP	
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 18:31	
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	9/12/2013 18:31	
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO	
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:56	
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR	
Aluminum	0.00992	J	0.0040	0.0100	mg/L	1	9/14/2013 00:13	
Arsenic	0.0156		0.0010	0.00500	mg/L	1	9/14/2013 00:13	
Barium	0.00990		0.00090	0.00500	mg/L	1	9/14/2013 00:13	
Boron	0.307		0.020	0.0500	mg/L	1	9/14/2013 00:13	
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:13	
Calcium	543		0.86	5.00	mg/L	10	9/17/2013 13:43	
Chromium	U		0.0010	0.00500	mg/L	1	9/14/2013 00:13	
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:13	
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:13	
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:13	
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:13	
Manganese	U		0.0025	0.00500	mg/L	1	9/14/2013 00:13	
Molybdenum	0.0162		0.0015	0.00500	mg/L	1	9/14/2013 00:13	
Nickel	0.00131	J	0.0010	0.00500	mg/L	1	9/14/2013 00:13	
Potassium	7.69		0.084	0.200	mg/L	1	9/14/2013 00:13	
Selenium	0.0129		0.0010	0.00500	mg/L	1	9/14/2013 00:13	
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:13	
Sodium	215		0.85	2.00	mg/L	10	9/17/2013 13:43	
Uranium	0.0395		0.0050	0.00500	mg/L	1	9/14/2013 00:13	
Zinc	U		0.0025	0.00500	mg/L	1	9/14/2013 00:13	
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG	
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:56	
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 12:56	
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 12:56	
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 12:56	
Surr: 2,4,6-Tribromophenol	55.5			34-129	%REC	1	9/13/2013 12:56	
Surr: 2-Fluorobiphenyl	57.3			40-125	%REC	1	9/13/2013 12:56	

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 9/4/2013 12:00 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-05

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	57.6			20-120	%REC	1	9/13/2013 12:56
Surr: 4-Terphenyl-d14	78.1			40-135	%REC	1	9/13/2013 12:56
Surr: Nitrobenzene-d5	67.8			41-120	%REC	1	9/13/2013 12:56
Surr: Phenol-d6	61.9			20-120	%REC	1	9/13/2013 12:56
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 07:11
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 07:11
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 07:11
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 07:11
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 07:11
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 07:11
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 07:11
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 07:11
Surr: 1,2-Dichloroethane-d4	106			71-125	%REC	1	9/10/2013 07:11
Surr: 4-Bromofluorobenzene	90.3			70-125	%REC	1	9/10/2013 07:11
Surr: Dibromofluoromethane	105			74-125	%REC	1	9/10/2013 07:11
Surr: Toluene-d8	109			75-125	%REC	1	9/10/2013 07:11
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	132		10	25.0	mg/L	50	9/16/2013 14:45
Fluoride	4.48		0.050	0.100	mg/L	1	9/16/2013 08:53
Nitrogen, Nitrate (As N)	0.325	Н	0.030	0.100	mg/L	1	9/16/2013 08:53
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 08:53
Sulfate	2,310		10	25.0	mg/L	50	9/16/2013 14:45
Nitrate/Nitrite (as N)	0.325	Н	0.030	0.200	mg/L	1	9/16/2013 08:53
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 9/4/2013 12:00 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-05

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Meth	nod: SM4500 H	I+ B			Analyst: KL
рН	7.10	Н	0.10	0.100	pH Units	1	9/8/2013 11:27
Temp Deg C @pH	23.5	Н	0		°C	1	9/8/2013 11:27
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,550		5.0	10.0	mg/L	1	9/9/2013 11:00

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119 **Collection Date:** 9/4/2013 01:30 PM

Work Order: 1309249 Lab ID: 1309249-06 Matrix: WATER

Date: 08-Oct-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	thod: SW8015N	1	Prep: SW3511 / 9/10/13		Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 12:25
TPH (Oil Range)	U		0.042	0.10	mg/L	1	9/11/2013 12:25
Surr: 2-Fluorobiphenyl	63.6			60-135	%REC	1	9/11/2013 12:25
GASOLINE RANGE ORGANICS - SW80	15C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 18:50
Surr: 4-Bromofluorobenzene	98.3			70-130	%REC	1	9/12/2013 18:50
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:58
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR
Aluminum	0.0113		0.0040	0.0100	mg/L	1	9/14/2013 00:18
Arsenic	0.00595		0.0010	0.00500	mg/L	1	9/14/2013 00:18
Barium	0.00864		0.00090	0.00500	mg/L	1	9/14/2013 00:18
Boron	0.183		0.020	0.0500	mg/L	1	9/14/2013 00:18
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:18
Calcium	635		0.86	5.00	mg/L	10	9/17/2013 13:46
Chromium	U		0.0010	0.00500	mg/L	1	9/14/2013 00:18
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:18
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:18
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:18
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:18
Manganese	U		0.0025	0.00500	mg/L	1	9/14/2013 00:18
Molybdenum	0.00846		0.0015	0.00500	mg/L	1	9/14/2013 00:18
Nickel	0.00140	J	0.0010	0.00500	mg/L	1	9/14/2013 00:18
Potassium	0.993		0.084	0.200	mg/L	1	9/14/2013 00:18
Selenium	0.00660		0.0010	0.00500	mg/L	1	9/14/2013 00:18
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:18
Sodium	133		0.085	0.200	mg/L	1	9/14/2013 00:18
Uranium	0.0275		0.0050	0.00500	mg/L	1	9/14/2013 00:18
Zinc	U		0.0025	0.00500	mg/L	1	9/14/2013 00:18
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/12/2013 22:40
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/12/2013 22:40
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/12/2013 22:40
Naphthalene	U		0.000050	0.00020	mg/L	1	9/12/2013 22:40
Surr: 2,4,6-Tribromophenol	55.3			34-129	%REC	1	9/12/2013 22:40
Surr: 2-Fluorobiphenyl	58.9			40-125	%REC	1	9/12/2013 22:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 9/4/2013 01:30 PM

Work Order: 1309249

Lab ID: 1309249-06

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	47.0			20-120	%REC	1	9/12/2013 22:40
Surr: 4-Terphenyl-d14	80.5			40-135	%REC	1	9/12/2013 22:40
Surr: Nitrobenzene-d5	58.6			41-120	%REC	1	9/12/2013 22:40
Surr: Phenol-d6	56.5			20-120	%REC	1	9/12/2013 22:40
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 07:36
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 07:36
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 07:36
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 07:36
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 07:36
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 07:36
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 07:36
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 07:36
Surr: 1,2-Dichloroethane-d4	110			71-125	%REC	1	9/10/2013 07:36
Surr: 4-Bromofluorobenzene	91.9			70-125	%REC	1	9/10/2013 07:36
Surr: Dibromofluoromethane	108			74-125	%REC	1	9/10/2013 07:36
Surr: Toluene-d8	110			75-125	%REC	1	9/10/2013 07:36
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	244		10	25.0	mg/L	50	9/16/2013 15:11
Fluoride	2.28		0.050	0.100	mg/L	1	9/16/2013 10:46
Nitrogen, Nitrate (As N)	0.228	Н	0.030	0.100	mg/L	1	9/16/2013 10:46
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 10:46
Sulfate	1,940		10	25.0	mg/L	50	9/16/2013 15:11
Nitrate/Nitrite (as N)	0.228	Н	0.030	0.200	mg/L	1	9/16/2013 10:46
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 9/4/2013 01:30 PM

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-06

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Meth	nod: SM4500 F	I+ B			Analyst: KL
pH	7.30	Н	0.10	0.100	pH Units	1	9/8/2013 11:30
Temp Deg C @pH	23.5	Н	0		°C	1	9/8/2013 11:30
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,030		5.0	10.0	mg/L	1	9/9/2013 11:00

Client: Navajo Refining Company

Project: RO Discharge Sampling
Sample ID: RO DISCHARGE
Collection Date: 9/5/2013 11:00 AM

Date: 08-Oct-13

Work Order: 1309249 **Lab ID:** 1309249-07 **Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Method: SW8015M				3511 / 9/10/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 12:52
TPH (Oil Range)	U		0.042	0.10	mg/L	1	9/11/2013 12:52
Surr: 2-Fluorobiphenyl	64.4			60-135	%REC	1	9/11/2013 12:52
GASOLINE RANGE ORGANICS - SW8015	С	Ме	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 19:26
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	9/12/2013 19:26
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	9/13/2013 16:59
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR
Aluminum	0.00809	J	0.0040	0.0100	mg/L	1	9/14/2013 00:23
Arsenic	0.00244	J	0.0010	0.00500	mg/L	1	9/14/2013 00:23
Barium	0.0553		0.00090	0.00500	mg/L	1	9/14/2013 00:23
Boron	0.0934		0.020	0.0500	mg/L	1	9/14/2013 00:23
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:23
Calcium	410		0.86	5.00	mg/L	10	9/17/2013 13:53
Chromium	0.00114	J	0.0010	0.00500	mg/L	1	9/14/2013 00:23
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:23
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:23
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:23
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:23
Manganese	U		0.0025	0.00500	mg/L	1	9/14/2013 00:23
Molybdenum	0.00604		0.0015	0.00500	mg/L	1	9/14/2013 00:23
Nickel	0.00329	J	0.0010	0.00500	mg/L	1	9/14/2013 00:23
Potassium	2.72		0.084	0.200	mg/L	1	9/14/2013 00:23
Selenium	0.00669		0.0010	0.00500	mg/L	1	9/14/2013 00:23
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:23
Sodium	45.7		0.085	0.200	mg/L	1	9/14/2013 00:23
Uranium	U		0.0050	0.00500	mg/L	1	9/14/2013 00:23
Zinc	0.00672		0.0025	0.00500	mg/L	1	9/14/2013 00:23
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 13:36
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 13:36
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 13:36
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 13:36
Surr: 2,4,6-Tribromophenol	72.0			34-129	%REC	1	9/13/2013 13:36
Surr: 2-Fluorobiphenyl	65.0			40-125	%REC	1	9/13/2013 13:36

Client: Navajo Refining Company

Project: RO Discharge Sampling Sample ID: RO DISCHARGE
Collection Date: 9/5/2013 11:00 AM

Work Order: 1309249

Work Order: 1309249 Lab ID: 1309249-07

Matrix: WATER

Date: 08-Oct-13

Surr: 2-Fluorophenol Surr: 4-Terphenyl-d14 Surr: Nitrobenzene-d5 Surr: Phenol-d6	68.2 85.3 81.7 72.8 U	Met	hod: SW8260	20-120 40-135 41-120 20-120	%REC %REC %REC %REC	1 1 1	9/13/2013 13:36 9/13/2013 13:36
Surr: Nitrobenzene-d5	81.7 72.8 U	Met	hod: SW8260	41-120	%REC		
	72.8 U	Met	hod: SW8260			1	0/40/0040 40:00
Surr Phenol-d6	U	Met	hod: SW8260	20-120	%REC		9/13/2013 13:36
Gair. I Honor do	_	Met	hod: SW8260			1	9/13/2013 13:36
LOW LEVEL VOLATILES - SW8260C	_		1100.0110_00				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
1,1,2,2-Tetrachloroethane			0.00050	0.0010	mg/L	1	9/10/2013 08:01
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 08:01
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 08:01
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 08:01
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 08:01
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 08:01
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 08:01
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 08:01
Surr: 1,2-Dichloroethane-d4	111			71-125	%REC	1	9/10/2013 08:01
Surr: 4-Bromofluorobenzene	90.5			70-125	%REC	1	9/10/2013 08:01
Surr: Dibromofluoromethane	110			74-125	%REC	1	9/10/2013 08:01
Surr: Toluene-d8	111			75-125	%REC	1	9/10/2013 08:01
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	61.1		0.20	0.500	mg/L	1	9/16/2013 11:12
Fluoride	2.26		0.050	0.100	mg/L	1	9/16/2013 11:12
Nitrogen, Nitrate (As N)	1.56	Н	0.030	0.100	mg/L	1	9/16/2013 11:12
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 11:12
Sulfate	1,030		10	25.0	mg/L	50	9/16/2013 15:37
Nitrate/Nitrite (as N)	1.56	Н	0.030	0.200	mg/L	1	9/16/2013 11:12
CYANIDE - SM4500CN E		Met	hod: M4500CN	I E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling
Sample ID: RO DISCHARGE
Collection Date: 9/5/2013 11:00 AM

Work Order: 1309249

Lab ID: 1309249-07 **Matrix:** WATER

Date: 08-Oct-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Analyst: KL					
pH	7.82	Н	0.10	0.100	pH Units	1	9/8/2013 11:33
Temp Deg C @pH	23.6	Н	0		°C	1	9/8/2013 11:33
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	2,290		5.0	10.0	mg/L	1	9/11/2013 18:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: DUP-01 **Collection Date:** 9/4/2013

Work Order: 1309249

Lab ID: 1309249-08

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	Method: SW8015M		Prep: SW3511 / 9/10/13		Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	9/11/2013 13:18
TPH (Oil Range)	U		0.041	0.10	mg/L	1	9/11/2013 13:18
Surr: 2-Fluorobiphenyl	63.4			60-135	%REC	1	9/11/2013 13:18
GASOLINE RANGE ORGANICS - SW80	15C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	9/12/2013 19:44
Surr: 4-Bromofluorobenzene	97.1			70-130	%REC	1	9/12/2013 19:44
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW7	7470 / 9/13/13	Analyst: OFO
Mercury	0.0000600	J	0.000042	0.000200	mg/L	1	9/13/2013 17:01
DISSOLVED METALS		Me	thod: SW6020		Prep: SW3	3010A / 9/13/13	Analyst: ALR
Aluminum	0.0118		0.0040	0.0100	mg/L	1	9/14/2013 00:28
Arsenic	0.00467	J	0.0010	0.00500	mg/L	1	9/14/2013 00:28
Barium	0.00946		0.00090	0.00500	mg/L	1	9/14/2013 00:28
Boron	0.281		0.020	0.0500	mg/L	1	9/14/2013 00:28
Cadmium	U		0.00080	0.00200	mg/L	1	9/14/2013 00:28
Calcium	631		0.86	5.00	mg/L	10	9/17/2013 13:55
Chromium	U		0.0010	0.00500	mg/L	1	9/14/2013 00:28
Cobalt	U		0.00080	0.00500	mg/L	1	9/14/2013 00:28
Copper	U		0.0010	0.00500	mg/L	1	9/14/2013 00:28
Iron	U		0.078	0.200	mg/L	1	9/14/2013 00:28
Lead	U		0.00070	0.00500	mg/L	1	9/14/2013 00:28
Manganese	0.00366	J	0.0025	0.00500	mg/L	1	9/14/2013 00:28
Molybdenum	0.00300	J	0.0015	0.00500	mg/L	1	9/14/2013 00:28
Nickel	0.00112	J	0.0010	0.00500	mg/L	1	9/14/2013 00:28
Potassium	1.22		0.084	0.200	mg/L	1	9/14/2013 00:28
Selenium	0.00558		0.0010	0.00500	mg/L	1	9/14/2013 00:28
Silver	U		0.00080	0.00500	mg/L	1	9/14/2013 00:28
Sodium	230		0.85	2.00	mg/L	10	9/17/2013 13:55
Uranium	0.0388		0.0050	0.00500	mg/L	1	9/14/2013 00:28
Zinc	U		0.0025	0.00500	mg/L	1	9/14/2013 00:28
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW3	3510 / 9/10/13	Analyst: LG
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	9/13/2013 13:55
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	9/13/2013 13:55
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	9/13/2013 13:55
Naphthalene	U		0.000050	0.00020	mg/L	1	9/13/2013 13:55
Surr: 2,4,6-Tribromophenol	36.2			34-129	%REC	1	9/13/2013 13:55
Surr: 2-Fluorobiphenyl	43.5			40-125	%REC	1	9/13/2013 13:55

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: DUP-01 **Collection Date:** 9/4/2013

Work Order: 1309249

Lab ID: 1309249-08 **Matrix:** WATER

Date: 08-Oct-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	38.5			20-120	%REC	1	9/13/2013 13:55
Surr: 4-Terphenyl-d14	64.0			40-135	%REC	1	9/13/2013 13:55
Surr: Nitrobenzene-d5	54.3			41-120	%REC	1	9/13/2013 13:55
Surr: Phenol-d6	45.4			20-120	%REC	1	9/13/2013 13:55
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 08:26
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 08:26
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 08:26
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 08:26
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 08:26
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 08:26
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 08:26
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 08:26
Surr: 1,2-Dichloroethane-d4	107			71-125	%REC	1	9/10/2013 08:26
Surr: 4-Bromofluorobenzene	90.2			70-125	%REC	1	9/10/2013 08:26
Surr: Dibromofluoromethane	109			74-125	%REC	1	9/10/2013 08:26
Surr: Toluene-d8	111			75-125	%REC	1	9/10/2013 08:26
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	9/25/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	339		10	25.0	mg/L	50	9/16/2013 16:10
Fluoride	1.11		0.050	0.100	mg/L	1	9/16/2013 11:38
Nitrogen, Nitrate (As N)	0.450	Н	0.030	0.100	mg/L	1	9/16/2013 11:38
Nitrogen, Nitrite (As N)	U	Н	0.030	0.100	mg/L	1	9/16/2013 11:38
Sulfate	2,140		10	25.0	mg/L	50	9/16/2013 16:10
Nitrate/Nitrite (as N)	0.450	Н	0.030	0.200	mg/L	1	9/16/2013 11:38
CYANIDE - SM4500CN E		Met	hod: M4500CN	I E&G			Analyst: EDG
Cyanide	U		0.0050	0.0200	mg/L	1	9/13/2013 10:15

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: DUP-01 **Collection Date:** 9/4/2013

Work Order: 1309249

Lab ID: 1309249-08

Date: 08-Oct-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH - SM4500H+ B		Meth	nod: SM4500 F	1+ B			Analyst: KL
pH	7.19	Н	0.10	0.100	pH Units	1	9/8/2013 11:36
Temp Deg C @pH	23.6	Н	0		°C	1	9/8/2013 11:36
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,470		5.0	10.0	mg/L	1	9/9/2013 11:00

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: TRIP BLANKS-1 **Collection Date:** 9/4/2013

Work Order: 1309249

Lab ID: 1309249-09

Date: 08-Oct-13

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	0.00020	0.0010	mg/L	1	9/10/2013 03:01
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	9/10/2013 03:01
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	9/10/2013 03:01
1,1-Dichloroethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
1,1-Dichloroethene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
1,2-Dibromoethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
1,2-Dichloroethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Benzene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Carbon tetrachloride	U	0.00050	0.0010	mg/L	1	9/10/2013 03:01
Chloroform	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Ethylbenzene	U	0.00030	0.0010	mg/L	1	9/10/2013 03:01
Methylene chloride	U	0.00040	0.0020	mg/L	1	9/10/2013 03:01
Tetrachloroethene	U	0.00030	0.0010	mg/L	1	9/10/2013 03:01
Toluene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Trichloroethene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Vinyl chloride	U	0.00020	0.0010	mg/L	1	9/10/2013 03:01
Xylenes, Total	U	0.00050	0.0010	mg/L	1	9/10/2013 03:01
Surr: 1,2-Dichloroethane-d4	106		71-125	%REC	1	9/10/2013 03:01
Surr: 4-Bromofluorobenzene	90.1		70-125	%REC	1	9/10/2013 03:01
Surr: Dibromofluoromethane	107		74-125	%REC	1	9/10/2013 03:01
Surr: Toluene-d8	107		75-125	%REC	1	9/10/2013 03:01

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** TRIP BLANKS-2

Collection Date: 9/4/2013

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-10

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	0.00020	0.0010	mg/L	1	9/10/2013 03:26
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	9/10/2013 03:26
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	9/10/2013 03:26
1,1-Dichloroethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
1,1-Dichloroethene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
1,2-Dibromoethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
1,2-Dichloroethane	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Benzene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Carbon tetrachloride	U	0.00050	0.0010	mg/L	1	9/10/2013 03:26
Chloroform	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Ethylbenzene	U	0.00030	0.0010	mg/L	1	9/10/2013 03:26
Methylene chloride	U	0.00040	0.0020	mg/L	1	9/10/2013 03:26
Tetrachloroethene	U	0.00030	0.0010	mg/L	1	9/10/2013 03:26
Toluene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Trichloroethene	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Vinyl chloride	U	0.00020	0.0010	mg/L	1	9/10/2013 03:26
Xylenes, Total	U	0.00050	0.0010	mg/L	1	9/10/2013 03:26
Surr: 1,2-Dichloroethane-d4	106		71-125	%REC	1	9/10/2013 03:26
Surr: 4-Bromofluorobenzene	89.7		70-125	%REC	1	9/10/2013 03:26
Surr: Dibromofluoromethane	107		74-125	%REC	1	9/10/2013 03:26
Surr: Toluene-d8	108		75-125	%REC	1	9/10/2013 03:26

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** TRIP BLANKS-3

Collection Date: 9/4/2013

Date: 08-Oct-13

Work Order: 1309249

Lab ID: 1309249-11

Matrix: WATER

Analyses	Result	Qual M	ID L	Report Limit	Units	Dilution Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Method: \$\	W8260				Analyst: AKP
1,1,1-Trichloroethane	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
1,1,2,2-Tetrachloroethane	U	0.0	00050	0.0010	mg/L	1	9/10/2013 03:51
1,1,2-Trichloroethane	U	0.0	00030	0.0010	mg/L	1	9/10/2013 03:51
1,1-Dichloroethane	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
1,1-Dichloroethene	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
1,2-Dibromoethane	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
1,2-Dichloroethane	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Benzene	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Carbon tetrachloride	U	0.0	00050	0.0010	mg/L	1	9/10/2013 03:51
Chloroform	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Ethylbenzene	U	0.0	00030	0.0010	mg/L	1	9/10/2013 03:51
Methylene chloride	U	0.0	00040	0.0020	mg/L	1	9/10/2013 03:51
Tetrachloroethene	U	0.0	00030	0.0010	mg/L	1	9/10/2013 03:51
Toluene	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Trichloroethene	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Vinyl chloride	U	0.0	00020	0.0010	mg/L	1	9/10/2013 03:51
Xylenes, Total	U	0.0	00050	0.0010	mg/L	1	9/10/2013 03:51
Surr: 1,2-Dichloroethane-d4	110			71-125	%REC	1	9/10/2013 03:51
Surr: 4-Bromofluorobenzene	92.5			70-125	%REC	1	9/10/2013 03:51
Surr: Dibromofluoromethane	111			74-125	%REC	1	9/10/2013 03:51
Surr: Toluene-d8	114			75-125	%REC	1	9/10/2013 03:51

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: TRIP BLANKS **Collection Date:** 9/4/2013

Work Order: 1309249

Lab ID: 1309249-12 **Matrix:** WATER

Date: 08-Oct-13

Report Dilution

Analyses	Result	Qual	MDL	Limit	Units	Factor	Date Analyzed
LOW LEVEL VOLATILES - SW8260C		Meth	nod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	9/10/2013 04:16
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	9/10/2013 04:16
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Benzene	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	9/10/2013 04:16
Chloroform	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Ethylbenzene	U		0.00030	0.0010	mg/L	1	9/10/2013 04:16
Methylene chloride	U		0.00040	0.0020	mg/L	1	9/10/2013 04:16
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	9/10/2013 04:16
Toluene	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Trichloroethene	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Vinyl chloride	U		0.00020	0.0010	mg/L	1	9/10/2013 04:16
Xylenes, Total	U		0.00050	0.0010	mg/L	1	9/10/2013 04:16
Surr: 1,2-Dichloroethane-d4	105			71-125	%REC	1	9/10/2013 04:16
Surr: 4-Bromofluorobenzene	89.5			70-125	%REC	1	9/10/2013 04:16
Surr: Dibromofluoromethane	106			74-125	%REC	1	9/10/2013 04:16
Surr: Toluene-d8	108			75-125	%REC	1	9/10/2013 04:16

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

ample ID	Client Sample ID	Matrix	Collection Date	TCLP Date Prep Date	Analysis Date	
Batch ID 7	72927 Test Name: Low	-Level Semiy	<u>volatiles</u>			
309249-01G	MW-114	Water	9/5/2013 9:30:00 AM	9/10/2013 10:00 AM	9/13/2013 11:57 AM	
309249-02G	MW-115		9/4/2013 5:10:00 PM	9/10/2013 10:00 AM	9/13/2013 12:17 PM	
309249-03G	MW-116		9/4/2013 3:20:00 PM	9/10/2013 10:00 AM	9/10/2013 11:28 PM	
309249-04G	MW-117		9/4/2013 9:50:00 AM	9/10/2013 10:00 AM	9/13/2013 12:36 PM	
309249-05G	MW-118		9/4/2013 12:00:00 PM	9/10/2013 10:00 AM	9/13/2013 12:56 PM	
309249-06G	MW-119		9/4/2013 1:30:00 PM	9/10/2013 10:00 AM	9/12/2013 10:40 PM	
309249-07G	RO DISCHARGE		9/5/2013 11:00:00 AM	9/10/2013 10:00 AM	9/13/2013 01:36 PM	
309249-08G	DUP-01		9/4/2013	9/10/2013 10:00 AM	9/13/2013 01:55 PM	
atch ID 7	72948 <u>Test Name:</u> <u>TPH</u>	DRO/ORO	8015C			
309249-01C	MW-114	Water	9/5/2013 9:30:00 AM	9/10/2013 02:08 PM	9/11/2013 10:12 AM	
309249-02C	MW-115		9/4/2013 5:10:00 PM	9/10/2013 02:08 PM	9/11/2013 10:39 AM	
309249-03C	MW-116		9/4/2013 3:20:00 PM	9/10/2013 02:08 PM	9/11/2013 11:06 AM	
309249-04C	MW-117		9/4/2013 9:50:00 AM	9/10/2013 02:08 PM	9/11/2013 11:32 AM	
309249-05C	MW-118		9/4/2013 12:00:00 PM	9/10/2013 02:08 PM	9/11/2013 11:59 AM	
309249-06C	MW-119		9/4/2013 1:30:00 PM	9/10/2013 02:08 PM	9/11/2013 12:25 PM	
309249-07C	RO DISCHARGE		9/5/2013 11:00:00 AM	9/10/2013 02:08 PM	9/11/2013 12:52 PM	
309249-08C	DUP-01		9/4/2013	9/10/2013 02:08 PM	9/11/2013 01:18 PM	

Work Order: 1309249

1309249-08E DUP-01

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 7	<u>73032</u> <u>Test Name:</u> <u>D</u>	Dissolved Mercury	by 7470A			
1309249-01E	MW-114	Water	9/5/2013 9:30:00 AM		9/13/2013 11:23 AM	9/13/2013 04:49 PM
1309249-02E	MW-115		9/4/2013 5:10:00 PM		9/13/2013 11:23 AM	9/13/2013 04:51 PM
1309249-03E	MW-116		9/4/2013 3:20:00 PM		9/13/2013 11:23 AM	9/13/2013 04:53 PM
1309249-04E	MW-117		9/4/2013 9:50:00 AM		9/13/2013 11:23 AM	9/13/2013 04:54 PM
1309249-05E	MW-118		9/4/2013 12:00:00 PM		9/13/2013 11:23 AM	9/13/2013 04:56 PM
1309249-06E	MW-119		9/4/2013 1:30:00 PM		9/13/2013 11:23 AM	9/13/2013 04:58 PM
1309249-07E	RO DISCHARGE		9/5/2013 11:00:00 AM		9/13/2013 11:23 AM	9/13/2013 04:59 PM

9/13/2013 11:23 AM

9/13/2013 05:01 PM

9/4/2013

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 7	73040 Test Name: Dis	ssolved Metals				
1309249-01E	MW-114	Water	9/5/2013 9:30:00 AM		9/13/2013 10:00 AM	9/13/2013 11:53 PM
					9/13/2013 10:00 AM	9/17/2013 01:34 PM
1309249-02E	MW-115		9/4/2013 5:10:00 PM		9/13/2013 10:00 AM	9/13/2013 11:58 PM
					9/13/2013 10:00 AM	9/17/2013 01:36 PM
1309249-03E	MW-116		9/4/2013 3:20:00 PM		9/13/2013 10:00 AM	9/14/2013 12:03 AM
					9/13/2013 10:00 AM	9/17/2013 01:39 PM
1309249-04E	MW-117		9/4/2013 9:50:00 AM		9/13/2013 10:00 AM	9/14/2013 12:08 AM
					9/13/2013 10:00 AM	9/17/2013 01:41 PM
1309249-05E	MW-118		9/4/2013 12:00:00 PM		9/13/2013 10:00 AM	9/14/2013 12:13 AM
					9/13/2013 10:00 AM	9/17/2013 01:43 PM
1309249-06E	MW-119		9/4/2013 1:30:00 PM		9/13/2013 10:00 AM	9/14/2013 12:18 AM
					9/13/2013 10:00 AM	9/17/2013 01:46 PM
1309249-07E	RO DISCHARGE		9/5/2013 11:00:00 AM		9/13/2013 10:00 AM	9/14/2013 12:23 AM
					9/13/2013 10:00 AM	9/17/2013 01:53 PM
1309249-08E	DUP-01		9/4/2013		9/13/2013 10:00 AM	9/14/2013 12:28 AM
					9/13/2013 10:00 AM	9/17/2013 01:55 PM

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

ample ID	Client San	ple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
Batch ID R	R153357	Test Name:	pH - SM4500H+ 1	<u> </u>				
309249-01F	MW-114		Water	9/5/2013 9:30:00 AM			9/8/2013 11:16 AM	
309249-02F	MW-115			9/4/2013 5:10:00 PM			9/8/2013 11:19 AM	
309249-03F	MW-116			9/4/2013 3:20:00 PM			9/8/2013 11:21 AM	
309249-04F	MW-117			9/4/2013 9:50:00 AM			9/8/2013 11:24 AM	
309249-05F	MW-118			9/4/2013 12:00:00 PM			9/8/2013 11:27 AM	
309249-06F	MW-119			9/4/2013 1:30:00 PM			9/8/2013 11:30 AM	
309249-07F	RO DISCH	ARGE		9/5/2013 11:00:00 AM			9/8/2013 11:33 AM	
309249-08F	DUP-01			9/4/2013			9/8/2013 11:36 AM	
Batch ID R	R153431	Test Name:	Low Level Volati	les - SW8260C				
309249-01A	MW-114		Water	9/5/2013 9:30:00 AM			9/9/2013 11:41 PM	
309249-02A	MW-115			9/4/2013 5:10:00 PM			9/10/2013 12:06 AM	
Batch ID R	R153436	Test Name:	Low Level Volati	les - SW8260C				
309249-03A	MW-116		Water	9/4/2013 3:20:00 PM			9/10/2013 06:21 AM	
309249-04A	MW-117			9/4/2013 9:50:00 AM			9/10/2013 06:46 AM	
309249-05A	MW-118			9/4/2013 12:00:00 PM			9/10/2013 07:11 AM	
309249-06A	MW-119			9/4/2013 1:30:00 PM			9/10/2013 07:36 AM	
309249-07A	RO DISCH	ARGE		9/5/2013 11:00:00 AM			9/10/2013 08:01 AM	
309249-08A	DUP-01			9/4/2013			9/10/2013 08:26 AM	
309249-09A	TRIP BLA	NKS-1					9/10/2013 03:01 AM	
309249-10A	TRIP BLA	NKS-2					9/10/2013 03:26 AM	
309249-11A	TRIP BLA	NKS-3					9/10/2013 03:51 AM	
200240 124	TRIP BLA	MIZC					9/10/2013 04:16 AM	

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

mple ID	Client Sam	ple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
atch ID <u>I</u>	R153508	Test Name:	Total Dissolved S	<u>olids</u>				
09249-04F	MW-117		Water	9/4/2013 9:50:00 AM			9/9/2013 11:00 AM	
09249-05F	MW-118			9/4/2013 12:00:00 PM			9/9/2013 11:00 AM	
09249-06F	MW-119			9/4/2013 1:30:00 PM			9/9/2013 11:00 AM	
09249-08F	DUP-01			9/4/2013			9/9/2013 11:00 AM	
atch ID <u>I</u>	R153658	Test Name:	Gasoline Range C	erganics - SW8015C				
09249-01B	MW-114		Water	9/5/2013 9:30:00 AM			9/12/2013 05:18 PM	
09249-02B	MW-115			9/4/2013 5:10:00 PM			9/12/2013 05:36 PM	
09249-03B	MW-116			9/4/2013 3:20:00 PM			9/12/2013 05:54 PM	
09249-04B	MW-117			9/4/2013 9:50:00 AM			9/12/2013 06:13 PM	
09249-05B	MW-118			9/4/2013 12:00:00 PM			9/12/2013 06:31 PM	
09249-06B	MW-119			9/4/2013 1:30:00 PM			9/12/2013 06:50 PM	
09249-07B	RO DISCH	ARGE		9/5/2013 11:00:00 AM			9/12/2013 07:26 PM	
09249-08B	DUP-01			9/4/2013			9/12/2013 07:44 PM	
atch ID <u>I</u>	R153690	Test Name:	Cyanide - SM450	OCN E				
09249-01D	MW-114		Water	9/5/2013 9:30:00 AM			9/13/2013 10:15 AM	
09249-02D	MW-115			9/4/2013 5:10:00 PM			9/13/2013 10:15 AM	
09249-03D	MW-116			9/4/2013 3:20:00 PM			9/13/2013 10:15 AM	
09249-04D	MW-117			9/4/2013 9:50:00 AM			9/13/2013 10:15 AM	
09249-05D	MW-118			9/4/2013 12:00:00 PM			9/13/2013 10:15 AM	
09249-06D	MW-119			9/4/2013 1:30:00 PM			9/13/2013 10:15 AM	
09249-07D	RO DISCH	ARGE		9/5/2013 11:00:00 AM			9/13/2013 10:15 AM	
09249-08D	DUP-01			9/4/2013			9/13/2013 10:15 AM	

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sa	mple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID I	R153693	Test Name: Total	tal Dissolved So	o <u>lids</u>			
1309249-01F	MW-114		Water	9/5/2013 9:30:00 AM			9/11/2013 06:55 PM
1309249-02F	MW-115			9/4/2013 5:10:00 PM			9/11/2013 06:55 PM
1309249-03F	MW-116			9/4/2013 3:20:00 PM			9/11/2013 06:55 PM
1309249-07F	RO DISCI	HARGE		9/5/2013 11:00:00 AM			9/11/2013 06:55 PM
Batch ID I	R153808	Test Name: An	ions - EPA 300.	.0 (1993)			
1309249-01F	MW-114		Water	9/5/2013 9:30:00 AM			9/16/2013 07:09 AM
							9/16/2013 12:13 PM
1309249-02F	MW-115			9/4/2013 5:10:00 PM			9/16/2013 07:35 AM
							9/16/2013 12:39 PM
1309249-03F	MW-116			9/4/2013 3:20:00 PM			9/16/2013 08:01 AM
							9/16/2013 01:05 PM
1309249-04F	MW-117			9/4/2013 9:50:00 AM			9/16/2013 08:27 AM
							9/16/2013 02:20 PM
1309249-05F	MW-118			9/4/2013 12:00:00 PM			9/16/2013 08:53 AM
							9/16/2013 02:45 PM
1309249-06F	MW-119			9/4/2013 1:30:00 PM			9/16/2013 10:46 AM
							9/16/2013 03:11 PM
1309249-07F	RO DISCI	HARGE		9/5/2013 11:00:00 AM			9/16/2013 11:12 AM
							9/16/2013 03:37 PM
1309249-08F	DUP-01			9/4/2013			9/16/2013 11:38 AM
							9/16/2013 04:10 PM

Work Order: 1309249

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID E	R154303 Test Name: Misce	llaneous Analy	<u>/Sis</u>			
1309249-01H	MW-114	Water	9/5/2013 9:30:00 AM			9/25/2013
1309249-02H	MW-115		9/4/2013 5:10:00 PM			9/25/2013
1309249-03H	MW-116		9/4/2013 3:20:00 PM			9/25/2013
1309249-04H	MW-117		9/4/2013 9:50:00 AM			9/25/2013
1309249-05H	MW-118		9/4/2013 12:00:00 PM			9/25/2013
1309249-06H	MW-119		9/4/2013 1:30:00 PM			9/25/2013
1309249-07H	RO DISCHARGE		9/5/2013 11:00:00 AM			9/25/2013
1309249-08H	DUP-01		9/4/2013			9/25/2013

Date: 08-Oct-13

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: 72948	Instrument ID FID-16		Method	d: SW80 ′	15M						
MBLK Sample ID	: LBLKW-130910-72948				ι	Jnits: mg/	L	Analys	is Date: 9	/11/2013 0	8:53 AM
Client ID:	Run II	D: FID-1	6_130910A		Se	qNo: 335 4	4458	Prep Date: 9/10	/2013	DF: 1	
Analyte	Result	PQI	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050)								
TPH (Oil Range)	U	0.10)								
Surr: 2-Fluorobipheny	0.04011	0.0050	0.06061		0	66.2	60-135	0			
LCS Sample ID	: LLCSW-130910-72948				ι	Jnits: mg/	L	Analys	is Date: 9	/11/2013 0	9:19 AM
Client ID:	Run II	D: FID-1	SeqNo: 33544 !		4459	Prep Date: 9/10/2013		Date: 9/10/2013 DF: 1			
Analyte	Result	PQI	_ SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6152	0.050	0.6061		0	102	70-130				
TPH (Oil Range)	0.4856	0.10	0.6061		0	80.1	70-130				
Surr: 2-Fluorobipheny	0.03812	0.0050	0.06061		0	62.9	60-135	0			
LCSD Sample ID	: LLCSDW-130910-72948				ι	Jnits: mg/	L	Analys	is Date: 9	/11/2013 (9:46 AM
Client ID:	Run II	D: FID-1	6_130910A		Se	qNo: 335 4	4460	Prep Date: 9/10	/2013	DF: 1	
Analyte	Result	PQI	_ SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6263	0.050	0.6061		0	103	70-130	0.6152	1.79	20	
TPH (Oil Range)	0.5252	0.10	0.6061		0	86.7	70-130	0.4856	7.84	20	
Surr: 2-Fluorobipheny	0.05009	0.0050	0.06061		0	82.6	60-135	0.03812	27.1	20	R
The following samples	were analyzed in this batch:		1309249-01C 1309249-04C 1309249-07C	13	3092	249-02C 249-05C 249-08C	_	09249-03C 09249-06C			

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153658 Inst	rument ID FID-9		Method	: SW80 1	15						
MBLK Sample ID: GBLK	(W-130912-R153658				ι	Jnits: mg/ l	L	Analys	is Date: 9/	12/2013 0	5:00 PM
Client ID:	Run	ID: FID-9_	130912A		Se	qNo: 335 4	4058	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	0.0500									
Surr: 4-Bromofluorobenzene	0.1049	0.00500	0.1		0	105	70-130	0			
LCS Sample ID: GLCS	SW-130912-R153658				ι	Jnits: mg/ l	L	Analys	is Date: 9/	12/2013 0	4:23 PM
Client ID:	Run	ID: FID-9_	130912A		Se	qNo: 335 4	4056	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	0.8961	0.0500	1		0	89.6	70-130				
Surr: 4-Bromofluorobenzene	0.1176	0.00500	0.1		0	118	70-130	0			
MS Sample ID: 13092	249-08BMS				ι	Jnits: mg/ l	L	Analys	is Date: 9/	12/2013 0	8:02 PM
Client ID: DUP-01	Run	ID: FID-9_	130912A		Se	qNo: 335 4	4068	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	0.8614	0.0500	1		0	86.1	70-130				
Surr: 4-Bromofluorobenzene	0.09992	0.00500	0.1		0	99.9	70-130	0			
MSD Sample ID: 13092	249-08BMSD				ι	Jnits: mg/ l	L	Analys	is Date: 9/	12/2013 0	8:21 PM
Client ID: DUP-01	Run	ID: FID-9_	130912A		Se	qNo: 335 4	4069	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	0.8464	0.0500	1		0	84.6	70-130	0.8614	1.75	30	
Surr: 4-Bromofluorobenzene	0.09882	0.00500	0.1		0	98.8	70-130	0.09992	1.1	30	
The following samples were a	nalyzed in this batch:	1	309249-01B 309249-04B 309249-07B	13	3092	249-02B 249-05B 249-08B	_	09249-03B 09249-06B			

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 7	3032 Instrument ID HG	03		Method	d: SW747	0	(Dissolve	e)			
MBLK	Sample ID: GBLKW3-091313-7	3032				Units: mg/	L	Analys	is Date: 9	/13/2013 0	4:29 PN
Client ID:		Rui	n ID: HG03 _	130913A		SeqNo: 335 4	4956	Prep Date: 9/13	3/2013	DF: 1	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		U	0.000200								
LCS	Sample ID: GLCSW3-091313-7	3032				Units: mg/	L	Analys	is Date: 9	/13/2013 0	4:30 PN
Client ID:		Rui	n ID: HG03 _	130913A		SeqNo: 335 4	4957	Prep Date: 9/13	3/2013	DF: 1	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.	.0052	0.000200	0.005		0 104	80-120				
MS	Sample ID: 1309408-01LMS					Units: mg/	L	Analys	is Date: 9	/13/2013 0	4:36 PN
Client ID:		Rui	n ID: HG03 _	130913A		SeqNo: 335 4	4960	Prep Date: 9/13	3/2013	DF: 1	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0	0491	0.000200	0.005	-0.00000	98.4	80-120				
MSD	Sample ID: 1309408-01LMSD					Units: mg/	L	Analys	is Date: 9	/13/2013 0	4:37 PN
Client ID:		Rui	n ID: HG03 _	130913A		SeqNo: 335 4	4961	Prep Date: 9/13	3/2013	DF: 1	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0	0483	0.000200	0.005	-0.00000	96.8	80-120	0.00491	1.64	20	
DUP	Sample ID: 1309408-01LDUP					Units: mg/	L	Analys	is Date: 9	/13/2013 0	4:34 PM
Client ID:		Rui	n ID: HG03 _	130913A		SeqNo: 335 4	4959	Prep Date: 9/13	3/2013	DF: 1	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		U	0.000200					-0.000009	0	20	
The followi	ing samples were analyzed in thi	s batcl	1	309249-01E 309249-04E 309249-07E	13	09249-02E 09249-05E 09249-08E		09249-03E 09249-06E			

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 730	Instrument ID ICP7500		Method:	SW602	0	(Dissolve	e)			
MBLK	Sample ID: MBLKW5-091313-73040				Units: mg/	L	Analy	sis Date: 9	/13/2013 1	11:04 PM
Client ID:	Ru	n ID: ICP750	0_130913A		SeqNo: 335 6	6450	Prep Date: 9/1	3/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0100								
Arsenic	U	0.00500								
Barium	U	0.00500								
Boron	U	0.0500								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00500								
Cobalt	U	0.00500								
Copper	U	0.00500								
Iron	U	0.200								
Lead	U	0.00500								
Manganese	U	0.00500								
Molybdenum	U	0.00500								
Nickel	U	0.00500								
Potassium	U	0.200								
Selenium	U	0.00500								
Silver	U	0.00500								
Sodium	U	0.200								
Uranium	U	0.00500								
Zinc	U	0.00500								

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 730	Instrument ID ICP7500		Method:	SW6020)		(Dissolve	e)			
LCS	Sample ID: MLCSW5-091313-73040				Uni	ts: mg /	L	Analy	sis Date: 9	/13/2013 1	1:09 PM
Client ID:	Ru	ın ID: ICP750	0_130913A		SeqN	lo: 335 0	6451	Prep Date: 9/1	13/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	9	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09845	0.0100	0.1	(0	98.4	80-120				
Arsenic	0.04872	0.00500	0.05		0	97.4	80-120				
Barium	0.05042	0.00500	0.05	(0	101	80-120				
Boron	0.4684	0.0500	0.5	(0	93.7	80-120				
Cadmium	0.04889	0.00200	0.05	(0	97.8	80-120				
Calcium	4.865	0.500	5		0	97.3	80-120				
Chromium	0.049	0.00500	0.05	(0	98	80-120				
Cobalt	0.04923	0.00500	0.05	(0	98.5	80-120				
Copper	0.05007	0.00500	0.05	(0	100	80-120				
Iron	4.915	0.200	5	(0	98.3	80-120				
Lead	0.04892	0.00500	0.05		0	97.8	80-120				
Manganese	0.04922	0.00500	0.05	(0	98.4	80-120				
Molybdenum	0.04754	0.00500	0.05		0	95.1	80-120				
Nickel	0.04931	0.00500	0.05	(0	98.6	80-120				
Potassium	4.995	0.200	5	(0	99.9	80-120				
Selenium	0.0489	0.00500	0.05	(0	97.8	80-120				
Silver	0.04891	0.00500	0.05	(0	97.8	80-120				
Sodium	4.708	0.200	5	(0	94.2	80-120				
Uranium	0.09781	0.00500	0.1	(0	97.8	80-120				
Zinc	0.05241	0.00500	0.05		0	105	80-120				

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 7304	0 Instrument ID ICP7500		Metho	d: SW6020		(Dissolve	e)			
MS S	Sample ID: 1309411-01LMS				Units: mg/	L	Analy	sis Date: 9	/13/2013 1	1:29 PM
Client ID:	Re	un ID: ICP750	0_130913A	s S	eqNo: 335	6455	Prep Date: 9/	13/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1192	0.0100	0.1	0.03002	89.2	75-125				
Arsenic	0.0613	0.00500	0.05	0.01119	100	75-125				
Barium	0.1092	0.00500	0.05	0.05874	101	75-125				
Boron	0.5297	0.0500	0.5	0.05887	94.2	75-125				
Cadmium	0.04973	0.00200	0.05	0.0003378	98.8	75-125				
Calcium	25.08	0.500	5	20.04	101	75-125				0
Chromium	0.04939	0.00500	0.05	0.00008956	98.6	75-125				
Cobalt	0.05155	0.00500	0.05	0.001474	100	75-125				
Copper	0.05207	0.00500	0.05	0.002172	99.8	75-125				
Iron	4.977	0.200	5	0.006766	99.4	75-125				
Lead	0.05044	0.00500	0.05	0.000449	100	75-125				
Manganese	0.4936	0.00500	0.05	0.4508	85.6	75-125				0
Molybdenum	0.04858	0.00500	0.05	0.00165	93.9	75-125				
Nickel	0.05377	0.00500	0.05	0.004889	97.8	75-125				
Potassium	30.22	0.200	5	25.69	90.6	75-125				0
Selenium	0.04976	0.00500	0.05	0.0005943	98.3	75-125				
Silver	0.04791	0.00500	0.05	-7.088E-06	95.8	75-125				
Sodium	6.327	0.200	5	1.725	92	75-125				
Uranium	0.101	0.00500	0.1	0.0006939	100	75-125				
Zinc	0.05405	0.00500	0.05	0.004301	99.5	75-125				

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 730	Instrument ID ICP7500		Metho	d: SW6020		(Dissolve	e)			
MSD	Sample ID: 1309411-01LMSD				Units: mg/	L	Analysi	s Date: 9/	13/2013 1	1:33 PM
Client ID:	Ru	n ID: ICP750	0_130913A	S	eqNo: 335	6456	Prep Date: 9/13	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1239	0.0100	0.1	0.03002	93.9	75-125	0.1192	3.87	25	
Arsenic	0.06101	0.00500	0.05	0.01119	99.6	75-125	0.0613	0.474	25	
Barium	0.1093	0.00500	0.05	0.05874	101	75-125	0.1092	0.0915	25	
Boron	0.5423	0.0500	0.5	0.05887	96.7	75-125	0.5297	2.35	25	
Cadmium	0.05158	0.00200	0.05	0.0003378	102	75-125	0.04973	3.65	25	
Calcium	24.84	0.500	5	20.04	96	75-125	25.08	0.962	25	0
Chromium	0.04911	0.00500	0.05	0.00008956	98	75-125	0.04939	0.569	25	
Cobalt	0.05177	0.00500	0.05	0.001474	101	75-125	0.05155	0.426	25	
Copper	0.05177	0.00500	0.05	0.002172	99.2	75-125	0.05207	0.578	25	
Iron	5.05	0.200	5	0.006766	101	75-125	4.977	1.46	25	
Lead	0.05132	0.00500	0.05	0.000449	102	75-125	0.05044	1.73	25	
Manganese	0.4875	0.00500	0.05	0.4508	73.4	75-125	0.4936	1.24	25	so
Molybdenum	0.04966	0.00500	0.05	0.00165	96	75-125	0.04858	2.2	25	
Nickel	0.05335	0.00500	0.05	0.004889	96.9	75-125	0.05377	0.784	25	
Potassium	30.42	0.200	5	25.69	94.6	75-125	30.22	0.66	25	0
Selenium	0.04955	0.00500	0.05	0.0005943	97.9	75-125	0.04976	0.423	25	
Silver	0.04983	0.00500	0.05	-7.088E-06	99.7	75-125	0.04791	3.93	25	
Sodium	6.404	0.200	5	1.725	93.6	75-125	6.327	1.21	25	
Uranium	0.103	0.00500	0.1	0.0006939	102	75-125	0.101	1.96	25	
Zinc	0.05326	0.00500	0.05	0.004301	97.9	75-125	0.05405	1.47	25	

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: 73040 Instrument ID ICP7500 Method: SW6020 (Dissolve) DUP Sample ID: 1309411-01LDUP Units: mg/L Analysis Date: 9/13/2013 11:19 PM Prep Date: 9/13/2013 Client ID: SeqNo: 3356453 DF: 1 Run ID: ICP7500_130913A **RPD** SPK Ref Control RPD Ref Value Limit Value Limit Analyte Result PQL SPK Val %REC %RPD Qual Aluminum 0.02774 0.0100 0.03002 7.89 25 Arsenic 0.01174 0.00500 0.01119 4.8 25 Barium 0.06055 0.00500 0.05874 3.03 25 Boron 0.05881 0.0500 0.05887 0.102 25 Cadmium U 0.00200 0.0003378 0 25 Calcium 20.29 0.500 20.04 1.24 25 Chromium U 0.00500 0.00008956 0 25 Cobalt 0.001422 0.00500 0.001474 0 25 J Copper 0.002179 0.00500 0.002172 0 25 J 0 Iron U 0.200 0.006766 25 Lead U 0.00500 0.000449 0 25 Manganese 0.457 0.00500 0.4508 1.37 25 Molybdenum U 0.00500 0.00165 0 25 Nickel 0.005085 0.00500 0.004889 3.93 25 Potassium 26.46 0.200 25.69 2.95 25 Selenium U 0.00500 0.0005943 0 25 Silver U 0.00500 -7.088E-06 0 25 Sodium 1.77 0.200 1.725 2.58 25 Uranium U 0.00500 0.0006939 0 25 0.004301 0 Zinc 0.003776 0.00500 25 J

The following samples were analyzed in this batch:

1309249-01E	1309249-02E	1309249-03E	
1309249-04E	1309249-05E	1309249-06E	
1309249-07E	1309249-08E		

Client: Navajo Refining Company

Work Order: 1309249

Batch ID: 72927	Instrument ID SV-4		Method	: SW827	70						
MBLK Sample ID:	SBLKW3-130910-72927				ι	Jnits: μ g/L		Analy	sis Date: 9	/10/2013 ()2:11 PM
Client ID:	Ru	un ID: SV-4_1	30910B		Se	eqNo: 335 4	4476	Prep Date: 9/1	0/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophe	enol 3.946	0.20	5		0	78.9	34-129	(0		
Surr: 2-Fluorobiphenyl	3.674	0.20	5		0	73.5	40-125	(9		
Surr: 2-Fluorophenol	3	0.20	5		0	60	20-120	(9		
Surr: 4-Terphenyl-d14	4.077	0.20	5		0	81.5	40-135	(9		
Surr: Nitrobenzene-d5	3.371	0.20	5		0	67.4	41-120	(9		
Surr: Phenol-d6	3.134	0.20	5		0	62.7	20-120	(0		
LCS Sample ID:	SLCSW3-130910-72927				ι	Jnits: µg/L	-	Analy	sis Date: 9	/10/2013 ()2:32 PM
Client ID:	Ru	ın ID: SV-4_1	30910B		Se	eqNo: 335 4	4477	Prep Date: 9/1	0/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.575	0.20	5		0	71.5	45-120				
2-Methylpanhthalene	3 263	0.20	5		Λ	65.3	50-120				

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: 72927 Instrument ID SV-4 Method: SW8270

LCSD Sample ID: SLCSDW3	3-130910-72927			ι	Jnits: µg/L	-	Analysi	s Date: 9/	10/2013 0	2:53 PM
Client ID:	Run ID	: SV-4_1	30910B	Se	eqNo: 335	4478	Prep Date: 9/10	/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.72	0.20	5	0	74.4	45-120	3.575	3.99	20	
2-Methylnaphthalene	3.437	0.20	5	0	68.7	50-120	3.263	5.18	20	
Benzo(a)pyrene	4.241	0.20	5	0	84.8	45-120	4.074	4.01	20	
Naphthalene	3.573	0.20	5	0	71.5	45-120	3.362	6.1	20	
Surr: 2,4,6-Tribromophenol	4.3	0.20	5	0	86	34-129	4.1	4.76	0	
Surr: 2-Fluorobiphenyl	3.718	0.20	5	0	74.4	40-125	3.555	4.48	0	
Surr: 2-Fluorophenol	2.88	0.20	5	0	57.6	20-120	3	4.09	0	
Surr: 4-Terphenyl-d14	4.357	0.20	5	0	87.1	40-135	4.133	5.28	0	
Surr: Nitrobenzene-d5	3.122	0.20	5	0	62.4	41-120	3.038	2.75	0	
Surr: Phenol-d6	3.095	0.20	5	0	61.9	20-120	3.128	1.07	0	

1309249-01G	1309249-02G	1309249-03G
1309249-04G	1309249-05G	1309249-06G
1309249-07G	1309249-08G	

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153431 Instrument ID VOA4 Method: SW8260

MBLK Sample ID: VBLKW-13	0909-R153431				Units: µg/	L	Analy	ysis Date: 9	/9/2013 02	2:26 PN
Client ID:	Run II	D: VOA4_	130909A		SeqNo: 334	8366	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	3.0								
Surr: 1,2-Dichloroethane-d4	55.51	1.0	50		0 111	71-125		0		
Surr: 4-Bromofluorobenzene	49.3	1.0	50		0 98.6	70-125		0		
Surr: Dibromofluoromethane	54.82	1.0	50		0 110	74-125		0		
Surr: Toluene-d8	57.16	1.0	50		0 114	75-125		0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153431 Instrument ID VOA4 Method: SW8260

LCS Sample ID: VLCSW-13	0909-R153431				Units: µg/L	-	Analy	sis Date: 9	/9/2013 0 ⁻	1:35 PM
Client ID:	Run II	D: VOA4_	130909A	Se	eqNo: 334	8365	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	57.98	1.0	50	0	116	75-130				
1,1,2,2-Tetrachloroethane	58.95	1.0	50	0	118	74-123				
1,1,2-Trichloroethane	51.83	1.0	50	0	104	80-120				
1,1-Dichloroethane	54.29	1.0	50	0	109	80-120				
1,1-Dichloroethene	56.75	1.0	50	0	113	75-130				
1,2-Dibromoethane	56.59	1.0	50	0	113	80-120				
1,2-Dichloroethane	53.38	1.0	50	0	107	79-120				
Benzene	52.59	1.0	50	0	105	80-120				
Carbon tetrachloride	53.55	1.0	50	0	107	75-125				
Chloroform	52.62	1.0	50	0	105	70-130				
Ethylbenzene	53.43	1.0	50	0	107	80-120				
Methylene chloride	50.16	2.0	50	0	100	65-133				
Tetrachloroethene	54.71	1.0	50	0	109	75-130				
Toluene	52.68	1.0	50	0	105	80-121				
Trichloroethene	54.42	1.0	50	0	109	75-125				
Vinyl chloride	56.52	1.0	50	0	113	70-135				
Xylenes, Total	162.2	3.0	150	0	108	80-124				
Surr: 1,2-Dichloroethane-d4	53.14	1.0	50	0	106	71-125		0		
Surr: 4-Bromofluorobenzene	55.46	1.0	50	0	111	70-125		0		
Surr: Dibromofluoromethane	54.93	1.0	50	0	110	74-125		0		
Surr: Toluene-d8	54.16	1.0	50	0	108	75-125		0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153431 Instrument ID VOA4 Method: SW8260

MS Sample ID: 1309205-0	1AMS				Units: µg/l	-	Analy	sis Date: 9	/9/2013 04	4:08 PM
Client ID:	Run II	D: VOA4_	130909A	S	eqNo: 334	8369	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	57.97	1.0	50	0	116	75-130				
1,1,2,2-Tetrachloroethane	54.96	1.0	50	0	110	74-123				
1,1,2-Trichloroethane	49.56	1.0	50	0	99.1	80-120				
1,1-Dichloroethane	53.26	1.0	50	0	107	80-120				
1,1-Dichloroethene	57.21	1.0	50	0	114	75-130				
1,2-Dibromoethane	53.32	1.0	50	0	107	80-120				
1,2-Dichloroethane	51.54	1.0	50	0	103	79-120				
Benzene	50.64	1.0	50	0	101	80-120				
Carbon tetrachloride	53.61	1.0	50	0	107	79-120				
Chloroform	52.05	1.0	50	0	104	70-130				
Ethylbenzene	52	1.0	50	0	104	80-120				
Methylene chloride	48.94	2.0	50	0	97.9	65-133				
Tetrachloroethene	52.85	1.0	50	0	106	75-130				
Toluene	51.15	1.0	50	0	102	80-121				
Trichloroethene	53.27	1.0	50	0	107	75-125				
Vinyl chloride	56.96	1.0	50	0	114	70-135				
Xylenes, Total	156.2	3.0	150	0	104	80-124				
Surr: 1,2-Dichloroethane-d4	52.29	1.0	50	0	105	71-125		0		
Surr: 4-Bromofluorobenzene	53.37	1.0	50	0	107	70-125		0		
Surr: Dibromofluoromethane	54.32	1.0	50	0	109	74-125		0		
Surr: Toluene-d8	52.34	1.0	50	0	105	75-125		0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153431 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1309205-0	1AMSD				Units: µg/I	-	Analysi	s Date: 9/	9/2013 04	1:34 PN
Client ID:	Run I	D: VOA4_	130909A	S	eqNo: 334	8370	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua
1,1,1-Trichloroethane	58.41	1.0	50	0	117	75-130	57.97	0.757	20	
1,1,2,2-Tetrachloroethane	55.31	1.0	50	0	111	74-123	54.96	0.646	20	
1,1,2-Trichloroethane	49.76	1.0	50	0	99.5	80-120	49.56	0.415	20	
1,1-Dichloroethane	53.55	1.0	50	0	107	80-120	53.26	0.553	20	
1,1-Dichloroethene	56.43	1.0	50	0	113	75-130	57.21	1.37	20	
1,2-Dibromoethane	53.54	1.0	50	0	107	80-120	53.32	0.406	20	
1,2-Dichloroethane	51.85	1.0	50	0	104	79-120	51.54	0.602	20	
Benzene	51.56	1.0	50	0	103	80-120	50.64	1.79	20	
Carbon tetrachloride	53.77	1.0	50	0	108	75-125	53.61	0.287	20	
Chloroform	51.32	1.0	50	0	103	70-130	52.05	1.4	20	
Ethylbenzene	52.71	1.0	50	0	105	80-120	52	1.36	20	
Methylene chloride	48.15	2.0	50	0	96.3	65-133	48.94	1.64	20	
Tetrachloroethene	54.29	1.0	50	0	109	75-130	52.85	2.69	20	
Toluene	51.98	1.0	50	0	104	80-121	51.15	1.61	20	
Trichloroethene	53.71	1.0	50	0	107	75-120	53.27	0.825	20	
Vinyl chloride	57.58	1.0	50	0	115	70-135	56.96	1.07	20	
Xylenes, Total	159.4	3.0	150	0	106	80-124	156.2	2.06	20	
Surr: 1,2-Dichloroethane-d4	51.1	1.0	50	0	102	71-125	52.29	2.3	20	
Surr: 4-Bromofluorobenzene	54.25	1.0	50	0	108	70-125	53.37	1.63	20	
Surr: Dibromofluoromethane	53.47	1.0	50	0	107	74-125	54.32	1.58	20	
Surr: Toluene-d8	53.38	1.0	50	0	107	75-125	52.34	1.98	20	

The following samples were analyzed in this batch:

1309249-01A 1309249-02A

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153436 Instrument ID VOA4 Method: SW8260

MBLK Sample ID: VBLKW-13	80909-R153436				Units: µg	/L	Anal	ysis Date: 9	/10/2013 ()2:36 AM
Client ID:	Run I	D: VOA4_	130909B		SeqNo: 33	48577	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	3.0								
Surr: 1,2-Dichloroethane-d4	52.23	1.0	50		0 104	71-125		0		
Surr: 4-Bromofluorobenzene	45.28	1.0	50		0 90.6	70-125		0		
Surr: Dibromofluoromethane	52.05	1.0	50		0 104	74-125		0		
Surr: Toluene-d8	53.48	1.0	50		0 107	75-125	;	0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153436 Instrument ID VOA4 Method: SW8260

LCS Sample ID: VLCSW-13	0909-R153436				Units: µg/l	-	Analy	sis Date: 9	/10/2013	01:46 AM
Client ID:	Run II	D: VOA4_	130909B	S	eqNo: 334	8576	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	56.44	1.0	50	0	113	75-130				
1,1,2,2-Tetrachloroethane	50.9	1.0	50	0	102	74-123				
1,1,2-Trichloroethane	50.27	1.0	50	0	101	80-120				
1,1-Dichloroethane	53.71	1.0	50	0	107	80-120				
1,1-Dichloroethene	53.51	1.0	50	0	107	75-130				
1,2-Dibromoethane	53.93	1.0	50	0	108	80-120				
1,2-Dichloroethane	52.01	1.0	50	0	104	79-120				
Benzene	52.02	1.0	50	0	104	80-120				
Carbon tetrachloride	52	1.0	50	0	104	75-125				
Chloroform	52.39	1.0	50	0	105	70-130				
Ethylbenzene	52.21	1.0	50	0	104	80-120				
Methylene chloride	51.16	2.0	50	0	102	65-133				
Tetrachloroethene	53.48	1.0	50	0	107	75-130				
Toluene	51.99	1.0	50	0	104	80-121				
Trichloroethene	57	1.0	50	0	114	75-125				
Vinyl chloride	55.79	1.0	50	0	112	70-135				
Xylenes, Total	158.5	3.0	150	0	106	80-124				
Surr: 1,2-Dichloroethane-d4	50.74	1.0	50	0	101	71-125		0		
Surr: 4-Bromofluorobenzene	53.55	1.0	50	0	107	70-125		0		
Surr: Dibromofluoromethane	53.78	1.0	50	0	108	74-125		0		
Surr: Toluene-d8	53.31	1.0	50	0	107	75-125		0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153436 Instrument ID VOA4 Method: SW8260

MS Sample ID: 1309196-01	IAMS			ţ	Jnits: µg/L	-	Analy	sis Date: 9	/10/2013 (05:06 AM
Client ID:	Run II	D: VOA4_	130909B	Se	eqNo: 334	8583	Prep Date:		DF: 1 0)
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	509.8	10	500	0	102	75-130				
1,1,2,2-Tetrachloroethane	467.1	10	500	0	93.4	74-123				
1,1,2-Trichloroethane	448.7	10	500	0	89.7	80-120				
1,1-Dichloroethane	495.7	10	500	8.87	97.4	80-120				
1,1-Dichloroethene	538.8	10	500	41.27	99.5	75-130				
1,2-Dibromoethane	473.8	10	500	0	94.8	80-120				
1,2-Dichloroethane	471.7	10	500	0	94.3	79-120				
Benzene	474.9	10	500	0	95	80-120				
Carbon tetrachloride	469.3	10	500	0	93.9	79-120				
Chloroform	474.3	10	500	0	94.9	70-130				
Ethylbenzene	471	10	500	0	94.2	80-120				
Methylene chloride	462.3	20	500	24.95	87.5	65-133				
Tetrachloroethene	476.7	10	500	0	95.3	75-130				
Toluene	471.8	10	500	0	94.4	80-121				
Trichloroethene	900.8	10	500	390.6	102	75-125				
Vinyl chloride	530.1	10	500	0	106	70-135				
Xylenes, Total	1438	30	1500	0	95.9	80-124				
Surr: 1,2-Dichloroethane-d4	492.5	10	500	0	98.5	71-125		0		
Surr: 4-Bromofluorobenzene	517.9	10	500	0	104	70-125		0		
Surr: Dibromofluoromethane	527.3	10	500	0	105	74-125		0		
Surr: Toluene-d8	512.5	10	500	0	103	75-125		0		

Client: Navajo Refining Company

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R153436 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 1309196-01	AMSD			ı	Units: µg/L	-	Analysi	s Date: 9/	10/2013 ()5:31 AN
Client ID:	Run II	D: VOA4_	130909B	Se	eqNo: 334	8584	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	517.9	10	500	0	104	75-130	509.8	1.59	20	
1,1,2,2-Tetrachloroethane	509	10	500	0	102	74-123	467.1	8.58	20	
1,1,2-Trichloroethane	468.5	10	500	0	93.7	80-120	448.7	4.31	20	
1,1-Dichloroethane	503.6	10	500	8.87	99	80-120	495.7	1.59	20	
1,1-Dichloroethene	553.4	10	500	41.27	102	75-130	538.8	2.68	20	
1,2-Dibromoethane	493.7	10	500	0	98.7	80-120	473.8	4.12	20	
1,2-Dichloroethane	484.7	10	500	0	96.9	79-120	471.7	2.72	20	
Benzene	478.5	10	500	0	95.7	80-120	474.9	0.743	20	
Carbon tetrachloride	470.2	10	500	0	94	75-125	469.3	0.18	20	
Chloroform	490.1	10	500	0	98	70-130	474.3	3.27	20	
Ethylbenzene	482.3	10	500	0	96.5	80-120	471	2.37	20	
Methylene chloride	480.1	20	500	24.95	91	65-133	462.3	3.76	20	
Tetrachloroethene	486.9	10	500	0	97.4	75-130	476.7	2.11	20	
Toluene	477.9	10	500	0	95.6	80-121	471.8	1.28	20	
Trichloroethene	899.6	10	500	390.6	102	75-120	900.8	0.138	20	
Vinyl chloride	531.7	10	500	0	106	70-135	530.1	0.303	20	
Xylenes, Total	1456	30	1500	0	97.1	80-124	1438	1.22	20	
Surr: 1,2-Dichloroethane-d4	524.7	10	500	0	105	71-125	492.5	6.34	20	
Surr: 4-Bromofluorobenzene	537	10	500	0	107	70-125	517.9	3.62	20	
Surr: Dibromofluoromethane	542.2	10	500	0	108	74-125	527.3	2.78	20	
Surr: Toluene-d8	535	10	500	0	107	75-125	512.5	4.3	20	

The following samples were analyzed in this batch:

1309249-03A	1309249-04A	1309249-05A	
1309249-06A	1309249-07A	1309249-08A	
1309249-09A	1309249-10A	1309249-11A	
1300240-124			

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R	153357	Instrument ID Man	Tech01		Method	d: SM450	0H+ B		(Dissolve	e)			
LCS	Sample ID:	LCS-PH-R153357					Uni	ts: pH l	Jnits	Analys	is Date: 9/	8/2013 10):45 AM
Client ID:			Run	ID: MANTE	CH01_1309	A800	SeqN	lo: 3346	6657	Prep Date:		DF: 1	
Analyte		Re	sult	PQL	SPK Val	SPK Ref Value	9	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН			6	0.100	6		0	100	90-110				
DUP	Sample ID:	1309264-01ZDUP					Uni	ts: pH l	Jnits	Analys	is Date: 9/	8/2013 11	1:03 AM
Client ID:			Run	ID: MANTE	CH01_1309	A800	SeqN	lo: 334 6	6661	Prep Date:		DF: 1	
Analyte		Re	sult	PQL	SPK Val	SPK Ref Value	9	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН			3.13	0.100						8.05	0.989	20	
Temp Deg	С @рН	23	3.75	0						23.54	0.888		
The follow	ing samples w	ere analyzed in this	batch:	13	809249-01F 809249-04F 809249-07F	13	309249 309249 309249	-05F	_	09249-03F 09249-06F			

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R	153508 Instrument	ID Balance1		Method	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-09091	13-R153508				Units: mg/	L	Analys	is Date: 9	/9/2013 11	1:00 AM
Client ID:		Run I	: BALAN	ICE1_13090	9E	SeqNo: 334 9	9975	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	U	10.0								
LCS	Sample ID: WLCS-09091	13-R153508				Units: mg/	L	Analys	is Date: 9	/9/2013 11	1:00 AM
Client ID:		Run IE	: BALAN	ICE1_13090	9E	SeqNo: 334 9	9976	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	1008	10.0	1000		0 101	85-115				
DUP	Sample ID: 1309061-01E	BDUP				Units: mg/	L	Analys	is Date: 9	/9/2013 11	1:00 AM
Client ID:		Run IE	: BALAN	ICE1_13090	9E	SeqNo: 334 9	9972	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	344	10.0					334	2.95	20	
DUP	Sample ID: 1309249-06F	DUP				Units: mg/	L	Analys	is Date: 9	/9/2013 11	1:00 AM
Client ID: M	W-119	Run ID	: BALAN	ICE1_13090	9E	SeqNo: 335	1809	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	4020	10.0					4030	0.248	20	
The followi	ng samples were analyzed	d in this batch:		309249-04F 309249-08F	13	309249-05F	13	309249-06F			

Navajo Refining Company

Work Order: 1309249

Client:

Project: RO Discharge Sampling

Batch ID: R	R153690	Instrument ID Gall01		Method	d: M4500	CN E&G	(Dissolve	e)			
MBLK	Sample ID: V	VBLKW1-091313-R153690				Units: mg	ı/L	Analysi	s Date: 9/	13/2013 1	0:15 AN
Client ID:		Run I	D: GALL	01_130913A		SeqNo: 33 !	54600	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U	0.0200								
LCS	Sample ID: V	NLCSW1-091313-R153690				Units: mg	ı/L	Analysi	s Date: 9/	13/2013 1	0:15 AM
Client ID:		Run II	D: GALL	01_130913A		SeqNo: 33	54601	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.187	0.0200	0.2		0 93.5	80-120				
MS	Sample ID: 1	309232-07DMS				Units: mg	ı/L	Analysi	s Date: 9/	13/2013 1	0:15 AM
Client ID:		Run II	D: GALL	01_130913A		SeqNo: 33	54607	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.1776	0.0200	0.2	0.0015	59 88	80-120				
MSD	Sample ID: 1	309232-07DMSD				Units: mg	ı/L	Analysi	s Date: 9/	13/2013 1	0:15 AM
Client ID:		Run II	D: GALL	01_130913A		SeqNo: 33	54608	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.1788	0.0200	0.2	0.001	59 88.6	80-120	0.1776	0.684	20	
The follow	ing samples we	ere analyzed in this batch:	1	309249-01D 309249-04D 309249-07D	13	809249-02D 809249-05D 809249-08D		609249-03D 609249-06D			

Work Order: 1309249

Project: RO Discharge Sampling

ajo Refining Company

QC BATCH REPORT

Batch ID: R	153693 Instrument I	D Balance1		Metho	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-09111	3-R153693				Units: mg/	L	Analys	is Date: 9	/11/2013 (06:55 PM
Client ID:		Run II	: BALAN	CE1_13091	1F	SeqNo: 335 4	4688	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	U	10.0								
LCS	Sample ID: WLCS-091113	3-R153693				Units: mg/	L	Analys	is Date: 9	/11/2013 (06:55 PM
Client ID:		Run II	: BALAN	CE1_13091	1F	SeqNo: 335 4	4689	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	1004	10.0	1000		0 100	85-115				
DUP	Sample ID: 1309249-03FI	DUP				Units: mg/	L	Analys	is Date: 9	/11/2013 (06:55 PM
Client ID: M	W-116	Run II	: BALAN	CE1_13091	1F	SeqNo: 335 4	4678	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	4376	10.0					4438	1.41	20	
DUP	Sample ID: 1309311-01Bi	DUP				Units: mg/	L	Analys	is Date: 9	/11/2013 (06:55 PM
Client ID:		Run II	: BALAN	CE1_13091	1F	SeqNo: 335 4	4686	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	368	10.0					362	1.64	20	
The following	ng samples were analyzed	in this batch:		809249-01F 809249-07F	13	809249-02F	13	09249-03F			

Work Order: 1309249

Batch ID: R153808	Instrument ID ICS3000		Method	d: E300			(Dissolve))			
MBLK Sample ID:	WBLKW1-R153808				Un	its: mg /	L	Analy	sis Date: 9	/15/2013 1	1:51 PN
Client ID:	Run II	D: ICS300	0_130915A		Seql	No: 335	7186	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500									
Fluoride	U	0.100									
Nitrogen, Nitrate (As N)	U	0.100									
Nitrogen, Nitrite (As N)	U	0.100									
Sulfate	U	0.500									
Nitrate/Nitrite (as N)	U	0.200									
LCS Sample ID:	WLCSW1-R153808				Un	its: mg/	L	Analy	sis Date: 9	/16/2013 1	2:16 AM
Client ID:	Run II	D: ICS300	0_130915A		Seq	No: 335	7187	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
									/0NFD		Quai
Chloride	21.23	0.500	20		0	106	90-110				
Fluoride	4.143	0.100	4		0	104	90-110				
Nitrogen, Nitrate (As N)	4.38	0.100	4		0	109	90-110				
Nitrogen, Nitrite (As N)	4.126	0.100	4		0	103	90-110				
Sulfate	20.51	0.500	20		0	103	90-110				
Nitrate/Nitrite (as N)	8.506	0.200	8		0	106	90-110				
MS Sample ID:	1309232-07EMS				Un	its: mg/	L	Analy	rsis Date: 9	/16/2013 ()5:52 AM
Client ID:	Run II	D: ICS300	0_130915A		Seql	No: 335	7200	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	73.98	0.500	10	65.3	32	86.7	80-120				0
Fluoride	2.868	0.100	2	0.97	79	94.4	80-120				
Nitrogen, Nitrate (As N)	1.843	0.100	2		0	92.2	80-120				Н
Nitrogen, Nitrite (As N)	1.91	0.100	2		0	95.5	80-120				Н
Sulfate	10.84	0.500	10	1.89		89.4	80-120				
Nitrate/Nitrite (as N)	3.753	0.200	4		0	93.8	80-120				Н

Work Order: 1309249

Project: RO Discharge Sampling

Batch ID: R1538	08	Instrument ID ICS3000		Method	: E300		(Dissolve))			
MSD Sa	mple ID:	1309232-07EMSD				Units: mg/	L	Analysi	s Date: 9/	16/2013 0	6:18 AM
Client ID:		Run ID	: ICS300	0_130915A	S	SeqNo: 335	7201	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		74.44	0.500	10	65.32	91.3	80-120	73.98	0.62	20	0
Fluoride		2.89	0.100	2	0.979	95.6	80-120	2.868	0.764	20	
Nitrogen, Nitrate	(As N)	1.852	0.100	2	0	92.6	80-120	1.843	0.487	20	Н
Nitrogen, Nitrite	(As N)	1.921	0.100	2	0	96	80-120	1.91	0.574	20	Н
Sulfate		10.93	0.500	10	1.897	90.4	80-120	10.84	0.836	20	
Nitrate/Nitrite (as	N)	3.773	0.200	4	0	94.3	80-120	3.753	0.531	20	Н
The following sa	amples w	vere analyzed in this batch:	13	309249-01F 309249-04F 309249-07F	1309	9249-02F 9249-05F 9249-08F		09249-03F 09249-06F			

Date: 08-Oct-13 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS, RO** Discharge Sampling **Project:** ACRONYMS, UNITS

WorkOrder: 1309249

mg/L

pH Units

Milligrams per Liter

Qualifier	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	Description
°C	Celsius degrees

QF Page 1 of 1

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING				Date/Time I	Received	: <u>06-</u>	Sep-13 (<u>)9:40</u>	
Work Order:	1309249				Received by	y:	<u>WT</u>	<u>J</u>		
Checklist comp	eSignature	07	'-Sep-13 Date	_	Reviewed by:	Sonia	West ure			10-Sep-13 Date
Matrices: Carrier name:	WATER FedEx									
Shipping contain	iner/cooler in good condition?		Yes	✓	No 🗌	Not	Present			
Custody seals i	intact on shipping container/coole	r?	Yes	✓	No 🗆	Not	Present			
Custody seals i	intact on sample bottles?		Yes		No 🗌	Not	Present	~		
Chain of custoo	dy present?		Yes	✓	No 🗌					
Chain of custoo	dy signed when relinquished and	received?	Yes	✓	No 🗌					
Chain of custoo	dy agrees with sample labels?		Yes	✓	No 🗆					
Samples in pro	per container/bottle?		Yes	✓	No \square					
Sample contain	ners intact?		Yes	✓	No \square					
Sufficient samp	ole volume for indicated test?		Yes	✓	No 🗆					
All samples rec	eived within holding time?		Yes	✓	No 🗌					
Container/Temp	p Blank temperature in compliand	e?	Yes	✓	No 🗆					
Temperature(s))/Thermometer(s):		4.6C/4. 4.7C/4.	.6C, 5	5.0C/5.0C, 5.3C	,5.3C,	IR1			
Cooler(s)/Kit(s)	:				1312,2753					
Date/Time sam	ple(s) sent to storage:		9/7/13		<u> </u>					
Water - VOA vi	als have zero headspace?			✓	No L	No VOA	vials sub	mitted		
	eptable upon receipt?		Yes	✓	No 🗌	N/A				
pH adjusted? pH adjusted by:	:		Yes		No L	N/A	✓			
Login Notes:			<u>-</u>							
3										
	- — — — — — — — -			:						
	- — — — — — — — — -			=					- — — —	
Client Contacte	ed:	Date Contacted:			Person	Contacte	ed:			
Contacted By:		Regarding:								
Comments:										
CorrectiveActio	n:								SRC	Page 1 of 1

64 of 88



Cincinnati, OH +1 513 733 5336

Holland, MI +1 616 399 6070

Everett, WA +1 425 356 2600

Fort Collins, CO +1 970 490 1511

Chain of Custody Form

of _ Page

coc ID: 9212

ALS Project Manager:

Project Information

Customer Information

1309249

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

***************************************	**************************************				***************************************		211112	# - C C E E E		1111 6 121 6 11		
Purchase Order		Project Name	RO Discharge/Sampling		A VOC	VOC (8260) NIM GW List	A GW List					
Work Order		Project Number			B GRC	GRO (8015M)						
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company		C DRC	DRO, ORO (8015M) LVI	115M) LVI					
Send Report To	Robert Combs	Invoice Attn	Robert Combs		מורפ	LL SVOC (8270) NN GW List) NW G	List			4 P. C. C. C. C. C. C. C. C. C. C. C. C. C.	Control of the contro
	501 East Main		501 East Main	And the state of t	E Diss	Dissolved Metals (6020/7000) Select List	Is (6020/7	000) Sele	act List			A STATE OF THE STA
Address		Address		Brest St	F Anic	Anions (300) Cl, F, SO4	F, SO4					
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211		G Tota	Total Cyanide (SM 4500)	SM 4500)					
Phone	(575) 746-5382	Phone	(575) 746-5382		표		**************************************					
Fax	(575) 746-5421	Fax	(575) 746-5421		TDS	AND AND ALL PROPERTY OF THE PARTY						
e-Mail Address		e-Mail Address			JRadi	Radium 226/228	හ					
No.	Sample Description	Date Ti	Time Matrix Pres.	. # Bottles	A B	၂	0	ш	H 5	-	ſ	Hold
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- //\/\\ 88	5	14/13 17	10 WATER	2	X	X	X	X	X	X	X	100 mm and 100 mm and
3 M/W-11	0	113 15.	20 WATER	9	×	X	X	X	メ	X	X	
4 MW-11	0	4113 109	50 WATER	<u>و</u>	X X	\ \	X	X	<u>^</u>	X	X	
- MM =	8	14/13 1/20	O WATER	2	X X	$\stackrel{\frown}{\times}$	メン	X	^ X	X	人	
	2	14/13/13	30 INATER	, , ,	×	/\ _×	X	X	$\stackrel{\wedge}{\times}$	X	X	
7 RO DIS	CHARGE 9	75/13 110) O WATER	2	X	X	メン	X	入 人	X	X	
■ DUP-C)	4/13 00	SO WATER	<u>)</u>	X	^ ×	X	X	X	X	X	
R TRID B	BLAINKS	-]	- WATEX	4	×							
10		-										
Sampler(s) Please Print & Sign	It & Sign (2017)	Shipment Method	<i>\</i>) je:	leck Box)	Other			Resul	Results Due Date:	ate:	
			7/ 2 Sid 10	V Std 10 WK Days	5 WK Days	12 MIK Days	Javes .	24 Hour		1.00		
Mar / R	7 2/5/13	000	19 9/6/13	0460		ID DAY IAT : GC Fam Inneger with Arcadis	ا راد ا	n wneger	AMIII ANG	dais		
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Logged by (Laboratory):	<u>Date:</u> Time:		Checked by (Laboratory):		1344			Level III Std OC	Level III Std OC/Raw Data	Raw Data		TRRP Level IV
December of other	TOTAL CHARGE TOTAL	O O O S	Cop 8 ACHIO & COPPEN	מפקם פ				Level N SW	Level IV SW846/CLP	d lo	Ì	
	2-113-03 S-112-0-4	G-14a2O2O3						/ BIEC	3			

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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Sales of the sales		Company A K (/))))	FedEx Priority Overnight Next bisiness marning * Friday shipmens will be delivered on Monday unless SATURDAY Delivery is selected.	FedEx 2Day Second business afternoon.* Thu will be delivered on Atonday unle- Delivery is selected.
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<u>5</u>	3		6 Special Handling and Delivery Sig	nature Options
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ALS Environmental

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

Rev. Date 2/12 • Part /163134 • @1994-2012 FedEx • PRINTED IN U.S.A. SRS

CUSTODY SEAL Seal Broken By:

Company:

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Express	US Airbill

8041 1922 7022

Express US Airbill Tracking 8041 1922 7022	im 0215	
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Sender's MALLORY BAILT Phone 71 0.94 1050	FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on shondby unless SAI URDAY Delevery is selected.	FedEx 2Day A.M. Second dusiness morning. Saturday Delivery WDT available.
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Recipients CLIENT SERVICES Phone 281 530-5656	SATURDAY Delivery NOT avaitable for FedEx Standard Overnight, FedEx 20 by A.R.	A, or Fedtix Express Saver.
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	Total Packages Total Weight	Credit Card Auth.
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10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887

CUST Date: Company:

DDY SEAL	Seal Broker
Time: 600	Date:

Rev. Date 2/12 + Part #183134 + @1994-2012 FedEx + PRINTED IN U.S.A. SRS

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ALS Environmental 10450 Senedi 1., Sen 210 Houston 1823 105 Tel. +1 281 530 5887

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69 of 88



September 25, 2013

Ms. Sonja West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re:

ALS Workorder:

13-09-098

Project Name:

None Submitted

Project Number:

1309249

Dear Ms. West:

Eight water samples were received from ALS Environmental on September 10, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses 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





1309098

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

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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.

ALS Laborato	ory Certifications
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nebraska	NE-OS-24-13
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)	CO01099
Washington	C1280

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1309098

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 1309249 Client PO Number: 10-1309249

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-114	1309098-1		WATER	05-Sep-13	9:30
MW-115	1309098-2		WATER	04-Sep-13	17:10
MW-116	1309098-3		WATER	04-Sep-13	15:20
MW-117	1309098-4		WATER	04-Sep-13	9:50
MW-118	1309098-5		WATER	04-Sep-13	12:00
MW-119	1309098-6		WATER	04-Sep-13	13:30
RO-DISCHARGE	1309098-7		WATER	05-Sep-13	11:00
DUP-01	1309098-8		WATER	04-Sep-13	

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Subcontractor:
ALS Environmental
225 Commerce Drive

Date: 07-Sep-13 COC ID: 14873 Due Date 13-Sep-13 CHAIN-OF-CUSTODY RECORD

(800) 443-1511 (970) 490-1522 Acct #: TEL: Fax:

Houston House Acct

Salesperson

Fort Collins, CO 80524

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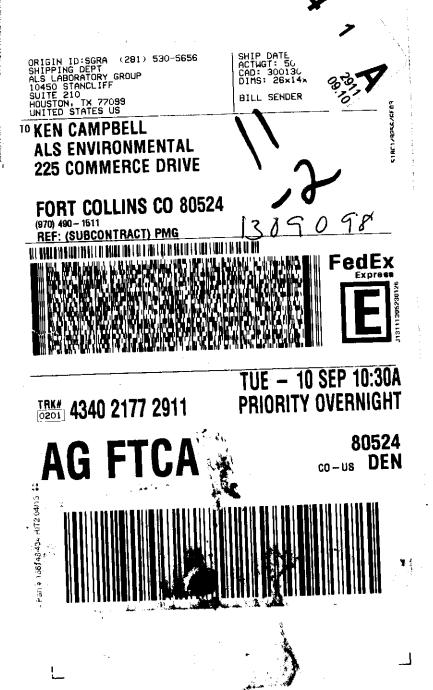
3	Customer Information		Pro	Project Information	ion			Parame	ter/Metho	Parameter/Method Request for Analysis	t for Ana	ysis		
Purchase Order	,WO#1309249	Project Nam	ame	1309249		A Radiu	A Radium 226 228 Sub to ALS Ft. Collins	28 Sub to	ALS Ft.	Collins		!	1	
Work Order		Project Num	umber			മ						1		1
Company Name	ALS Group USA, Corp.	Bill To Company		ALS Group USA, Corp.	JSA, Corp.	ပ	:					1		
Send Report To	Sonia West	Inv Attn		Accounts Payable	ayable	۵	!							
Address	10450 Stancliff Rd, Suite 210	Address		10450 Stancli	10450 Stancliff Rd, Suite 210	ш								
		Γ				止								
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	diZ/e	Houston, Tex	Houston, Texas 77099-4338	ပ				,				
Phone	(281) 530-5656	Рһопе		(281) 530-5656	99	Ξ								
Fax	(281) 530-5887	Fax		(281) 530-5887	87									
eMail Address	Sonia. West@alsglobal.com	eMail CC		jumoke.lawal	jumoke.lawal@alsglobal.com	7								
Sample ID		Matrix	Collection	lection Date 24hr	Bottle	A	В	၁) E	ш.	ტ	I	-	٦
() 1309249-01H (MW-114)		Water	5/Sep/2013 9:30	13 9:30	(2) 1LPHNO3	×								
31309249-02H (MW-115)		Water	4/Sep/2013 17:10	3 17:10	(2) 1LPHNO3	×	:							-
309249-03H (MW-116)		Water	4/Sep/2013 15:20	3 15:20	(2) 1LPHNO3	×								!
(A 1309249-04H (MW-117)		Water	4/Sep/2013 9:50	13 9:50	(2) 1LPHN03	×								
(MW-118)		Water	4/Sep/2013 12:00	3 12:00	(2) 1LPHN03	×					-			
(A) 1309249-06H (MW-119)		Water	4/Sep/2013 13:30	3 13:30	(2) 1LPHN03	×		-						
1309249-07H (RO DISCHARGE)		Water	5/Sep/2013 11:00	3 11:00	(2) 1LPHNO3	×	-							Ì
(DUP-01)		Water	4/Sep/2013	2013	(2) 1LPHN03	×			_					
9														

	Report/QC Level	
	Pate/Time Cooler IDs	Relinquished by: Date/Time Received by:
se analyze for Radium 226/228.	Received by:	Received by:
249. Due on 9/13/13. Plea	€.71 .671	Date/Time
Comments: Wo#1309	Relinquished by:	Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS - TX Workorder No:	3090	198	
Project Manager: JK Initials: CDT	Date:	7-10-	13
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. o containers, matrix, requested analyses, etc.)	f	YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YE)	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
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 of sediment: dusting moderateheavy	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	YES	(NO)
Cooler #:			
Temperature (°C): Amb			
No. of custody seals on cooler: 2			
DOT Survey/ Acceptance External µR/hr reading:			
Information Background μR/hr reading: \ 0			
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		ND #16.	
Auditorial information. The vibe between the state of the			
If applicable, was the client contacted? YES / NO / Contact:	Date/Ti	me:	
Project Manager Signature / Date: 9-11-1)			



SAM PLE SUM MARY REPORT

Date: 25-Sep-13 C lient: ALS Environmental

1309249 W ork Order: 1309098 Project: MW-114 Lab ID: 1309098-1 Sample ID: LegalLocation: M atrix: WATER

Collection Date: 9/5/2013 09:30 PercentMoisture:

Analyses	R esult	Qual	Report Limit Uni	Dilution ts Factor	D ate A nalyzed
RA-226 BY RADON EMANATIO	N - METHOD 903.1		PAI 783	Prep Date:	9/16/2013 PrepBy: PJW
Ra-226	0.37 (+/- 0.24)	LT	0.21 pC	i/l NA	9/24/2013 12:51
Carr: BARIUM	90.1		40-110 %F	REC NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GF	PC		PAI 724	Prep Date:	9/14/2013 PrepBy: JTL
Ra-228	0.62 (+/- 0.3)	LT	0.52 pC	i/l NA	9/17/2013 11:24
Carr: BARIUM	90.1		40-110 %F	REC NA	9/17/2013 11:24

SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249
 W ork 0 rder:
 1309098

 Sam ple ID:
 MW-115
 Lab ID:
 1309098-2

 LegalLocation:
 M atrix:
 WATER

Collection Date: 9/4/2013 17:10 Percent Moisture:

Analyses	R esult	Qual	Report Limit (Units	D ilution Factor	Date Analyzed
RA-226 BY RADON EMANAT	ION - METHOD 903.1		PAI 783		Prep Date: 9/1	16/2013 PrepBy: PJW
Ra-226	ND (+/- 0.15)	U	0.26	pCi/l	NA	9/24/2013 12:51
Carr: BARIUM	95.8		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY (GFPC		PAI 724		Prep Date: 9/1	14/2013 PrepBy: JTL
Ra-228	ND (+/- 0.22)	U	0.47	pCi/l	NA	9/17/2013 11:24
Carr: BARIUM	95.8		40-110	%REC	NA	9/17/2013 11:24

SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249
 W ork 0 rder:
 1309098

 Sam ple ID:
 MW-116
 Lab ID:
 1309098-3

 LegalLocation:
 M atrix:
 WATER

Collection Date: 9/4/2013 15:20 Percent Moisture:

Analyses	R esult	Qual	Report Limit (Units	D ilution Factor	D ate A nalyzed
RA-226 BY RADON EMANATION	N - METHOD 903.1		PAI 783		Prep Date: 9/16/201	3 PrepBy: PJW
Ra-226	ND (+/- 0.17)	U	0.25	pCi/l	NA	9/24/2013 12:51
Carr: BARIUM	87		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GFF	PC		PAI 724		Prep Date: 9/14/201	3 PrepBy: JTL
Ra-228	ND (+/- 0.26)	U	0.53	pCi/l	NA	9/17/2013 11:24
Carr: BARIUM	87		40-110	%REC	NA	9/17/2013 11:24

SAM PLE SUM MARY REPORT

Date: 25-Sep-13 C lient: ALS Environmental

Project: 1309249 W ork Order: 1309098 MW-117 Lab ID: 1309098-4 Sample ID:

LegalLocation: M atrix: WATER

Collection Date: 9/4/2013 09:50 PercentMoisture:

Analyses	R esult	Report Dilution Qual Limit Units Factor		Date Analyzed		
RA-226 BY RADON EMANATIO	N - METHOD 903.1		PAI 783		Prep Date: 9/16/2	2013 PrepBy: PJW
Ra-226	0.2 (+/- 0.16)	LT	0.08 p	oCi/l	NA	9/24/2013 12:51
Carr: BARIUM	93.6		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GF	PC		PAI 724		Prep Date: 9/14/2	2013 PrepBy: JTL
Ra-228	0.74 (+/- 0.36)	LT	0.62 p	oCi/l	NA	9/17/2013 11:41
Carr: BARIUM	93.6		40-110	%REC	NA	9/17/2013 11:41

SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249
 W ork 0 rder:
 1309098

 Sam ple ID:
 MW-118
 Lab ID:
 1309098-5

 LegalLocation:
 M atrix:
 WATER

Collection Date: 9/4/2013 12:00 Percent Moisture:

Analyses	R esult	Qual	Report Limit	Units	D ilution Factor	Date Analyzed
RA-226 BY RADON EMANATI	ON - METHOD 903.1		PAI 783		Prep Date: 9/16/20	13 PrepBy: PJW
Ra-226	ND (+/- 0.14)	U	0.21	pCi/I	NA	9/24/2013 12:51
Carr: BARIUM	88.1		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY G	SFPC		PAI 724		Prep Date: 9/14/20	13 PrepBy: JTL
Ra-228	0.64 (+/- 0.34)	LT	0.6	pCi/l	NA	9/17/2013 11:41
Carr: BARIUM	88.1		40-110	%REC	NA	9/17/2013 11:41

ALS Environmental -- FC

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SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

Project: 1309249 W ork O rder: 1309098 Sam ple \mathbb{D} : MW-119 Lab \mathbb{D} : 1309098-6

LegalLocation: M atrix: WATER

Collection Date: 9/4/2013 13:30 Percent Moisture:

Analyses	R esult	Qual	Limit	Units	Dilution Factor	Date Analyzed

		~			ractor	_
RA-226 BY RADON EMANATION -	METHOD 903.1		PAI 783		Prep Date:	9/16/2013 PrepBy: PJW
Ra-226	0.17 (+/- 0.15)	LT	0.08	pCi/I	NA	9/24/2013 12:51
Carr: BARIUM	93.3		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GFPC			PAI 724		Prep Date:	9/14/2013 PrepBy: JTL
Ra-228	ND (+/- 0.28)	U	0.64	pCi/I	NA	9/17/2013 11:41
Carr: BARIUM	93.3		40-110	%REC	NA	9/17/2013 11:41

Carr: BARIUM

SAM PLE SUM M ARY REPORT

NA

9/17/2013 11:41

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249
 W ork O rder:
 1309098

 Sam ple ID:
 RO-DISCHARGE
 Lab ID:
 1309098-7

LegalLocation: Matrix: WATER

Collection Date: 9/5/2013 11:00 Percent Moisture:

90.5

Analyses	Result	Qual	Report Limit Units	D ilution Factor	Date Analyzed
RA-226 BY RADON EMANATION - N	METHOD 903.1		PAI 783	Prep Date: 9/16/20	13 PrepBy: PJW
Ra-226	0.46 (+/- 0.28)	LT	0.23 pCi/l	NA	9/24/2013 12:51
Carr: BARIUM	90.5		40-110 %REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GFPC			PAI 724	Prep Date: 9/14/20	13 PrepBy: JTL
Ra-228	ND (+/- 0.29)	U	0.57 pCi/l	NA	9/17/2013 11:41

40-110 %REC

ALS Environmental -- FC

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SAM PLE SUM M ARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249 W ork 0 rder: 1309098

 Sam ple ID:
 DUP-01
 Lab ID: 1309098-8

LegalLocation: Matrix: WATER

Collection Date: 9/4/2013 Percent Moisture:

			кфотс		Dilution	
Analyses	Result	Qual	Limit	Units	Factor	Date Analyzed

Analyses	Result	Qual	L IM IC	Units	Factor	Date Analyzed
RA-226 BY RADON EMANATION	N - METHOD 903.1		PAI 783		Prep Date: 9/16/2013	PrepBy: PJW
Ra-226	0.28 (+/- 0.22)	LT	0.26	pCi/l	NA	9/24/2013 12:51
Carr: BARIUM	91.5		40-110	%REC	NA	9/24/2013 12:51
RADIUM-228 ANALYSIS BY GFF	PC		PAI 724		Prep Date: 9/14/2013	PrepBy: JTL
Ra-228	ND (+/- 0.25)	U	0.54	pCi/I	NA	9/17/2013 11:41
Carr: BARIUM	91.5		40-110	%REC	NA	9/17/2013 11:41

SAM PLE SUM M ARY REPORT

Date: 25-Sep-13 Client: ALS Environmental

Project: 1309249 W ork Order: 1309098 Sample ID: DUP-01 Lab ID: 1309098-8

M atrix: WATER LegalLocation:

Collection Date: 9/4/2013 Percent Moisture:

> R eport D ilution

Analyses Result Date Analyzed Qual Limit Units Factor

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.

LT - Result is less than requested MDC but greater than achieved MDC.

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

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SAM PLE SUM MARY REPORT

C lient: ALS Environmental Date: 25-Sep-13

 Project:
 1309249
 W ork Order: 1309098

 Sam ple ID:
 DUP-01
 Lab ID: 1309098-8

LegalLocation: Matrix: WATER

Collection Date: 9/4/2013 Percent Moisture:

Report Dilution

Analyses Result Qual Limit Units 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.
- ${\bf 5}$ 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

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ALS Environmental -- FC

Client: ALS Environmental

Work Order: 1309098 Project: 1309249 Date: 9/25/2013 9:24:

QC BATCH REPORT

Batch ID: R	E130916-1-1	Instrument ID:	Alpha Scin		Method:	Ra-226 by	Radon E	Emanation - Me			
LCS	Sample ID: RE130916-	1				Units: pCi	Ī	Analys	s Date: 9	/24/2013 1	2:51
Client ID:		Ru	un ID: RE130	RE130916-1A				Prep Date: 9/16	/2013	DF: NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		26.2 (+/- 6.7)	0.2	29.99		87.4	67-120				Р
Carr: BAR	RIUM	32620		34440		94.7	40-110				
LCSD	Sample ID: RE130916-	1				Units: pCi	1	Analys	s Date: 9	/24/2013 1	3:07
Client ID:		Ru	Run ID: RE130916-1A					Prep Date: 9/16	DF: NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		26 (+/- 6.6)	0.3	29.99		86.8	67-120	26.2	0.0202	2.13	Р
Carr: BAR	RIUM	31760		34430		92.2	40-110	32620			
МВ	Sample ID: RE130916-	1				Units: pCi	Ί	Analys	s Date: 9	/24/2013 1	2:51
Client ID:		Ru	un ID: RE130	916-1A				Prep Date: 9/16	/2013	DF: NA	4
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-226		ND	0.37								U
Carr: BAR	RIUM	30200		34430		87.7	40-110				
The follow	ving samples were analyz	ed in this bate	1	309098-1 309098-4 309098-7	130)9098-2)9098-5)9098-8		809098-3 809098-6			

C lient: ALS Environmental

W ork Order: 1309098 Project: 1309249

Batch ID: F	RA130912-1-2	Instrument ID	: LB4100-B		Method:	Radium-2	28 Analy	sis by GFPC				
LCS	Sample ID: RA13091	2-1				Units: pCi /	Ί	Analysi	s Date: 9	17/2013 1	1:24	
Client ID:		Rı	un ID: RA130	912-1A				Prep Date: 9/14	/2013	DF: N A	4	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Ra-228		10.1 (+/- 2.4)	0.5	9.511		106	70-130				Р	
Carr: BAF	RIUM	32620		34440		94.7	40-110					
LCSD	Sample ID: RA13091	2-1				Units: pCi /	Ί	Analysi	s Date: 9	17/2013 1	1:24	
Client ID:		Ru	Run ID: RA130912-1A					Prep Date: 9/14	/2013	13 DF: NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Ra-228		10.6 (+/- 2.5)	0.5	9.511		112	70-130	10.1	0.152	2.13	Р	
Carr: BAF	RIUM	31760		34430		92.2	40-110	32620				
МВ	Sample ID: RA13091	2-1				Units: pCi /	Ί	Analysi	s Date: 9	17/2013 1	1:41	
Client ID:		Ru	un ID: RA130	912-1A				Prep Date: 9/14	/2013	DF: N A	A	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua	
Ra-228		ND	0.57								U	
Carr: BAF	RIUM	30200		34430		87.7	40-110					
The follow	wing samples were anal	yzed in this bat	1	309098-1 309098-4 309098-7	130)9098-2)9098-5)9098-8		809098-3 809098-6				



07-Jan-2014

Robert Combs Navajo Refining Company PO Box 1490 Artesia, NM 88211-1490

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

Re: RO Discharge Sampling Work Order: 13111096

Dear Robert,

ALS Environmental received 3 samples on 21-Nov-2013 09:15 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 48.

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

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager

Certificate No: T104704231-13-12

ALS Environmental

Date: 07-Jan-14

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111096

Work Order Sample Summary

Lab Samp ID Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	Hold
13111096-01 MW-117	Water		11/20/2013 14:30	11/21/2013 09:1	5
13111096-02 MW-118	Water		11/20/2013 13:00	11/21/2013 09:1	5
13111096-03 Trip Blank 110613-72	Water		11/20/2013	11/21/2013 09:1	₅

ALS Environmental

Date: 07-Jan-14

Client: Navajo Refining Company
Project: RO Discharge Sampling

Project: RO Discharge Sampling
Work Order: 13111096

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

Batch 74937, Dissolved Metals 6020, Sample 13111133-11D: MS/MSD are for an unrelated sample.

Batch 74973, Semivolatile Organics 8270, Sample SLCSW1-131126: Insufficient sample was received for MS/MSD.

Batch R157966, Volatile Organics 8260, Sample 13111133-18A: MS/MSD are for an unrelated sample.

Client: Navajo Refining Company

Project: **RO** Discharge Sampling

MW-117 Sample ID:

Collection Date: 11/20/2013 02:30 PM

Work Order: 13111096

Lab ID: 13111096-01

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Met	:hod: SW8015N	1	Prep: SW	3511 / 11/27/13	Analyst: RPM
TPH (Diesel Range)	U		0.020	0.051	mg/L	1	12/3/2013 16:36
TPH (Oil Range)	U		0.041	0.10	mg/L	1	12/3/2013 16:36
Surr: 2-Fluorobiphenyl	120			60-135	%REC	1	12/3/2013 16:36
GASOLINE RANGE ORGANICS - SW801	5C	Met	:hod: SW8015				Analyst: DNR
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	11/25/2013 19:31
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	11/25/2013 19:31
DISSOLVED MERCURY BY 7470A		Met	:hod: SW7470		Prep: SW	7470 / 12/3/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	12/3/2013 14:24
DISSOLVED METALS		Met	hod: SW6020		Prep: SW	3010A / 11/25/13	Analyst: JCJ
Aluminum	0.0298		0.0040	0.0100	mg/L	1	11/26/2013 02:12
Arsenic	0.00347	J	0.0010	0.00500	mg/L	1	11/26/2013 02:12
Barium	0.0108		0.00090	0.00500	mg/L	1	11/26/2013 02:12
Boron	0.204		0.020	0.0500	mg/L	1	11/27/2013 17:12
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 02:12
Calcium	556		0.86	5.00	mg/L	10	11/26/2013 19:38
Chromium	U		0.0010	0.00500	mg/L	1	11/26/2013 02:12
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 02:12
Copper	0.00345	J	0.0010	0.00500	mg/L	1	11/26/2013 02:12
Iron	0.110	J	0.078	0.200	mg/L	1	11/26/2013 19:57
Lead	0.00125	J	0.00070	0.00500	mg/L	1	11/26/2013 02:12
Manganese	0.00982		0.0025	0.00500	mg/L	1	11/26/2013 02:12
Molybdenum	0.0114		0.0015	0.00500	mg/L	1	11/26/2013 02:12
Nickel	0.00305	J	0.0010	0.00500	mg/L	1	11/26/2013 02:12
Potassium	7.54		0.084	0.200	mg/L	1	11/26/2013 02:12
Selenium	0.00380	J	0.0010	0.00500	mg/L	1	11/26/2013 02:12
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 19:57
Sodium	115		0.085	0.200	mg/L	1	11/26/2013 19:57
Uranium	0.0182		0.0050	0.00500	mg/L	1	11/26/2013 19:57
Zinc	0.0343		0.0025	0.00500	mg/L	1	11/26/2013 02:12
LOW-LEVEL SEMIVOLATILES		Met	:hod: SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:05
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 15:05
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:05
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 15:05
Surr: 2,4,6-Tribromophenol	36.7			34-129	%REC	1	11/26/2013 15:05
Surr: 2-Fluorobiphenyl	46.5			40-125	%REC	1	11/26/2013 15:05

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 11/20/2013 02:30 PM

Work Order: 13111096

Lab ID: 13111096-01

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	31.2			20-120	%REC	1	11/26/2013 15:05
Surr: 4-Terphenyl-d14	51.2			40-135	%REC	1	11/26/2013 15:05
Surr: Nitrobenzene-d5	42.1			41-120	%REC	1	11/26/2013 15:05
Surr: Phenol-d6	32.0			20-120	%REC	1	11/26/2013 15:05
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 01:33
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 01:33
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 01:33
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 01:33
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 01:33
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 01:33
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 01:33
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 01:33
Surr: 1,2-Dichloroethane-d4	122			71-125	%REC	1	12/3/2013 01:33
Surr: 4-Bromofluorobenzene	112			70-125	%REC	1	12/3/2013 01:33
Surr: Dibromofluoromethane	116			74-125	%REC	1	12/3/2013 01:33
Surr: Toluene-d8	113			75-125	%REC	1	12/3/2013 01:33
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	1/7/2014
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	92.4		0.20	0.500	mg/L	1	12/3/2013 10:01
Fluoride	3.95		0.050	0.100	mg/L	1	12/3/2013 10:01
Sulfate	2,190		20	50.0	mg/L	100	12/3/2013 10:59
Nitrate/Nitrite (as N)	U		0.15	1.00	mg/L	5	12/2/2013 22:18
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Met	hod: SM4500H	+ B			Analyst: KL
рН	6.75	Н	0.10	0.100	pH Units	1	11/26/2013 09:00

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-117

Collection Date: 11/20/2013 02:30 PM

Date: 07-Jan-14

Work Order: 13111096

Lab ID: 13111096-01

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Temp Deg C @pH	20.4	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,150		5.0	10.0	mg/L	1	11/26/2013 17:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-118

Collection Date: 11/20/2013 01:00 PM

Work Order: 13111096

Lab ID: 13111096-02

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Ме	thod: SW8015N	1	Prep: SW	3511 / 11/27/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.052	mg/L	1	12/3/2013 17:03
TPH (Oil Range)	U		0.042	0.10	mg/L	1	12/3/2013 17:03
Surr: 2-Fluorobiphenyl	122			60-135	%REC	1	12/3/2013 17:03
GASOLINE RANGE ORGANICS - SW8019	5C	Me	thod: SW8015				Analyst: DNR
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	11/25/2013 19:49
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	11/25/2013 19:49
DISSOLVED MERCURY BY 7470A		Me	thod: SW7470		Prep: SW	7470 / 12/3/13	Analyst: OFO
Mercury	U		0.000042	0.000200	mg/L	1	12/3/2013 14:35
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 11/25/13	Analyst: JCJ
Aluminum	0.0103		0.0040	0.0100	mg/L	1	11/26/2013 02:16
Arsenic	0.0125		0.0010	0.00500	mg/L	1	11/26/2013 02:16
Barium	0.00964		0.00090	0.00500	mg/L	1	11/26/2013 02:16
Boron	0.288		0.020	0.0500	mg/L	1	11/27/2013 17:14
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 02:16
Calcium	532		0.86	5.00	mg/L	10	11/26/2013 19:43
Chromium	0.00105	J	0.0010	0.00500	mg/L	1	11/26/2013 02:16
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 02:16
Copper	0.00338	J	0.0010	0.00500	mg/L	1	11/26/2013 02:16
Iron	0.179	J	0.078	0.200	mg/L	1	11/26/2013 20:02
Lead	0.00107	J	0.00070	0.00500	mg/L	1	11/26/2013 02:16
Manganese	0.00526		0.0025	0.00500	mg/L	1	11/26/2013 02:16
Molybdenum	0.0141		0.0015	0.00500	mg/L	1	11/26/2013 02:16
Nickel	0.00214	J	0.0010	0.00500	mg/L	1	11/26/2013 02:16
Potassium	6.92		0.084	0.200	mg/L	1	11/26/2013 02:16
Selenium	0.00327	J	0.0010	0.00500	mg/L	1	11/26/2013 02:16
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 20:02
Sodium	163		0.085	0.200	mg/L	1	11/26/2013 20:02
Uranium	0.0311		0.0050	0.00500	mg/L	1	11/26/2013 20:02
Zinc	0.0407		0.0025	0.00500	mg/L	1	11/26/2013 02:16
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:24
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 15:24
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:24
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 15:24
Surr: 2,4,6-Tribromophenol	37.5			34-129	%REC	1	11/26/2013 15:24
Surr: 2-Fluorobiphenyl	47.4			40-125	%REC	1	11/26/2013 15:24

Client: Navajo Refining Company

Project: **RO** Discharge Sampling

MW-118 Sample ID:

Collection Date: 11/20/2013 01:00 PM

Work Order: 13111096

Lab ID: 13111096-02

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 2-Fluorophenol	38.5			20-120	%REC	1	11/26/2013 15:24
Surr: 4-Terphenyl-d14	72.4			40-135	%REC	1	11/26/2013 15:24
Surr: Nitrobenzene-d5	42.6			41-120	%REC	1	11/26/2013 15:24
Surr: Phenol-d6	35.7			20-120	%REC	1	11/26/2013 15:24
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 01:58
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 01:58
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 01:58
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 01:58
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 01:58
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 01:58
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 01:58
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 01:58
Surr: 1,2-Dichloroethane-d4	121			71-125	%REC	1	12/3/2013 01:58
Surr: 4-Bromofluorobenzene	112			70-125	%REC	1	12/3/2013 01:58
Surr: Dibromofluoromethane	115			74-125	%REC	1	12/3/2013 01:58
Surr: Toluene-d8	112			75-125	%REC	1	12/3/2013 01:58
MISCELLANEOUS ANALYSIS		Met	hod:NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	1/7/2014
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	90.1		0.20	0.500	mg/L	1	12/3/2013 10:16
Fluoride	6.78		0.050	0.100	mg/L	1	12/3/2013 10:16
Sulfate	2,470		20	50.0	mg/L	100	12/3/2013 11:13
Nitrate/Nitrite (as N)	U		0.15	1.00	mg/L	5	12/2/2013 22:33
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Met	hod: SM4500H	+ B			Analyst: KL
рН	6.50	Н	0.10	0.100	pH Units	1	11/26/2013 09:00

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 13111096

Sample ID: MW-118 **Lab ID:** 13111096-02

Collection Date: 11/20/2013 01:00 PM Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Temp Deg C @pH	20.4	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	4,640		5.0	10.0	mg/L	1	11/26/2013 17:30

Date: 07-Jan-14

Work Order: 13111096

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID Clien	t Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 74937	Test Name:	Dissolved Metals				
13111096-01E MW-	117	Water	11/20/2013 2:30:00 PM		11/25/2013 10:00 AM	11/26/2013 02:12 AM
					11/25/2013 10:00 AM	11/26/2013 07:38 PM
					11/25/2013 10:00 AM	11/26/2013 07:57 PM
					11/25/2013 10:00 AM	11/27/2013 05:12 PM
13111096-02E MW-	118		11/20/2013 1:00:00 PM		11/25/2013 10:00 AM	11/26/2013 02:16 AM
					11/25/2013 10:00 AM	11/26/2013 07:43 PM
					11/25/2013 10:00 AM	11/26/2013 08:02 PM
					11/25/2013 10:00 AM	11/27/2013 05:14 PM
Batch ID 74973	Test Name:	Low-Level Semiv	<u>olatiles</u>			
13111096-01 MW-	117	Water	11/20/2013 2:30:00 PM		11/26/2013 07:34 AM	11/26/2013 03:05 PM
13111096-02 MW-	118		11/20/2013 1:00:00 PM		11/26/2013 07:34 AM	11/26/2013 03:24 PM
Batch ID 75019	Test Name:	TPH DRO/ORO 8	<u>8015C</u>			
13111096-01 MW-	117	Water	11/20/2013 2:30:00 PM		11/27/2013 09:52 AM	12/3/2013 04:36 PM
13111096-02 MW-	118		11/20/2013 1:00:00 PM		11/27/2013 09:52 AM	12/3/2013 05:03 PM
Batch ID 75070	Test Name:	Dissolved Mercury	y by 7470 <u>A</u>			
13111096-01E MW-	117	Water	11/20/2013 2:30:00 PM		12/3/2013 09:59 AM	12/3/2013 02:24 PM
13111096-02E MW-	118		11/20/2013 1:00:00 PM		12/3/2013 09:59 AM	12/3/2013 02:35 PM
Batch ID R15775	<u>Test Name:</u>	Gasoline Range O	rganics - SW8015C			
13111096-01 MW-	117	Water	11/20/2013 2:30:00 PM			11/25/2013 07:31 PM
13111096-02 MW-	118		11/20/2013 1:00:00 PM			11/25/2013 07:49 PM
D						

DATES REPORT

Work Order: 13111096

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID Clie	nt Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
Batch ID R157	787 <u>Test Name</u> :	pH - SM4500H+	<u>B</u>				
13111096-01F MW	·-117	Water	11/20/2013 2:30:00 PM			11/26/2013 09:00 AM	
13111096-02F MW	-118		11/20/2013 1:00:00 PM			11/26/2013 09:00 AM	
Batch ID R1579	<u>Test Name</u> :	Total Dissolved S	<u>Solids</u>				
13111096-01F MW	<i>'</i> -117	Water	11/20/2013 2:30:00 PM			11/26/2013 05:30 PM	
13111096-02F MW	7-118		11/20/2013 1:00:00 PM			11/26/2013 05:30 PM	
Batch ID R1579	756 <u>Test Name</u>	Anions - EPA 300	0.0 (1993)				
13111096-01 MW	<i>-</i> 117	Water	11/20/2013 2:30:00 PM			12/2/2013 10:18 PM	
13111096-02 MW	7-118		11/20/2013 1:00:00 PM			12/2/2013 10:33 PM	
Batch ID R1579	766 Test Name	Low Level Volati	<u>les - SW8260C</u>				
13111096-01 MW	<i>-</i> 117	Water	11/20/2013 2:30:00 PM			12/3/2013 01:33 AM	
13111096-02 MW	7-118		11/20/2013 1:00:00 PM			12/3/2013 01:58 AM	
Batch ID R1580	006 <u>Test Name</u>	Anions - EPA 300	0.0 (1993)				
13111096-01F MW	<i>'</i> -117	Water	11/20/2013 2:30:00 PM			12/3/2013 10:01 AM	
						12/3/2013 10:59 AM	
13111096-02F MW	-118		11/20/2013 1:00:00 PM			12/3/2013 10:16 AM	
						12/3/2013 11:13 AM	
Batch ID R1580	<u>Test Name</u>	Cyanide - SM450	OCN E				
13111096-01 MW	<i>'</i> -117	Water	11/20/2013 2:30:00 PM			12/3/2013 08:45 AM	
13111096-02 MW	7-118		11/20/2013 1:00:00 PM			12/3/2013 08:45 AM	

DATES REPORT

Work Order: 13111096

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID	R159590 Test Nam	e: Miscellaneous Ana	<u>lysis</u>			
13111096-01	I MW-117	Water	11/20/2013 2:30:00 PM			1/7/2014
13111096-02	I MW-118		11/20/2013 1:00:00 PM			1/7/2014

DATES REPORT

Date: 07-Jan-14

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: 75019	Instrument ID FID-16		Metho	d: SW801	5M						
MBLK Sample ID:	LBLKW-131127-75019				L	Jnits: mg/	L	Analysi	s Date: 12	2/3/2013 0	3:17 PM
Client ID:	Run II	D: FID-16 _	_131127A		Se	qNo: 345 7	7707	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.06882	0.0050	0.06061		0	114	60-135	0			
LCS Sample ID:	LLCSW-131127-75019				L	Jnits: mg/	L	Analysi	s Date: 12	2/3/2013 0	3:43 PM
Client ID:	Run II	D: FID-16 _	_131127A		Se	qNo: 345 7	7709	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7182	0.050	0.6061		0	119	70-130				
TPH (Oil Range)	0.6655	0.10	0.6061		0	110	70-130				
Surr: 2-Fluorobiphenyl	0.0758	0.0050	0.06061		0	125	60-135	0			
LCSD Sample ID:	LLCSDW-131127-75019				L	Jnits: mg/ l	L	Analysi	s Date: 12	2/3/2013 0	4:10 PM
Client ID:	Run II	D: FID-16 _	_131127A		Se	qNo: 345 7	7711	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6627	0.050	0.6061		0	109	70-130	0.7182	8.04	20	
TPH (Oil Range)	0.6411	0.10	0.6061		0	106	70-130	0.6655	3.75	20	
Surr: 2-Fluorobiphenyl	0.07659	0.0050	0.06061		0	126	60-135	0.0758	1.04	20	
The following samples w	ere analyzed in this batch:	13 01	3111096- IC	13 02		096-					

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R15775	Instrumer	nt ID FID-9		Metho	d: SW801	5						
MBLK Sar	mple ID: GBLKW1-1	131125-R157757	,			U	nits: mg /	L	Analy	/sis Date: 11	/25/2013	01:46 PM
Client ID:		Run	ID: FID-9_	131125A		Sec	No: 344 9	9261	Prep Date:		DF: 1	
					SPK Ref			Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Gasoline Range (Organics	U	0.0500									
Surr: 4-Bromof	luorobenzene	0.1047	0.00500	0.1		0	105	70-130		0		
LCS Sar	nple ID: GLCSW1-1	31125-R157757	•			U	nits: mg/	L	Analy	/sis Date: 11	/25/2013	12:36 PM
Client ID:		Run	ID: FID-9_	131125A		Sec	No: 344 9	9259	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	0.9583	0.0500	1		0	95.8	70-130				
Surr: 4-Bromof	luorobenzene	0.1087	0.00500	0.1		0	109	70-130		0		
MS Sar	mple ID: 13111127- 0	04BMS				U	nits: mg/	L	Analy	/sis Date: 11	/25/2013	09:01 PM
Client ID:		Run	ID: FID-9_	131125A		Sec	No: 344 9	9275	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	0.9683	0.0500	1		0	96.8	70-130				
Surr: 4-Bromof	luorobenzene	0.1012	0.00500	0.1		0	101	70-130		0		
MSD Sar	mple ID: 13111127- 0	04BMSD				U	nits: mg/	L	Analy	/sis Date: 11	/25/2013	09:19 PM
Client ID:		Run	ID: FID-9_	131125A		Sec	No: 344 9	9276	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	0.9651	0.0500	1		0	96.5	70-130	0.968	3 0.326	30	
Surr: 4-Bromof	luorobenzene	0.1021	0.00500	0.1		0	102	70-130	0.101	2 0.868	30	

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05		Method:	SW602	20	(Dissolve	e)			
MBLK	Sample ID: MBLKW5-112513-74937				Units: mg/	L	Analy	sis Date:	11/27/2013	04:48 PM
Client ID:	Ru	n ID: ICPMS	05_131127A		SeqNo: 345 2	2534	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0100								
Arsenic	U	0.00500								
Barium	U	0.00500								
Boron	U	0.0500								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00500								
Cobalt	U	0.00500								
Copper	U	0.00500								
Iron	U	0.200								
Lead	U	0.00500								
Manganese	U	0.00500								
Molybdenum	U	0.00500								
Nickel	U	0.00500								
Potassium	U	0.200								
Selenium	U	0.00500								
Silver	U	0.00500								
Sodium	0.09841	0.200								J
Uranium	U	0.00500								
Zinc	U	0.00500								·

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 74937	Instrument ID ICPMS05		Method	SW602	20		(Dissolve	e)			
LCS Samp	ple ID: MLCSW5-112513-74937				l	Jnits: mg /	L	Analy	sis Date: 1	1/26/2013	02:07 AN
Client ID:	Run	ID: ICPMS	04_131125A		Se	qNo: 344 9	9183	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.102	0.0100	0.1		0	102	80-120				
Arsenic	0.05014	0.00500	0.05		0	100	80-120				
Barium	0.05287	0.00500	0.05		0	106	80-120				
Cadmium	0.05071	0.00200	0.05		0	101	80-120				
Chromium	0.04917	0.00500	0.05		0	98.3	80-120				
Cobalt	0.04899	0.00500	0.05		0	98	80-120				
Copper	0.0494	0.00500	0.05		0	98.8	80-120				
Lead	0.0477	0.00500	0.05		0	95.4	80-120				
Manganese	0.0517	0.00500	0.05		0	103	80-120				
Molybdenum	0.04833	0.00500	0.05		0	96.7	80-120				
Nickel	0.0491	0.00500	0.05		0	98.2	80-120				
Potassium	4.584	0.200	5		0	91.7	80-120				
Selenium	0.05055	0.00500	0.05		0	101	80-120				
Zinc	0.0526	0.00500	0.05		0	105	80-120				
LCS Samp	ple ID: MLCSW5-112513-74937				ι	Jnits: mg/	L	Analy	sis Date: 1	1/26/2013	04:49 PN
Client ID:	Run	ID: ICPMS	04_131126A		Se	qNo: 345 2	2022	Prep Date: 11	/25/2013	DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Calcium	5.2	0.500	5		0	104	80-120				
Iron	5.14	0.200	5		0	103	80-120				
Silver	0.04833	0.00500	0.05		0	96.7	80-120				
Sodium	4.836	0.200	5		0	96.7	80-120				
Uranium	0.09245	0.00500	0.1		0	92.4	80-120				
LCS Samp	ple ID: MLCSW5-112513-74937				Į	Jnits: mg/	L	Analy	sis Date: 1	1/27/2013	04:50 PM
Client ID:	Run	ID: ICPMS	05_131127A		Se	eqNo: 345 2	2535	Prep Date: 11	/25/2013	DF: 1	
				SPK Ref			Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Boron	0.4788	0.0500	0.5		0	95.8	80-120				

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05	i	Method:	SW6020		(Dissolve))			
MS	Sample ID: 13111133-11DMS				Units: mg/	L	Anal	ysis Date:	11/27/2013	04:57 PM
Client ID:	Ru	ın ID: ICPMS	05_131127A	S	eqNo: 345 2	2538	Prep Date: 11	1/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.116	0.0100	0.1	0.005542	110	75-125				
Arsenic	0.08293	0.00500	0.05	0.03331	99.2	75-125				
Barium	0.6868	0.00500	0.05	0.6627	48.2	75-125				so
Boron	0.6871	0.0500	0.5	0.2289	91.6	75-125				
Cadmium	0.0525	0.00200	0.05	0.00034	104	75-125				
Calcium	217	0.500	5	224.4	-147	75-125				SEO
Chromium	0.05293	0.00500	0.05	0.001062	104	75-125				
Cobalt	0.05193	0.00500	0.05	0.000403	103	75-125				
Copper	0.05102	0.00500	0.05	-0.000985	104	75-125				
Iron	50.17	0.200	5	46.79	67.6	75-125				SO
Lead	0.05385	0.00500	0.05	0.000599	106	75-125				
Manganese	1.895	0.00500	0.05	1.901	-11	75-125				SEO
Molybdenum	0.05397	0.00500	0.05	0.002996	102	75-125				
Nickel	0.05185	0.00500	0.05	0.00082	102	75-125				
Potassium	11.36	0.200	5	6.616	95	75-125				
Selenium	0.05608	0.00500	0.05	-0.000761	114	75-125				
Silver	0.05374	0.00500	0.05	0.000201	107	75-125				
Sodium	23.18	0.200	5	19.16	80.3	75-125				
Uranium	0.1036	0.00500	0.1	0.000808	103	75-125				
Zinc	0.05467	0.00500	0.05	0.003439	102	75-125				

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 74937	Instrument ID ICPMS05		Method	SW6020		(Dissolve	e)			
MSD Sa	ample ID: 13111133-11DMSD				Units: mg/	L	Analysi	s Date: 1 1	/27/2013	05:00 PM
Client ID:	Run	ID: ICPMS	05_131127A	S	eqNo: 345 2	2539	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2342	0.0100	0.1	0.005542	229	75-125	0.116	67.5	25	SR
Arsenic	0.08694	0.00500	0.05	0.03331	107	75-125	0.08293	4.72	25	
Barium	0.7052	0.00500	0.05	0.6627	84.9	75-125	0.6868	2.64	25	Ο
Boron	0.6994	0.0500	0.5	0.2289	94.1	75-125	0.6871	1.77	25	
Cadmium	0.05189	0.00200	0.05	0.00034	103	75-125	0.0525	1.16	25	
Calcium	222	0.500	5	224.4	-47.3	75-125	217	2.26	25	SEO
Chromium	0.05579	0.00500	0.05	0.001062	109	75-125	0.05293	5.26	25	
Cobalt	0.05259	0.00500	0.05	0.000403	104	75-125	0.05193	1.26	25	
Copper	0.05331	0.00500	0.05	-0.000985	109	75-125	0.05102	4.4	25	
Iron	51.84	0.200	5	46.79	101	75-125	50.17	3.29	25	0
Lead	0.05621	0.00500	0.05	0.000599	111	75-125	0.05385	4.28	25	
Manganese	1.942	0.00500	0.05	1.901	83.1	75-125	1.895	2.45	25	EO
Molybdenum	0.05606	0.00500	0.05	0.002996	106	75-125	0.05397	3.79	25	
Nickel	0.05346	0.00500	0.05	0.00082	105	75-125	0.05185	3.06	25	
Potassium	11.74	0.200	5	6.616	102	75-125	11.36	3.25	25	
Selenium	0.05687	0.00500	0.05	-0.000761	115	75-125	0.05608	1.39	25	
Silver	0.05433	0.00500	0.05	0.000201	108	75-125	0.05374	1.1	25	
Sodium	23.42	0.200	5	19.16	85.1	75-125	23.18	1.02	25	
Uranium	0.1052	0.00500	0.1	0.000808	104	75-125	0.1036	1.54	25	
Zinc	0.09266	0.00500	0.05	0.003439	178	75-125	0.05467	51.6	25	SR
DUP Sa	ample ID: 13111133-11DDUP				Units: mg/	L	Analysi	s Date: 1 1	/26/2013	06:00 PM
Client ID:	Rur	ID: ICPMS	04_131126A	S	eqNo: 345 2	2036	Prep Date: 11/2	5/2013	DF: 10	
				SPK Ref		Control	RPD Ref		RPD	
Analyte	Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Calcium	182.6	5.00					164.8	10.3	25	
Manganese	1.556	0.0500					1.362	13.3	25	

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05		Method:	SW602	20	(Dissolv	e)			
DUP	Sample ID: 13111133-11DDUP				Units: mg/	L	Analysi	s Date: 1 1	/27/2013	04:55 PM
Client ID:	Ru	n ID: ICPMS	05_131127A		SeqNo: 345	2537	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.006905	0.0100					0.005542	0	25	J
Arsenic	0.03154	0.00500					0.03331	5.45	25	
Barium	0.6584	0.00500					0.6627	0.657	25	
Boron	0.2266	0.0500					0.2289	1.02	25	
Cadmium	U	0.00200					0.00034	0	25	
Chromium	U	0.00500					0.001062	0	25	
Cobalt	U	0.00500					0.000403	0	25	
Copper	U	0.00500					-0.000985	0	25	
Iron	46.98	0.200					46.79	0.407	25	
Lead	U	0.00500					0.000599	0	25	
Molybdenum	0.002269	0.00500					0.002996	0	25	J
Nickel	U	0.00500					0.00082	0	25	
Potassium	6.498	0.200					6.616	1.79	25	
Selenium	U	0.00500					-0.000761	0	25	
Silver	U	0.00500					0.000201	0	25	
Sodium	18.63	0.200					19.16	2.85	25	
Uranium	U	0.00500					0.000808	0	25	
Zinc	U	0.00500					0.003439	0	25	

The following samples were analyzed in this batch:

13111096-	13111096-	
10111000	10111000	
01E	02E	

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: 75	070	Instrument ID HG03		Metho	d: SW747	0	(Dissolve	e)			
MBLK	Sample ID): GBLKW1-120313-75070				Units: mg	J/L	Analysi	s Date: 1	2/3/2013 0	2:17 PN
Client ID:		Rui	n ID: HG03	_131203A		SeqNo: 34	56164	Prep Date: 12/3	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		U	0.000200								
LCS	Sample ID): GLCSW1-120313-75070				Units: m g	ı/L	Analysi	s Date: 1	2/3/2013 0	2:22 PN
Client ID:		Rui	n ID: HG03	_131203A		SeqNo: 34	56165	Prep Date: 12/3	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		0.00504	0.000200	0.005		0 101	80-120				
MS	Sample ID): 13111096-01EMS				Units: mg	_J /L	Analysi	s Date: 1	2/3/2013 0	2:27 PM
Client ID: M	W-117	Rui	n ID: HG03	_131203A		SeqNo: 34	56168	Prep Date: 12/3	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		0.00529	0.000200	0.005	-0.00000)8 106	80-120				
MSD	Sample ID): 13111096-01EMSD				Units: mg	J/L	Analysi	s Date: 1	2/3/2013 0	2:30 PM
Client ID: M	W-117	Rui	n ID: HG03	_131203A		SeqNo: 34	56169	Prep Date: 12/3	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury		0.00543	0.000200	0.005	-0.00000	109	80-120	0.00529	2.6	1 20	
DUP	Sample ID): 13111096-01EDUP				Units: mg	J/L	Analysi	s Date: 1	2/3/2013 0	2:25 PM
Client ID: M	W-117	Rui	n ID: HG03	_131203A		SeqNo: 34	56167	Prep Date: 12/3	/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	-	U	0.000200					-0.000008	() 20	
The following	ng samples	were analyzed in this batc		13111096- D1E	13 02	111096- E					

Client: Navajo Refining Company

Work Order: 13111096

Surr: Nitrobenzene-d5

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 74973 Inst	rument ID SV-4		Metho	d: SW827	70						
MBLK Sample ID: SBLK	W1-131126-74973				ι	Jnits: μ g/L	_	Analy	ysis Date: 1	1/26/2013	05:05 PM
Client ID:	Run	ID: SV-4_1	31126A		Se	eqNo: 345	1914	Prep Date: 11	/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.583	0.20	5		0	71.7	34-129		0		
Surr: 2-Fluorobiphenyl	3.466	0.20	5		0	69.3	40-125		0		
Surr: 2-Fluorophenol	3.106	0.20	5		0	62.1	20-120		0		
Surr: 4-Terphenyl-d14	4.479	0.20	5		0	89.6	40-135		0		
Surr: Nitrobenzene-d5	3.192	0.20	5		0	63.8	41-120		0		
Surr: Phenol-d6	2.816	0.20	5		0	56.3	20-120		0		
LCS Sample ID: SLCS	W1-131126-74973				ι	Jnits: µg/l	-	Analy	ysis Date: 1	1/26/2013	05:25 PM
Client ID:	Run	ID: SV-4_1	31126A		Se	eqNo: 345	1915	Prep Date: 11	/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.803	0.20	5		0	76.1	45-120				
2-Methylnaphthalene	3.701	0.20	5		0	74	50-120				
Benzo(a)pyrene	4.305	0.20	5		0	86.1	45-120				
Naphthalene	3.749	0.20	5		0	75	45-120				
Surr: 2,4,6-Tribromophenol	4.877	0.20	5		0	97.5	34-129		0		
Surr: 2-Fluorobiphenyl	3.823	0.20	5		0	76.5	40-125		0		
Surr: 2-Fluorophenol	3.367	0.20	5		0	67.3	20-120		0		
Surr: 4-Terphenyl-d14	3.983	0.20	5		0	79.7	40-135		0		

3.45

3.572

0.20

0.20

0

69

71.4

41-120

20-120

Navajo Refining Company Client:

Work Order: 13111096

Project: RO Discharge Sampling

> Instrument ID SV-4 Method: SW8270

Batch ID: 74973 Instrum	nent ID SV-4		Metho	d: SW827	0						
LCSD Sample ID: SLCSDV	V1-131126-74973				L	Jnits: µg/L	_	Analysi	s Date: 1	1/26/2013	05:46 PN
Client ID:	Run IE): SV-4_1	31126A		Se	qNo: 345 ′	1916	Prep Date: 11/2	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.143	0.20	5		0	82.9	45-120	3.803	8.56	20	
2-Methylnaphthalene	4.022	0.20	5		0	80.4	50-120	3.701	8.3	20	
Benzo(a)pyrene	4.867	0.20	5		0	97.3	45-120	4.305	12.2	20	
Naphthalene	3.815	0.20	5		0	76.3	45-120	3.749	1.74	20	
Surr: 2,4,6-Tribromophenol	4.519	0.20	5		0	90.4	34-129	4.877	7.63	0	
Surr: 2-Fluorobiphenyl	3.597	0.20	5		0	71.9	40-125	3.823	6.09	0	
Surr: 2-Fluorophenol	3.41	0.20	5		0	68.2	20-120	3.367	1.28	0	
Surr: 4-Terphenyl-d14	4.253	0.20	5		0	85.1	40-135	3.983	6.55	0	
Surr: Nitrobenzene-d5	3.315	0.20	5		0	66.3	41-120	3.45	3.98	0	
Surr: Phenol-d6	3.376	0.20	5		0	67.5	20-120	3.572	5.65	0	

The following samples were analyzed in this batch:

13111096-	13111096-	
13111090-	13111090-	
01D	02D	
טוט	020	

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Metho	d: SW82 6	80					
MBLK Sample ID: V	/BLKW-131202-R157966				Units: µg/l	L	Analy	/sis Date: 1	2/2/2013	10:17 PM
Client ID:	Run I	D: VOA4_	131202B		SeqNo: 345	5017	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	3.0								
Surr: 1,2-Dichloroethane	-d4 59.36	1.0	50		0 119	71-125	i	0		
Surr: 4-Bromofluorobenz	rene 55.31	1.0	50		0 111	70-125	i	0		
Surr: Dibromofluorometh	ane 56.59	1.0	50		0 113	74-125	i	0		
Surr: Toluene-d8	55.93	1.0	50		0 112	75-125	i	0		

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Method	: SW826	0						
LCS Sample ID: V	/LCSW-131202-R157966				L	Jnits: µg/L		Analy	sis Date: 1	2/2/2013	09:28 PM
Client ID:	Run I	D: VOA4_	131202B		Se	qNo: 345	5016	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	57.14	1.0	50		0	114	75-130				
1,1,2,2-Tetrachloroethane	49.37	1.0	50		0	98.7	74-123				
1,1,2-Trichloroethane	49.71	1.0	50		0	99.4	80-120				
1,1-Dichloroethane	55.07	1.0	50		0	110	80-120				
1,1-Dichloroethene	57.83	1.0	50		0	116	75-130				
1,2-Dibromoethane	51.15	1.0	50		0	102	80-120				
1,2-Dichloroethane	51.47	1.0	50		0	103	79-120				
Benzene	52.69	1.0	50		0	105	80-120				
Carbon tetrachloride	52.57	1.0	50		0	105	75-125				
Chloroform	52.9	1.0	50		0	106	70-130				
Ethylbenzene	49.65	1.0	50		0	99.3	80-120				
Methylene chloride	56.01	2.0	50		0	112	65-133				
Tetrachloroethene	49.35	1.0	50		0	98.7	75-130				
Toluene	49.5	1.0	50		0	99	80-121				
Trichloroethene	52.09	1.0	50		0	104	75-125				
Vinyl chloride	58.74	1.0	50		0	117	70-135				
Xylenes, Total	148.7	3.0	150		0	99.1	80-124				
Surr: 1,2-Dichloroethane	-d4 56.08	1.0	50		0	112	71-125		0		
Surr: 4-Bromofluorobenz	ene 57.29	1.0	50		0	115	70-125		0		
Surr: Dibromofluorometh	ane 58.81	1.0	50		0	118	74-125		0		
Surr: Toluene-d8	54.41	1.0	50		0	109	75-125		0		

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Method	: SW8260						
MS Sample ID: 1	3111133-18AMS				Units: µg/I		Analy	/sis Date: 1	2/2/2013	11:55 PM
Client ID:	Ru	un ID: VOA4_	131202B	s	eqNo: 345	5094	Prep Date:		DF: 5 (0
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	3155	50	2500	0	126	75-130				
1,1,2,2-Tetrachloroethane	2666	50	2500	0	107	74-123				
1,1,2-Trichloroethane	2735	50	2500	0	109	80-120				
1,1-Dichloroethane	3070	50	2500	0	123	80-120				S
1,1-Dichloroethene	3219	50	2500	0	129	75-130				
1,2-Dibromoethane	2732	50	2500	0	109	80-120				
1,2-Dichloroethane	2864	50	2500	0	115	79-120				
Benzene	3496	50	2500	594.7	116	80-120				
Carbon tetrachloride	2951	50	2500	0	118	79-120				
Chloroform	2976	50	2500	0	119	70-130				
Ethylbenzene	2839	50	2500	85.48	110	80-120				
Methylene chloride	3128	100	2500	0	125	65-133				
Tetrachloroethene	2714	50	2500	0	109	75-130				
Toluene	2769	50	2500	24.06	110	80-121				
Trichloroethene	2827	50	2500	0	113	75-125				
Vinyl chloride	3229	50	2500	0	129	70-135				
Xylenes, Total	8364	150	7500	157.3	109	80-124				
Surr: 1,2-Dichloroethane	e-d4 2902	50	2500	0	116	71-125		0		
Surr: 4-Bromofluorobenz	zene 2930	50	2500	0	117	70-125		0		
Surr: Dibromofluorometh	ane 2992	50	2500	0	120	74-125		0		
Surr: Toluene-d8	2772	50	2500	0	111	75-125		0		

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R157966 Instrument ID VOA4 Method: SW8260

MSD Sample ID: 13111133-	18AMSD				Units: µg/I	_	Analysi	is Date: 12	2/3/2013 1	2:20 AN
Client ID:	Run II	D: VOA4_	131202B	Se	eqNo: 345	5095	Prep Date:		DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	3089	50	2500	0	124	75-130	3155	2.12	20	
1,1,2,2-Tetrachloroethane	2652	50	2500	0	106	74-123	2666	0.529	20	
1,1,2-Trichloroethane	2695	50	2500	0	108	80-120	2735	1.46	20	
1,1-Dichloroethane	2965	50	2500	0	119	80-120	3070	3.49	20	
1,1-Dichloroethene	3103	50	2500	0	124	75-130	3219	3.66	20	
1,2-Dibromoethane	2731	50	2500	0	109	80-120	2732	0.0308	20	
1,2-Dichloroethane	2758	50	2500	0	110	79-120	2864	3.75	20	
Benzene	3376	50	2500	594.7	111	80-120	3496	3.49	20	
Carbon tetrachloride	2791	50	2500	0	112	75-125	2951	5.57	20	
Chloroform	2880	50	2500	0	115	70-130	2976	3.27	20	
Ethylbenzene	2748	50	2500	85.48	106	80-120	2839	3.27	20	
Methylene chloride	3032	100	2500	0	121	65-133	3128	3.11	20	
Tetrachloroethene	2615	50	2500	0	105	75-130	2714	3.7	20	
Toluene	2670	50	2500	24.06	106	80-121	2769	3.61	20	
Trichloroethene	2736	50	2500	0	109	75-120	2827	3.26	20	
Vinyl chloride	3146	50	2500	0	126	70-135	3229	2.63	20	
Xylenes, Total	8081	150	7500	157.3	106	80-124	8364	3.44	20	
Surr: 1,2-Dichloroethane-d4	2870	50	2500	0	115	71-125	2902	1.11	20	
Surr: 4-Bromofluorobenzene	2914	50	2500	0	117	70-125	2930	0.566	20	
Surr: Dibromofluoromethane	2964	50	2500	0	119	74-125	2992	0.949	20	
Surr: Toluene-d8	2769	50	2500	0	111	75-125	2772	0.136	20	

The following samples were analyzed in this batch:

Note:

13111096-	13111096-	
01A	02A	

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R	157787 Instrument I	D WetChem		Metho	d: SM450	0H+ B	(Dissolv	e)			
LCS	Sample ID: WLCS-W1112	26-R157787				Units: p H	Units	Analys	is Date: 1 1	1/26/2013	09:00 AM
Client ID:		Run II	D: WETCH	IEM_13112	6B	SeqNo: 34	50021	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН		6	0.100	6		0 100	98-102				
DUP	Sample ID: 13111121-01E	Dup				Units: p H	Units	Analys	is Date: 1 1	1/26/2013	09:00 AM
DUP Client ID:	Sample ID: 13111121-01E		D: WETCH	IEM_13112	6B	Units: pH SeqNo: 34		Analys Prep Date:	is Date: 1 1	I/26/2013 DF: 1	09:00 AM
	Sample ID: 13111121-01E		D: WETCH PQL	IEM_13112 SPK Val	6B SPK Ref Value	•	50073 Control	•	is Date: 1 1 %RPD		09:00 AM Qual
Client ID:	Sample ID: 13111121-01E	Run II		_	SPK Ref	SeqNo: 34	50073 Control	Prep Date:		DF: 1 RPD	
Client ID:		Run II	PQL	_	SPK Ref	SeqNo: 34	50073 Control	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R	157905 Instrument	ID Balance1		Method	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-11261	13-R157905				Units: mg/	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run	ID: BALAN	CE1_13112	6C	SeqNo: 345 3	3367	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	U	10.0								
LCS	Sample ID: WLCS-11261	13-R157905				Units: mg/	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run	ID: BALAN	CE1_13112	6C	SeqNo: 345 3	3368	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	1016	10.0	1000		0 102	85-115				
DUP	Sample ID: 13111054-05	CDUP				Units: mg/	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run	ID: BALAN	CE1_13112	6C	SeqNo: 345 3	3347	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Fil	213600	10.0					207500	2.9	10	
DUP	Sample ID: 13111187-01	FDUP				Units: mg/	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run	ID: BALAN	CE1_13112	6C	SeqNo: 345 3	3366	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
		4586	10.0					4570	0.349	10	
Total Dissol	ved Solids (Residue, Fil	4360	10.0								

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R	157956	Instrument ID ICS2100		Method	d: E300			(Dissolve	e)			
MBLK	Sample ID:	WBLKW2-R157956				U	nits: mg /	L	Analy	sis Date: 1	2/2/2013 (7:09 PM
Client ID:		Run	ID: ICS210	0_131202D		Sec	No: 345	4587	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	U	0.200									
LCS	Sample ID:	WLCSW2-R157956				U	nits: mg/	L	Analy	sis Date: 1	2/2/2013 (7:24 PM
Client ID:		Run	ID: ICS210	0_131202D		Sec	No: 345	4588	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	7.891	0.200	8		0	98.6	90-110				
MS	Sample ID:	13111093-01FMSZ				U	nits: mg/	L	Analy	sis Date: 1	2/2/2013 (7:53 PM
Client ID:		Run	ID: ICS210	0_131202D		Sec	No: 345	4590	Prep Date:		DF: 5	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.69	1.00	20		0	98.4	80-120				
MSD	Sample ID:	13111093-01FMSDZ				U	nits: mg/	L	Analy	sis Date: 1	2/2/2013 (08:07 PM
Client ID:		Run	ID: ICS210	0_131202D		Sec	No: 345 4	4591	Prep Date:		DF: 5	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.36	1.00	20		0	96.8	80-120	19.6	9 1.66	3 20	
The followi	ng samples w	ere analyzed in this batch		3111096- IG	13 02	31110 2G	096-					

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

Batch ID: R1	58006	Instrument ID ICS2100		Method	: E300			(Dissolve	e)			
MBLK	Sample ID:	WBLKW1-R158006				U	Inits: mg/	L	Analys	is Date: 12	2/3/2013 0	8:45 AN
Client ID:		Run ID:	ICS210	0_131203A		Se	qNo: 345	5869	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.500									
Fluoride		U	0.100									
Sulfate		U	0.500									
LCS	Sample ID:	WLCSW1-R158006				U	Inits: mg/	L	Analys	is Date: 12	2/3/2013 0	8:59 AN
Client ID:		Run ID:	ICS210	0_131203A		Se	qNo: 345	5870	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		21.69	0.500	20		0	108	90-110				
Fluoride		4.341	0.100	4		0	109	90-110				
Sulfate		20.81	0.500	20		0	104	90-110				
MS	Sample ID:	13111096-02FMS				U	Inits: mg/	L	Analys	is Date: 12	2/3/2013 1	1:28 AN
Client ID: MV	W-118	Run ID:	ICS210	0_131203A		Se	qNo: 345	5875	Prep Date:		DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		1174	50.0	1000	65.7	73	111	80-120				
Fluoride		210.9	10.0	200	4.3	37	103	80-120				
Sulfate		3421	50.0	1000	246	67	95.5	80-120				
MSD	Sample ID:	13111096-02FMSD				U	Inits: mg/	L	Analys	is Date: 12	2/3/2013 1	1:42 AN
Client ID: MV	W-118	Run ID:	ICS210	0_131203A		Se	qNo: 345	5876	Prep Date:		DF: 10	0
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		1177	50.0	1000	65.7	73	111	80-120	1174	0.221	20	
Fluoride		211.2	10.0	200	4.3	37	103	80-120	210.9		20	
Sulfate		3428	50.0	1000	246	67	96.1	80-120	3421	0.2	20	

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

Note:

Client: Navajo Refining Company

Work Order: 13111096

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R	158074 Instrument ID Gall01		Method	d: M4500	CN E&G	(Dissolve	9)			
MBLK	Sample ID: MB-R158074-R158074				Units: mg	/L	Analysi	s Date: 1	2/3/2013 (8:45 AM
Client ID:	Run I	D: GALL0	1_131203B		SeqNo: 345	7369	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	0.0200								
LCS	Sample ID: LCS-R158074-R158074				Units: mg	/L	Analysi	s Date: 1	2/3/2013 ()8:45 AM
Client ID:	Run I	D: GALLO	1_131203B		SeqNo: 345	7370	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.1872	0.0200	0.2		0 93.6	80-120				
LCSD	Sample ID: WLCSDW1120313-R158074	l			Units: mg	/L	Analysi	s Date: 1	2/3/2013 (8:45 AM
Client ID:										
Cilent ib.	Run I	D: GALLO	1_131203B		SeqNo: 345	7378	Prep Date:		DF: 1	
Analyte	Run I Result	D: GALL0 PQL	1_131203B SPK Val	SPK Ref Value	SeqNo: 345 %REC	Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
					·	Control	RPD Ref	%RPD 2.36	RPD Limit	Qual
Analyte	Result	PQL	SPK Val		%REC	Control Limit 80-120	RPD Ref Value	2.36	RPD Limit	
Analyte Cyanide	Result 0.1917 Sample ID: 13111251-01ams	PQL 0.0200	SPK Val		%REC 0 95.9	Control Limit 80-120	RPD Ref Value	2.36	RPD Limit	
Analyte Cyanide MS	Result 0.1917 Sample ID: 13111251-01ams	PQL 0.0200	SPK Val		%REC 0 95.9 Units: mg .	Control Limit 80-120	RPD Ref Value 0.1872 Analysi	2.36	RPD Limit 20 2/3/2013 (
Analyte Cyanide MS Client ID:	Result 0.1917 Sample ID: 13111251-01ams Run I	PQL 0.0200 D: GALL0	SPK Val 0.2 1_131203B	Value SPK Ref	%REC 0 95.9 Units: mg. SeqNo: 345 %REC	Control Limit 80-120 /L 7374 Control	RPD Ref Value 0.1872 Analysi Prep Date: RPD Ref	2.36 s Date: 1	RPD Limit 5 20 2/3/2013 (DF: 1 RPD	08:45 AM

Date: 07-Jan-14 **ALS Environmental**

Client: Navajo Refining Company **QUALIFIERS, Project: RO** Discharge Sampling **ACRONYMS, UNITS**

WorkOrder: 13111096

pH Units

Qualifier	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program
Units Reported	Description
°C	Celsius degrees
mg/L	Milligrams per Liter

Sample Receipt Checklist

Client Name:	NAVAJO REFINING			[Date/Time	Received:	<u>21-</u> l	Nov-13	<u>09:15</u>	
Work Order:	<u>13111096</u>			F	Received b	y:	NDI	<u>R</u>		
Checklist comple	eted by Lohnnu B. Wlen eSignature	22	2-Nov-13 Date	Revi	ewed by:	Bethany	Men) Daniel		27-Nov-13 Date
Matrices: Carrier name:	water FedEx Priority Overnight									
Shipping contain	ner/cooler in good condition?		Yes	✓	No 🗌	Not Pi	resent			
Custody seals in	ntact on shipping container/coole	er?	Yes	✓	No 🗌	Not Pr	esent			
Custody seals in	ntact on sample bottles?		Yes		No 🗌	Not Pr	resent	✓		
Chain of custody	y present?		Yes	✓	No 🗌					
Chain of custody	y signed when relinquished and	received?	Yes	✓	No \square					
Chain of custody	y agrees with sample labels?		Yes	✓	No \square					
Samples in prop	per container/bottle?		Yes	✓	No \square					
Sample containe	ers intact?		Yes	✓	No \square					
Sufficient sample	e volume for indicated test?		Yes	✓	No 🗌					
All samples rece	eived within holding time?		Yes	✓	No \square					
Container/Temp	Blank temperature in compliand	ce?	Yes	✓	No 🗌					
Temperature(s)/	Thermometer(s):		1.9 C/	1.9 C u/c			IR 1			
Cooler(s)/Kit(s):			<u>3139</u>							
Date/Time samp	ole(s) sent to storage:			13 07:05						
Water - VOA via	als have zero headspace?		Yes		No 🗀	No VOA v	ials sub	mitted		
Water - pH acce	eptable upon receipt?		Yes	✓	No 🗌	N/A]			
pH adjusted? pH adjusted by:			Yes -		No 🗸	N/A				
Login Notes:	Trip Blank logged in w/out to	est codes								
							=			
Client Contacted	d:	Date Contacted:			Person	Contacted	:			
Contacted By:		Regarding:								
Comments:										
CorrectiveAction	1:									
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Cincinnati, OH +1 513 733 5336

Everett, WA +1 425 356 2600

Holland, MI +1 616 399 6070 Fort Collins, CO +1 970 490 1511

Chain of Custody Form

õ Page

94265 COC ID:

ALS Project Manager:

13111096

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

VOC ,

⋖

Project Name RO Discharge/Sampling

Project Information

Customer Information

Purchase Order

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Work Order		. Project Number	mber			Ω.		GRO (8015M)				THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COL		
Company Name	Navajo Refining Company	Bill To Company	30000	Navajo Refining Company	ıamy	O		DRO, ORO (8015M) LVI	7015M) L.	4				
Send Report To	Robert Combs	Invoice Attn	100.00	Robert Combs		0		LL SVOC (8270) NM GW List	70) NIM G	A List	***************************************			
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Phone	(575) 746-5382	<u>a</u>	Phone (575) 7	(575) 746-5382		Ι		pH, TDS	**************************************			***		A STEM THAT IS A PART A STATE A STATE OF THE
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No.	Sample Description	Date	Time	Matrix	Pres, #	# Bottles	A B	0	Q	ш	Ö	I	2	Hold
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Sampler(s) Please Print & Sign	Print & Sign S	Shipme	Shipment Method	Require	Required Turnaround Time: (Check Box)	Time: Che	ick Box)		Other 2 took Days 28 Hour	28 Hore	100 (50 kg)	Results Due Date:	e Date:	-
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Relinquished by:	Date:	Time:	Received by (Laboratory):	yoratom):	7		Cooler ID		Cooler Temp: QC Package: (Check One Box Below)	QC Packa	ge: (Check	k One Box	Below)	
										Į			í	

34 of 48

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.

TRRP ChockList

Level III Std OC
Level III Std OC/Raw Data

Level IV SW846/CLP

Other / EDD

9-5035

8-4°C

7-Other

6-NaHSO,

5-Na₂S₂O₃

4-NaOH

3-H2SO4

2-HNO3

1-HCI

Preservative Key:

Time:

Date:

Logged by (Laboratory):

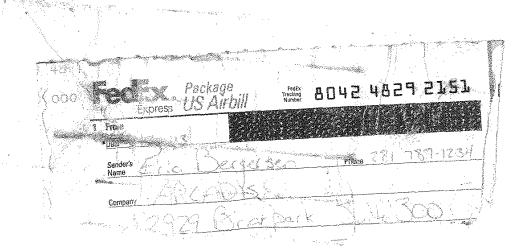
9.15.



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

31	cus	TODY SEAL	The state of the s	
	ate: 11/20/13	Time: /5/27		Seal Broken By:
E	ame: <u>Ecie Ser</u> ompany:	gegen		, Qate: /
	ompany:	A STACADA		11/2/17

3139 -19:





December 16, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re: ALS Workorder: 13-11-471

Project Name: None Submitted Project Number: 13111096

Dear Ms. West:

Two water samples were received from ALS Environmental on November 25, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental' Jeff Kujawa

Project Manager

JRK/jl

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 🤼



1311471

Case Narrative

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

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.

ALS Laborate	ory Certifications
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nebraska	NE-OS-24-13
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)	CO01099
Washington	C1280

Sample Number(s) Cross-Reference Table

OrderNum: 1311471

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 13111096 Client PO Number: 10-13111096

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-117	1311471-1		WATER	20-Nov-13	14:30
MW-118	1311471-2		WATER	20-Nov-13	13:00

Subcontractor: ALS Environmental

225 Commerce Drive

Fort Collins, CO 80524

TEL: FAX:

(800) 443-1511 (970) 490-1522 Acct #:

CHAIN-OF-CUSTODY RECORD Date: 22-Nov-13 COCID: 15486 Due Date 05-Dec-13

ALS Group US Accounts Pay 10450 Stanclif Houston, Texa (281) 530-565 (281) 530-565 (281) 530-588 jumoke, lawal@ on Date 24hr /2013 14:30	Purchase Order Work Order	Salesperson Customer Information r 10-13111096	Houston House Acct Project Name	Project Information 13111096	Parameter/Method Request for Analysis A Radium 226 228 Sub to ALS Ft. Collins
West Inv Attn Accounts Payable D	pany Name	ALS Group USA, Corp.	Bill To Company		, , , , , , , , , , , , , , , , , , , ,
O Stancliff Rd, Suite 210 Address 10450 Stancliff Rd, Suite 210 E	Report To	Sonia West	Inv Attn	Accounts Payable	
Sign	988	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	
1500-5656	i				
530-5656	tate/zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	9
1.300-5887 Fax (281) 530-5887 I 1. West@alsglobal.com eMail CC jumoke.lawal@alsglobal.com J Matrix Collection Date 24hr Bottle A B C D E Water 20/Nov/2013 13:00 (2) 1LPHNO3 X Water 20/Nov/2013 13:00 (2) 1 PHNO3 V	•	(281) 530-5656	Phone	(281) 530-5656	
a. West@alsglobal.com Amatrix Collection Date 24hr Bottle A B C D E Water 20/Nov/2013 14:30 (2) 1LPHNO3 X Water 20/Nov/2013 13:00 (2) 1 PHNO3 X		(281) 530-5887	Fax	(281) 530-5887	
Matrix Collection Date 24hr Bottle A B C D E (3) Water 20/Nov/2013 13:00 (2) 11 PHNO3 X	Address	Sonia.West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	
(1) Water 20/Nov/2013 14:30 (2) 1LPHNO3 X (2) Water 20/Nov/2013 13:00 (2) 11 PHNO3 X	Sample ID		ĺ	on Date 24hr Bottle	
(J) Water 20/Nov/2013 13:00	1096-011 (MV	-117)	-	L	
	1096-021 (MW	-118)			X

Report/QC Level Std Cooler IDs Date/Time Received by: WO 13111096- Please analyze for Radium 226/228 Date/Time Comments: Religioushed by: Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

هم)	XLS)	Client:	ALC	TV		Worko	rder No:	1311	471		
	Project N	-	<u>. 110)</u> .	T12/<			Initials:	JR	Date:	1125/13	
ı Do	es this nro	niect requi	ire any spe	cial handling	in addition to sta	ndard ALS proc	edures?			YES	_ (i)_
				containers					NONE	YES	NO.
				containers i					NONE	YES	.NO
					nt or other repre	sentative docu	ments?			₹Ê S	NO
					and legible?					(ES	NO
					ceived? (IDs, da	tes times no o	of sample	s. no. of			
		_		analyses, et		tes, times, no. e	/	,		&E3	NO
					nt and/or remov	able?			DROP OFF	(YE)	NO
8. Ar	e all aqueo	ous sampl	es requirin	g preservatio	n preserved corre	ctly? (excluding	volatiles)	N/A	(FES)	NO
9. Ar	e all aque	eous non	-preserve	d samples p	H 4-9?			-	(√A)	YES	NO
10. Is 1	there suff	ficient sa	mple for	the requeste	d analyses?					(ES)	NO
t					ntainers for the i	equested analy	yses?			(ES)	NO
					the requested an					(ES	NO
		<u> </u>			ct? (not broken		.)			(Ès	NO
1	e all sam adspace f	-	-		VOC, GRO, RS _ < green pea	K/MEE, Rx Cl > greer		on)	(N/A	YES	NO
				sediment?				mount	N/A	YES	(NO)
Ап	nount of	sediment	t:dı	usting	moderate	heavy					
16. W (ere the sa	mples sh	nipped on	ice?			<u>-</u>		· /	YES	<u>Ø</u>
17. W (ere coole	r temper	atures me	asured at 0.	1-6.0°C?	IR gun used*:	#2	#4	(R.\D)	YES	(10)
				Cooler #:							
			Tempe	rature (°C):	AMB					 	
		No. of cu		s on cooler:	0						
	Survey/	Ε	xtemal μR	/hr reading:	13						
Infor	mation			/hr reading:	(0						
Wei	re external µ				nd within DOT accept	ance criteria? (YES	3/NO/N	A (If no, see	Form 008.)		
					LOW FOR A NO RE					D#16.	
	· 										
-											
If and	ionbla was	the aliane	contacted?	VES / NO Á	N Contact:				Date/Tim	ıe:	
					Tomaci.	11 -	15-0	<u> </u>			
Ргоје	et Manag	ger Signa	ture / Date	::	10,5	4.0	r) (/		_		
				<i>()(</i>	Cun #2: Oakton 9	N 20022500201-0	0066				

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

MET - BESMYJEHGKUKH Dap: Environmental

⊔ate: 22Nov13 ₩gt: 30.75 LBS SHIPPING: SPECIAL:

HANDLING: 0.00 TOTAL:

58.8

6.1 5.0

20.0

Svcs: PRIORITY OVERNIGHT TRCX: 5813 7984 9778

ORIGIN ID:SGRA (281) 530-5656 SHIPPING DEPT ALS LABGRATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, IX 22099 UNITED STATES US

SHIP DATE: 22NDV13 ACTWGT: 30.8 LB CAD: 300130/CAFE2704 DIMS: 26x14x14 IN

BILL SENDER

10 ROY FRENCH SAMPLE CONTROL. **ALS ENVIRONMENTAL** 225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1611

REF: BFSW/JBAGRORA

(970) 490-1611 DEPT: ENVIRONMENTAL



FedEx Express

TRK# 5813 7984 9778

MON - 25 NOV 10:30A PRIORITY OVERNIGHT

XH FTCA

80524 co-us DEN





Fatt # 156148-454 BiT2 04/13

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111096
 Work Order:
 1311471

 Sample ID:
 MW-117
 Lab ID:
 1311471-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 14:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	ATION - METHOD 903.1		PAI 783		Prep Date: 11/26/2013	B PrepBy: PJW
Ra-226	0.15 (+/- 0.1)	LT	0.1	pCi/l	NA	12/4/2013 13:06
Carr: BARIUM	95.3		40-110	%REC	NA	12/4/2013 13:06
RADIUM-228 ANALYSIS BY	Y GFPC		PAI 724		Prep Date: 12/5/2013	PrepBy: JTL
Ra-228	1.25 (+/- 0.5)		0.76	pCi/l	NA	12/10/2013 11:41
Carr: BARIUM	93.2		40-110	%REC	NA	12/10/2013 11:41

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111096
 Work Order:
 1311471

 Sample ID:
 MW-118
 Lab ID:
 1311471-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 13:00 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	ATION - METHOD 903.1		PAI 783		Prep Date: 11/26/2013	PrepBy: PJW
Ra-226	0.16 (+/- 0.11)	LT	0.09	pCi/l	NA 1	2/4/2013 13:06
Carr: BARIUM	95.2		40-110	%REC	NA 1	2/4/2013 13:06
RADIUM-228 ANALYSIS B	Y GFPC		PAI 724		Prep Date: 12/5/2013	PrepBy: JTL
Ra-228	1.23 (+/- 0.51)		0.83	pCi/l	NA 1	2/10/2013 11:41
Carr: BARIUM	94.6		40-110	%REC	NA 1	2/10/2013 11:41

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111096
 Work Order:
 1311471

 Sample ID:
 MW-118
 Lab ID:
 1311471-2

Legal Location: Matrix: WATER

Collection Date: 11/20/2013 13:00 **Percent Moisture:**

Report Dilution
Analyses Result Qual Limit Units 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.

LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

 $\ensuremath{\mathsf{H}}$ - 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
LIMS Version: 6.680

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111096
 Work Order:
 1311471

 Sample ID:
 MW-118
 Lab ID:
 1311471-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 13:00 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units 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

LIMS Version: 6.680

AR Page 4 of 4

Client: ALS Environmental

Work Order: 1311471 **Project:** 13111096

Date: 12/13/2013 4:26

QC BATCH REPORT

Batch ID: RE131126-1-2 Instrument ID: Alpha So				Alpha Scin		Method:	Ra-226 by	Radon E	Emanation - Me			
LCS	Sample ID:	RE131126-1					Units: pCi/	1	Analysi	s Date:	12/4/2013 1	3:44
Client ID:			Ru	un ID: RE131 1	126-1A				Prep Date: 11/20	6/2013	DF: N	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226			49 (+/- 12)	0	45.31		108	67-120				Р
Carr: BAR	IUM		14690		15800		93	40-110				
LCSD	Sample ID:	RE131126-1					Units: pCi/	1	Analysi	s Date:	12/4/2013 1	3:44
Client ID:			Rı	un ID: RE131 1	126-1A				Prep Date: 11/20	6/2013	DF: N	A
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226			49 (+/- 12)	0	45.31		109	67-120	49	0.0219	9 2.13	Р
Carr: BAR	IUM		15010		15800		95	40-110	14690			
МВ	Sample ID:	RE131126-1					Units: pCi/	l	Analysi	s Date:	12/4/2013 1	3:06
Client ID:			Ru	un ID: RE131 1	126-1A				Prep Date: 11/20	6/2013	DF: N	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226			ND	0.04								U
Carr: BAR	IUM		14170		15800		89.7	40-110				
		were analyze		ch: 1	15800 311471-1	131	89.7 11471-2	40-110				

QC BATCH REPORT

Client: ALS Environmental

Work Order: 1311471 **Project:** 13111096

Batch ID: R	A131204-1-2	I	nstrument ID:	:LB4100-C		Method:	Radium-2	28 Analy	sis by GFPC			
LCS	Sample ID:	RA131204-1					Units: pCi/	Ί	Analysi	is Date: 12	2/10/2013	11:01
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5/	/2013	DF: N /	A
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228			8.6 (+/- 2.2)	0.8	9.251		93.3	70-130				Р
Carr: BAR	RIUM		32650		33400		97.8	40-110				
LCSD	Sample ID:	RA131204-1					Units: pCi/	1	Analysi	is Date: 12	2/10/2013	11:01
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5/	/2013	DF: N A	A
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228			9.6 (+/- 2.4)	0.9	9.251		104	70-130	8.6	0.291	2.13	Р
Carr: BAR	RIUM		31700		33400		94.9	40-110	32650			
MB	Sample ID:	RA131204-1					Units: pCi/	1	Analysi	is Date: 12	2/10/2013	13:22
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5 /	/2013	DF: N /	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
			ND	0.64								U
Ra-228			IND	0.01								



07-Jan-2014

Robert Combs
Navajo Refining Company
PO Box 1490
Artesia, NM 88211-1490

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

Re: RO Discharge Sampling Work Order: 13111097

Dear Robert,

ALS Environmental received 3 samples on 21-Nov-2013 through 22-Nov-2013 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 48.

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

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonie West

Sonia West Project Manager ELLP ACCREONS

Certificate No: T104704231-13-12

ALS Environmental

Date: 07-Jan-14

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111097

Work Order Sample Summary

Lab Samp ID Cl	lient Sample ID	Matrix	Tag Number	Collection Date	Date Received	<u>Hold</u>
13111097-01 R	O South	Water		11/20/2013 11:00	11/21/2013 09:15	
13111097-02 M	IW-119	Water		11/20/2013 10:00	11/21/2013 09:15	
13111097-03 Tr	rip Blank 110613-88	Water		11/22/2013	11/22/2013	

ALS Environmental

Date: 07-Jan-14

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111097

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

Batch 74990B, TPH DRO/ORO 8015, Sample LLCSDW-131126: The LCSD surrogate RPD was outside of the control limits. The LCS/LCSD surrogate recoveries were within the control limits.

Batch 74937, Dissolved Metals 6020, Sample 13111133-11D: MS/MSD are for an unrelated sample.

Batch 74973, Semivolatile Organics 8270, Sample SLCSW1-131126: Insufficient sample was received for MS/MSD.

Batch R157966, Volatile Organics 8260, Sample 13111133-18A: MS/MSD are for an unrelated sample.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO South

Collection Date: 11/20/2013 11:00 AM

Work Order: 13111097

Lab ID: 13111097-01

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Met	:hod: SW8015 N	1	Prep: SW	3511 / 11/26/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	11/27/2013 07:23
TPH (Oil Range)	U		0.042	0.11	mg/L	1	11/27/2013 07:23
Surr: 2-Fluorobiphenyl	114			60-135	%REC	1	11/27/2013 07:23
GASOLINE RANGE ORGANICS - SW8015	С	Met	:hod: SW8015				Analyst: DNR
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	11/25/2013 20:07
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	11/25/2013 20:07
DISSOLVED METALS		Met	:hod: SW6020		Prep: SW	3010A / 11/25/13	Analyst: JCJ
Aluminum	0.0567		0.0040	0.0100	mg/L	1	11/26/2013 02:31
Arsenic	0.00125	J	0.0010	0.00500	mg/L	1	11/26/2013 02:31
Barium	0.0533		0.00090	0.00500	mg/L	1	11/26/2013 02:31
Boron	0.109		0.020	0.0500	mg/L	1	11/27/2013 17:17
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 02:31
Calcium	459		0.86	5.00	mg/L	10	11/26/2013 19:47
Chromium	U		0.0010	0.00500	mg/L	1	11/26/2013 02:31
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 02:31
Copper	0.00218	J	0.0010	0.00500	mg/L	1	11/26/2013 02:31
Iron	0.113	J	0.078	0.200	mg/L	1	11/26/2013 20:06
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 02:31
Manganese	0.0111		0.0025	0.00500	mg/L	1	11/26/2013 02:31
Molybdenum	0.00815		0.0015	0.00500	mg/L	1	11/26/2013 02:31
Nickel	0.00127	J	0.0010	0.00500	mg/L	1	11/26/2013 02:31
Potassium	3.04		0.084	0.200	mg/L	1	11/26/2013 02:31
Selenium	0.00481	J	0.0010	0.00500	mg/L	1	11/26/2013 02:31
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 20:06
Sodium	83.9		0.085	0.200	mg/L	1	11/26/2013 20:06
Uranium	U		0.0050	0.00500	mg/L	1	11/26/2013 20:06
Zinc	0.00909		0.0025	0.00500	mg/L	1	11/26/2013 02:31
LOW-LEVEL SEMIVOLATILES		Met	:hod: SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:43
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 15:43
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 15:43
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 15:43
Surr: 2,4,6-Tribromophenol	58.6			34-129	%REC	1	11/26/2013 15:43
Surr: 2-Fluorobiphenyl	68.4			40-125	%REC	1	11/26/2013 15:43
Surr: 2-Fluorophenol	54.3			20-120	%REC	1	11/26/2013 15:43
Surr: 4-Terphenyl-d14	77.4			40-135	%REC	1	11/26/2013 15:43
Surr: Nitrobenzene-d5	57.3			41-120	%REC	1	11/26/2013 15:43

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: RO South

Collection Date: 11/20/2013 11:00 AM

Date: 07-Jan-14

Work Order: 13111097

Lab ID: 13111097-01

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Phenol-d6	54.1			20-120	%REC	1	11/26/2013 15:43
LOW LEVEL VOLATILES - SW8260C		Meth	nod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 02:22
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 02:22
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 02:22
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 02:22
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 02:22
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 02:22
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 02:22
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 02:22
Surr: 1,2-Dichloroethane-d4	123			71-125	%REC	1	12/3/2013 02:22
Surr: 4-Bromofluorobenzene	114			70-125	%REC	1	12/3/2013 02:22
Surr: Dibromofluoromethane	118			74-125	%REC	1	12/3/2013 02:22
Surr: Toluene-d8	114			75-125	%REC	1	12/3/2013 02:22
MISCELLANEOUS ANALYSIS		Meth	nod: NA				Analyst: SUB
	See Attached		0			1	1/7/2014
ANIONS - EPA 300.0 (1993)		Meth	nod: E300				Analyst: JKP
Chloride	134		10	25.0	mg/L	50	12/4/2013 15:11
Fluoride	2.67		0.050	0.100	mg/L	1	12/4/2013 13:03
Sulfate	1,240		10	25.0	mg/L	50	12/4/2013 15:11
Nitrate/Nitrite (as N)	1.06		0.15	1.00	mg/L	5	12/2/2013 22:47
CYANIDE - SM4500CN E		Meth	nod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Meth	nod: SM4500H	+ B			Analyst: KL
рН	7.54	Н	0.10	0.100	pH Units	1	11/26/2013 09:00
Temp Deg C @pH	20.5	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 13111097

 Sample ID:
 RO South
 Lab ID: 13111097-01

 Collection Date:
 11/20/2013 11:00 AM
 Matrix: WATER

Report Dilution **Date Analyzed** Limit Analyses MDL **Factor** Result Qual Units Total Dissolved Solids (Residue, 10.0 11/26/2013 17:30 2,770 5.0 mg/L Filterable)

Date: 07-Jan-14

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 11/20/2013 10:00 AM

Work Order: 13111097

Lab ID: 13111097-02

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	thod: SW8015N	1	Prep: SW	3511 / 11/26/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	11/27/2013 08:41
TPH (Oil Range)	U		0.042	0.11	mg/L	1	11/27/2013 08:41
Surr: 2-Fluorobiphenyl	88.9			60-135	%REC	1	11/27/2013 08:41
GASOLINE RANGE ORGANICS - SW8015	С	Me	thod: SW8015				Analyst: DNR
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	11/25/2013 20:25
Surr: 4-Bromofluorobenzene	98.8			70-130	%REC	1	11/25/2013 20:25
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 11/25/13	Analyst: JCJ
Aluminum	0.0149		0.0040	0.0100	mg/L	1	11/26/2013 02:36
Arsenic	0.00438	J	0.0010	0.00500	mg/L	1	11/26/2013 02:36
Barium	0.00973		0.00090	0.00500	mg/L	1	11/26/2013 02:36
Boron	0.219		0.020	0.0500	mg/L	1	11/27/2013 17:19
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 02:36
Calcium	551		0.86	5.00	mg/L	10	11/26/2013 19:52
Chromium	0.00116	J	0.0010	0.00500	mg/L	1	11/26/2013 02:36
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 02:36
Copper	0.00311	J	0.0010	0.00500	mg/L	1	11/26/2013 02:36
Iron	0.185	J	0.078	0.200	mg/L	1	11/26/2013 20:11
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 02:36
Manganese	0.00459	J	0.0025	0.00500	mg/L	1	11/26/2013 02:36
Molybdenum	0.00861		0.0015	0.00500	mg/L	1	11/26/2013 02:36
Nickel	0.00222	J	0.0010	0.00500	mg/L	1	11/26/2013 02:36
Potassium	1.10		0.084	0.200	mg/L	1	11/26/2013 02:36
Selenium	0.00144	J	0.0010	0.00500	mg/L	1	11/26/2013 02:36
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 20:11
Sodium	98.8		0.085	0.200	mg/L	1	11/26/2013 20:11
Uranium	0.0213		0.0050	0.00500	mg/L	1	11/26/2013 20:11
Zinc	0.0241		0.0025	0.00500	mg/L	1	11/26/2013 02:36
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 16:02
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 16:02
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 16:02
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 16:02
Surr: 2,4,6-Tribromophenol	37.8			34-129	%REC	1	11/26/2013 16:02
Surr: 2-Fluorobiphenyl	45.6			40-125	%REC	1	11/26/2013 16:02
Surr: 2-Fluorophenol	35.9			20-120	%REC	1	11/26/2013 16:02
Surr: 4-Terphenyl-d14	62.5			40-135	%REC	1	11/26/2013 16:02
Surr: Nitrobenzene-d5	42.7			41-120	%REC	1	11/26/2013 16:02

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-119

Collection Date: 11/20/2013 10:00 AM

Work Order: 13111097

Lab ID: 13111097-02

Date: 07-Jan-14

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Phenol-d6	35.2			20-120	%REC	1	11/26/2013 16:02
LOW LEVEL VOLATILES - SW8260C		Metho	d: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 02:47
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 02:47
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 02:47
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 02:47
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 02:47
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 02:47
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 02:47
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 02:47
Surr: 1,2-Dichloroethane-d4	122			71-125	%REC	1	12/3/2013 02:47
Surr: 4-Bromofluorobenzene	114			70-125	%REC	1	12/3/2013 02:47
Surr: Dibromofluoromethane	118			74-125	%REC	1	12/3/2013 02:47
Surr: Toluene-d8	114			75-125	%REC	1	12/3/2013 02:47
MISCELLANEOUS ANALYSIS		Metho	d:NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	1/7/2014
ANIONS - EPA 300.0 (1993)		Metho	d: E300				Analyst: JKP
Chloride	185		10	25.0	mg/L	50	12/4/2013 16:33
Fluoride	3.17		0.050	0.100	mg/L	1	12/4/2013 13:17
Sulfate	2,210		10	25.0	mg/L	50	12/4/2013 16:33
Nitrate/Nitrite (as N)	U		0.15	1.00	mg/L	5	12/2/2013 23:02
CYANIDE - SM4500CN E Method: M4500CN E&G							Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Metho	d: SM4500 H	l+ B			Analyst: KL
pH	6.87	Н	0.10	0.100	pH Units	1	11/26/2013 09:00
Temp Deg C @pH	20.7	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Metho	d: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 13111097

 Sample ID:
 MW-119
 Lab ID:
 13111097-02

 Collection Date:
 11/20/2013 10:00 AM
 Matrix:
 WATER

Report Dilution **Date Analyzed** Limit Analyses MDL **Factor** Result Qual Units Total Dissolved Solids (Residue, 4,130 10.0 11/26/2013 17:30 5.0 mg/L Filterable)

Date: 07-Jan-14

Work Order: 13111097

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sam	ple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
Batch ID 749	9 <u>37</u>	Test Name:	Dissolved Metals					
13111097-01E I	RO South		Water	11/20/2013 11:00:00 AM		11/25/2013 10:00 AM	11/26/2013 02:31 AM	
						11/25/2013 10:00 AM	11/26/2013 07:47 PM	
						11/25/2013 10:00 AM	11/26/2013 08:06 PM	
						11/25/2013 10:00 AM	11/27/2013 05:17 PM	
13111097-02E I	MW-119			11/20/2013 10:00:00 AM		11/25/2013 10:00 AM	11/26/2013 02:36 AM	
						11/25/2013 10:00 AM	11/26/2013 07:52 PM	
						11/25/2013 10:00 AM	11/26/2013 08:11 PM	
						11/25/2013 10:00 AM	11/27/2013 05:19 PM	
Batch ID 749	<u>973</u>	Test Name:	Low-Level Semiv	<u>volatiles</u>				
13111097-01 I	RO South		Water	11/20/2013 11:00:00 AM		11/26/2013 07:34 AM	11/26/2013 03:43 PM	
13111097-02	MW-119			11/20/2013 10:00:00 AM		11/26/2013 07:34 AM	11/26/2013 04:02 PM	
Batch ID 749	990 <u>B</u>	Test Name:	TPH DRO/ORO	8015C				
13111097-01 I	RO South		Water	11/20/2013 11:00:00 AM		11/26/2013 01:33 PM	11/27/2013 07:23 AM	
3111097-02 I	MW-119			11/20/2013 10:00:00 AM		11/26/2013 01:33 PM	11/27/2013 08:41 AM	
Batch ID R1:	<u>57757</u>	Test Name:	Gasoline Range C	Organics - SW8015C				
13111097-01 I	RO South		Water	11/20/2013 11:00:00 AM			11/25/2013 08:07 PM	
13111097-02 I	MW-119			11/20/2013 10:00:00 AM			11/25/2013 08:25 PM	
Batch ID R1:	<u>57787</u>	Test Name:	<u>pH - SM4500H+</u>	<u>B</u>				
13111097-01F I	RO South		Water	11/20/2013 11:00:00 AM			11/26/2013 09:00 AM	
13111097-02F 1	MW-119			11/20/2013 10:00:00 AM			11/26/2013 09:00 AM	

DATES REPORT

Work Order: 13111097

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID F	R157905 <u>Test Na</u>	ame: Total Dissolved S	<u>Solids</u>			
13111097-01F	RO South	Water	11/20/2013 11:00:00 AM			11/26/2013 05:30 PM
13111097-02F	F MW-119		11/20/2013 10:00:00 AM			11/26/2013 05:30 PM
Batch ID E	R157956 Test Na	ame: Anions - EPA 30	0.0 (1993)			
13111097-01	RO South	Water	11/20/2013 11:00:00 AM			12/2/2013 10:47 PM
13111097-02	MW-119		11/20/2013 10:00:00 AM			12/2/2013 11:02 PM
Batch ID E	R157966 Test Na	ame: Low Level Volati	les - SW8260C			
13111097-01	RO South	Water	11/20/2013 11:00:00 AM			12/3/2013 02:22 AM
13111097-02	MW-119		11/20/2013 10:00:00 AM			12/3/2013 02:47 AM
Batch ID E	R158074 Test Na	ame: Cyanide - SM450	<u>0CN E</u>			
13111097-01	RO South	Water	11/20/2013 11:00:00 AM			12/3/2013 08:45 AM
13111097-02	MW-119		11/20/2013 10:00:00 AM			12/3/2013 08:45 AM
Batch ID E	R158112 Test Na	ame: Anions - EPA 30	0.0 (1993)			
13111097-01F	RO South	Water	11/20/2013 11:00:00 AM			12/4/2013 01:03 PM
						12/4/2013 03:11 PM
13111097-02F	7 MW-119		11/20/2013 10:00:00 AM			12/4/2013 01:17 PM
						12/4/2013 04:33 PM
Batch ID E	R159590 Test Na	ame: Miscellaneous Ar	nalysis			
13111097-01I	RO South	Water	11/20/2013 11:00:00 AM			1/7/2014
13111097-02I	MW-119		11/20/2013 10:00:00 AM			1/7/2014

DATES REPORT

Date: 07-Jan-14

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: 74990B	Instrument ID FID-16		Metho	d: SW80 1	5M							
MBLK Sample ID:	LBLKW-131126-74990B	1990B				Jnits: mg/	L	Analysis Date: 11/27/2013 03:29 AM				
Client ID:	Run I	Run ID: FID-16_131126A		SeqNo: 3457741			7741	Prep Date: 11/26/2013			DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
TPH (Diesel Range)	U	0.050										
TPH (Oil Range)	U	0.10										
Surr: 2-Fluorobiphenyl	0.07386	0.0050	0.06061		0	122	60-135	0				
LCS Sample ID:	LLCSW-131126-74990B				L	Jnits: mg/	L	Analysi	s Date: 11	/27/2013	03:55 AM	
Client ID:	Run I	ID: FID-16_131126A			SeqNo: 3457742			Prep Date: 11/2	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
TPH (Diesel Range)	0.5893	0.050	0.6061		0	97.2	70-130					
TPH (Oil Range)	0.5302	0.10	0.6061		0	87.5	70-130					
Surr: 2-Fluorobiphenyl	0.07808	0.0050	0.06061		0	129	60-135	0				
LCSD Sample ID:	LLCSDW-131126-74990B				L	Jnits: mg/	L	Analysi	s Date: 11	/27/2013	04:21 AM	
Client ID:	Run I	ID: FID-1 6	5_131126A	SeqNo: 3457743		7743	Prep Date: 11/2	6/2013	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
TPH (Diesel Range)	0.5356	0.050	0.6061		0	88.4	70-130	0.5893	9.55	20		
TPH (Oil Range)	0.5714	0.10	0.6061		0	94.3	70-130	0.5302	7.49	20		
Surr: 2-Fluorobiphenyl	0.05932	0.0050	0.06061		0	97.9	60-135	0.07808	27.3	20	R	
The following samples v	were analyzed in this batch:		3111097- 01C	13 02		097-						

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

Note:

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R157757	Instrument ID FID-9		Metho	d: SW801	5						
MBLK Sample ID): GBLKW1-131125-R1577	'57			Uı	nits: mg/	L	Analy	sis Date: 11	1/25/2013	01:46 PN
Client ID:	R	un ID: FID-9 _	131125A		Sec	No: 344 9	9261	Prep Date:		DF: 1	
				SPK Ref			Control	RPD Ref		RPD Limit	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	Limit	Qual
Gasoline Range Organio	U U	0.0500									
Surr: 4-Bromofluorobe	enzene 0.1047	0.00500	0.1		0	105	70-130	()		
LCS Sample ID): GLCSW1-131125-R1577	57			U	nits: mg/	L	Analy	sis Date: 11	1/25/2013	12:36 PM
Client ID:	R	un ID: FID-9 _	131125A		Sec	No: 344 9	9259	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organic	cs 0.9583	0.0500	1		0	95.8	70-130				
Surr: 4-Bromofluorobe	enzene 0.1087	0.00500	0.1		0	109	70-130	()		
MS Sample ID): 13111127-04BMS				Uı	nits: mg/	L	Analy	sis Date: 11	1/25/2013	09:01 PM
Client ID:	R	un ID: FID-9 _	131125A		Sec	No: 344 9	9275	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organio	os 0.9683	0.0500	1		0	96.8	70-130				
Surr: 4-Bromofluorobe	enzene 0.1012	0.00500	0.1		0	101	70-130	()		
MSD Sample ID): 13111127-04BMSD				U	nits: mg/ l	L	Analy	sis Date: 11	1/25/2013	09:19 PM
Client ID:	R	un ID: FID-9 _	131125A		Sec	No: 344 9	9276	Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organio	cs 0.9651	0.0500	1		0	96.5	70-130	0.9683	3 0.326	30	
0 0											
Surr: 4-Bromofluorobe	enzene 0.1021	0.00500	0.1		0	102	70-130	0.1012	2 0.868	30	

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05		Method	SW602	20	(Dissolv	e)			
MBLK	Sample ID: MBLKW5-112513-74937				Units: mg/	L	Analy	sis Date: 1	1/27/2013	04:48 PM
Client ID:	Rur	n ID: ICPMS	05_131127A		SeqNo: 345 2	2534	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0100								
Arsenic	U	0.00500								
Barium	U	0.00500								
Boron	U	0.0500								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00500								
Cobalt	U	0.00500								
Copper	U	0.00500								
Iron	U	0.200								
Lead	U	0.00500								·
Manganese	U	0.00500								
Molybdenum	U	0.00500								·
Nickel	U	0.00500								
Potassium	U	0.200								
Selenium	U	0.00500								
Silver	U	0.00500								
Sodium	0.09841	0.200								J
Uranium	U	0.00500								
Zinc	U	0.00500								

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05		Method	: SW6020)		(Dissolve	e)			
LCS	Sample ID: MLCSW5-112513-74937				Ur	nits: mg /	L	Analy	/sis Date: 1	1/26/2013	02:07 AN
Client ID:	Ru	n ID: ICPMS	04_131125A	Ī	Seq	No: 344 9	9183	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
· · · · · · · · · · · · · · · · · · ·									701 CI D		Quui
Aluminum	0.102	0.0100	0.1		0	102	80-120				
Arsenic	0.05014 0.05287	0.00500	0.05		0	100	80-120 80-120				
Barium Cadmium	0.05267	0.00300	0.05		0	100	80-120				
Chromium	0.03071	0.00200	0.05		0	98.3	80-120				
Cobalt	0.04899	0.00500	0.05		0	98	80-120				
Copper	0.0494	0.00500	0.05		0	98.8	80-120				
Lead	0.0477	0.00500	0.05		0	95.4	80-120				
Manganese	0.0517	0.00500	0.05		0	103	80-120				
Molybdenum	0.04833	0.00500	0.05		0	96.7	80-120				
Nickel	0.0491	0.00500	0.05		0	98.2	80-120				
Potassium	4.584	0.200	5	(0	91.7	80-120				
Selenium	0.05055	0.00500	0.05	(0	101	80-120				
Zinc	0.0526	0.00500	0.05	(0	105	80-120				
LCS	Sample ID: MLCSW5-112513-74937				Ur	nits: mg/	L	Analy	/sis Date: 1	1/26/2013	04:49 PN
Client ID:	Ru	n ID: ICPMS	04_131126A		Seq	No: 345 2	2022	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.2	0.500	5	(0	104	80-120				
Iron	5.14	0.200	5		0	103	80-120				
Silver	0.04833	0.00500	0.05		0	96.7	80-120				
Sodium	4.836	0.200	5		0	96.7	80-120				
Uranium	0.09245	0.00500	0.1	(0	92.4	80-120				
LCS	Sample ID: MLCSW5-112513-74937				Ur	nits: mg/	L	Analy	/sis Date: 1	1/27/2013	04:50 PN
Client ID:	Ru	n ID: ICPMS	05_131127A		Seq	No: 345 2	2535	Prep Date: 11	/25/2013	DF: 1	
				SPK Ref			Control	RPD Ref		RPD Limit	
Analyte	Result	PQL	SPK Val	Value		%REC	Limit	Value	%RPD	LIIIII	Qual
Boron	0.4788	0.0500	0.5	(0	95.8	80-120				

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 74937	Instrument ID ICPMS05		Method:	SW6020		(Dissolve	e)			
MS Sar	mple ID: 13111133-11DMS				Units: mg /	L	Anal	/sis Date: 1	1/27/2013	04:57 PM
Client ID:	Ru	n ID: ICPMS	05_131127A	s	eqNo: 345 2	2538	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.116	0.0100	0.1	0.005542	110	75-125				
Arsenic	0.08293	0.00500	0.05	0.03331	99.2	75-125				
Barium	0.6868	0.00500	0.05	0.6627	48.2	75-125				SO
Boron	0.6871	0.0500	0.5	0.2289	91.6	75-125				
Cadmium	0.0525	0.00200	0.05	0.00034	104	75-125				
Calcium	217	0.500	5	224.4	-147	75-125				SEO
Chromium	0.05293	0.00500	0.05	0.001062	104	75-125				
Cobalt	0.05193	0.00500	0.05	0.000403	103	75-125				
Copper	0.05102	0.00500	0.05	-0.000985	104	75-125				
Iron	50.17	0.200	5	46.79	67.6	75-125				SO
Lead	0.05385	0.00500	0.05	0.000599	106	75-125				
Manganese	1.895	0.00500	0.05	1.901	-11	75-125				SEO
Molybdenum	0.05397	0.00500	0.05	0.002996	102	75-125				
Nickel	0.05185	0.00500	0.05	0.00082	102	75-125				
Potassium	11.36	0.200	5	6.616	95	75-125				
Selenium	0.05608	0.00500	0.05	-0.000761	114	75-125				
Silver	0.05374	0.00500	0.05	0.000201	107	75-125				
Sodium	23.18	0.200	5	19.16	80.3	75-125				
Uranium	0.1036	0.00500	0.1	0.000808	103	75-125				
Zinc	0.05467	0.00500	0.05	0.003439	102	75-125				

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 749	937 Instrument ID IC	PMS05		Method	: SW6020		(Dissolve	e)			
MSD	Sample ID: 13111133-11DMS	D				Units: mg/	L	Analysi	s Date: 11	/27/2013	05:00 PM
Client ID:		Run	ID: ICPMS	05_131127A	S	eqNo: 345 2	2539	Prep Date: 11/2	5/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	(0.2342	0.0100	0.1	0.005542	229	75-125	0.116	67.5	25	SR
Arsenic	0.	.08694	0.00500	0.05	0.03331	107	75-125	0.08293	4.72	25	
Barium	(0.7052	0.00500	0.05	0.6627	84.9	75-125	0.6868	2.64	25	0
Boron	(0.6994	0.0500	0.5	0.2289	94.1	75-125	0.6871	1.77	25	
Cadmium	0.	.05189	0.00200	0.05	0.00034	103	75-125	0.0525	1.16	25	
Calcium		222	0.500	5	224.4	-47.3	75-125	217	2.26	25	SEO
Chromium	0.	.05579	0.00500	0.05	0.001062	109	75-125	0.05293	5.26	25	
Cobalt	0.	.05259	0.00500	0.05	0.000403	104	75-125	0.05193	1.26	25	
Copper	0.	.05331	0.00500	0.05	-0.000985	109	75-125	0.05102	4.4	25	
Iron		51.84	0.200	5	46.79	101	75-125	50.17	3.29	25	Ο
Lead	0.	.05621	0.00500	0.05	0.000599	111	75-125	0.05385	4.28	25	
Manganese		1.942	0.00500	0.05	1.901	83.1	75-125	1.895	2.45	25	EO
Molybdenum	0.	.05606	0.00500	0.05	0.002996	106	75-125	0.05397	3.79	25	
Nickel	0.	05346	0.00500	0.05	0.00082	105	75-125	0.05185	3.06	25	
Potassium		11.74	0.200	5	6.616	102	75-125	11.36	3.25	25	
Selenium	0.	.05687	0.00500	0.05	-0.000761	115	75-125	0.05608	1.39	25	
Silver	0.	.05433	0.00500	0.05	0.000201	108	75-125	0.05374	1.1	25	
Sodium		23.42	0.200	5	19.16	85.1	75-125	23.18	1.02	25	
Uranium	(0.1052	0.00500	0.1	0.000808	104	75-125	0.1036	1.54	25	
Zinc	0.	.09266	0.00500	0.05	0.003439	178	75-125	0.05467	51.6	25	SR
DUP	Sample ID: 13111133-11DDU	P				Units: mg/	L	Analysi	s Date: 11	/26/2013	06:00 PM
Client ID:		Run	ID: ICPMS	04_131126A	S	eqNo: 345 2	2036	Prep Date: 11/2		DF: 10	
					SPK Ref		Control	RPD Ref		RPD	
Analyte		Result	PQL	SPK Val	Value	%REC	Limit	Value	%RPD	Limit	Qual
Calcium		182.6	5.00					164.8	10.3	25	
Manganese		1.556	0.0500					1.362	13.3	25	

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICPMS05		Method:	SW602	20	(Dissolv	e)			
DUP	Sample ID: 13111133-11DDUP				Units: mg/	L	Analysi	s Date: 1 1	1/27/2013	04:55 PM
Client ID:	Rui	n ID: ICPMS	05_131127A		SeqNo: 345	2537	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.006905	0.0100					0.005542	0	25	J
Arsenic	0.03154	0.00500					0.03331	5.45	25	
Barium	0.6584	0.00500					0.6627	0.657	25	
Boron	0.2266	0.0500					0.2289	1.02	25	
Cadmium	U	0.00200					0.00034	0	25	
Chromium	U	0.00500					0.001062	0	25	
Cobalt	U	0.00500					0.000403	0	25	
Copper	U	0.00500					-0.000985	0	25	
Iron	46.98	0.200					46.79	0.407	25	
Lead	U	0.00500					0.000599	0	25	
Molybdenum	0.002269	0.00500					0.002996	0	25	J
Nickel	U	0.00500					0.00082	0	25	
Potassium	6.498	0.200					6.616	1.79	25	
Selenium	U	0.00500					-0.000761	0	25	
Silver	U	0.00500					0.000201	0	25	
Sodium	18.63	0.200					19.16	2.85	25	
Uranium	U	0.00500					0.000808	0	25	
Zinc	U	0.00500					0.003439	0	25	

The following samples were analyzed in this batch:

13111097-	13111097-	
13111031-	13111031-	
01E	02E	

Client: Navajo Refining Company

Work Order: 13111097

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 74973 Instrum	nent ID SV-4		Metho	d: SW827	70						
MBLK Sample ID: SBLKW1	I-131126-74973				ι	Jnits: µg/l	L	Anal	ysis Date: *	11/26/2013	05:05 PM
Client ID:	Run II	D: SV-4_1	31126A		Se	eqNo: 345	1914	Prep Date: 1	1/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.583	0.20	5		0	71.7	34-129		0		
Surr: 2-Fluorobiphenyl	3.466	0.20	5		0	69.3	40-125		0		
Surr: 2-Fluorophenol	3.106	0.20	5		0	62.1	20-120		0		
Surr: 4-Terphenyl-d14	4.479	0.20	5		0	89.6	40-135		0		
Surr: Nitrobenzene-d5	3.192	0.20	5		0	63.8	41-120		0		
Surr: Phenol-d6	2.816	0.20	5		0	56.3	20-120		0		
LCS Sample ID: SLCSW1	-131126-74973				ι	Jnits: µg/l	L	Anal	ysis Date: '	11/26/2013	05:25 PM
Client ID:	Run II	D: SV-4_1	31126A		Se	eqNo: 345	1915	Prep Date: 1	1/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.803	0.20	5		0	76.1	45-120				
2-Methylnaphthalene	3.701	0.20	5		0	74	50-120				
Benzo(a)pyrene	4.305	0.20	5		0	86.1	45-120				
Naphthalene	3.749	0.20	5		0	75	45-120				
Surr: 2,4,6-Tribromophenol	4.877	0.20	5		0	97.5	34-129		0		
Surr: 2-Fluorobiphenyl	3.823	0.20	5		0	76.5	40-125		0		
Surr: 2-Fluorophenol	3.367	0.20	5		0	67.3	20-120		0		
Surr: 4-Terphenyl-d14	3.983	0.20	5		0	79.7	40-135		0		
Surr: Nitrobenzene-d5	3.45	0.20	5		0	69	41-120		0		
O Di	0.570	0.00			_		00.400				

3.572

0.20

20-120

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: 7497 3	3 Instrume	nt ID SV-4		Metho	d: SW827	0						
LCSD S	ample ID: SLCSDW1	-131126-74973				U	Jnits: μg/L		Analysi	s Date: 1 1	1/26/2013	05:46 PM
Client ID:		Run IE): SV-4_1	31126A		Se	qNo: 345 ′	1916	Prep Date: 11/2	6/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphth	alene	4.143	0.20	5		0	82.9	45-120	3.803	8.56	20	
2-Methylnaphth	alene	4.022	0.20	5		0	80.4	50-120	3.701	8.3	20	
Benzo(a)pyrene		4.867	0.20	5		0	97.3	45-120	4.305	12.2	20	
Naphthalene		3.815	0.20	5		0	76.3	45-120	3.749	1.74	20	
Surr: 2,4,6-Ti	ribromophenol	4.519	0.20	5		0	90.4	34-129	4.877	7.63	0	
Surr: 2-Fluore	obiphenyl	3.597	0.20	5		0	71.9	40-125	3.823	6.09	0	
Surr: 2-Fluore	ophenol	3.41	0.20	5		0	68.2	20-120	3.367	1.28	0	
Surr: 4-Terph	enyl-d14	4.253	0.20	5		0	85.1	40-135	3.983	6.55	0	
Surr: Nitrobe	nzene-d5	3.315	0.20	5		0	66.3	41-120	3.45	3.98	0	
Surr: Phenol-	d6	3.376	0.20	5		0	67.5	20-120	3.572	5.65	0	

The following samples were analyzed in this batch:

13111097-	13111097-	
13111097-	13111097-	
01D	02D	
טוט	020	

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Metho	d: SW82 6	50					
MBLK Sample ID: V	/BLKW-131202-R157966				Units: µg	/L	Analy	ysis Date: 1	2/2/2013	10:17 PM
Client ID:	Run II	D: VOA4_	131202B		SeqNo: 34	55017	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	3.0								
Surr: 1,2-Dichloroethane	e-d4 59.36	1.0	50		0 119	71-125	i	0		
Surr: 4-Bromofluorobenz	zene 55.31	1.0	50		0 111	70-125	i	0		
Surr: Dibromofluorometh	nane 56.59	1.0	50		0 113	74-125	i	0		
Surr: Toluene-d8	55.93	1.0	50		0 112	75-125	i	0		

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Method	: SW826	0						
LCS Sample ID: V	/LCSW-131202-R157966				Ĺ	Jnits: µg/L		Analy	sis Date: 1	2/2/2013	09:28 PM
Client ID:	Run I	ID: VOA4_	131202B		Se	qNo: 345	5016	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	57.14	1.0	50		0	114	75-130				
1,1,2,2-Tetrachloroethane	49.37	1.0	50		0	98.7	74-123				
1,1,2-Trichloroethane	49.71	1.0	50		0	99.4	80-120				
1,1-Dichloroethane	55.07	1.0	50		0	110	80-120				
1,1-Dichloroethene	57.83	1.0	50		0	116	75-130				
1,2-Dibromoethane	51.15	1.0	50		0	102	80-120				
1,2-Dichloroethane	51.47	1.0	50		0	103	79-120				
Benzene	52.69	1.0	50		0	105	80-120				
Carbon tetrachloride	52.57	1.0	50		0	105	75-125				
Chloroform	52.9	1.0	50		0	106	70-130				
Ethylbenzene	49.65	1.0	50		0	99.3	80-120				
Methylene chloride	56.01	2.0	50		0	112	65-133				
Tetrachloroethene	49.35	1.0	50		0	98.7	75-130				
Toluene	49.5	1.0	50		0	99	80-121				
Trichloroethene	52.09	1.0	50		0	104	75-125				
Vinyl chloride	58.74	1.0	50		0	117	70-135				
Xylenes, Total	148.7	3.0	150		0	99.1	80-124				
Surr: 1,2-Dichloroethane	e-d4 56.08	1.0	50		0	112	71-125		0		
Surr: 4-Bromofluorobenz	zene 57.29	1.0	50		0	115	70-125		0		
Surr: Dibromofluorometh	nane 58.81	1.0	50		0	118	74-125		0		
Surr: Toluene-d8	54.41	1.0	50		0	109	75-125		0		

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R157966	Instrument ID VOA4		Method	d: SW8260						
MS Sample ID:	13111133-18AMS			ı	Units: μ g/L	_	Analy	/sis Date: 1	2/2/2013	11:55 PM
Client ID:	R	un ID: VOA4_	131202B	Se	eqNo: 345	5094	Prep Date:		DF: 5 6	0
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	3155	50	2500	0	126	75-130				
1,1,2,2-Tetrachloroethane	2666	50	2500	0	107	74-123				
1,1,2-Trichloroethane	2735	50	2500	0	109	80-120				
1,1-Dichloroethane	3070	50	2500	0	123	80-120				S
1,1-Dichloroethene	3219	50	2500	0	129	75-130				
1,2-Dibromoethane	2732	50	2500	0	109	80-120				
1,2-Dichloroethane	2864	50	2500	0	115	79-120				
Benzene	3496	50	2500	594.7	116	80-120				
Carbon tetrachloride	2951	50	2500	0	118	79-120				
Chloroform	2976	50	2500	0	119	70-130				
Ethylbenzene	2839	50	2500	85.48	110	80-120				
Methylene chloride	3128	100	2500	0	125	65-133				
Tetrachloroethene	2714	50	2500	0	109	75-130				
Toluene	2769	50	2500	24.06	110	80-121				
Trichloroethene	2827	50	2500	0	113	75-125				
Vinyl chloride	3229	50	2500	0	129	70-135				
Xylenes, Total	8364	150	7500	157.3	109	80-124				
Surr: 1,2-Dichloroethane	e-d4 2902	50	2500	0	116	71-125		0		
Surr: 4-Bromofluorobenz	zene 2930	50	2500	0	117	70-125		0		
Surr: Dibromofluorometh	nane 2992	50	2500	0	120	74-125		0		
Surr: Toluene-d8	2772	50	2500	0	111	75-125		0		

0.136

20

Client: Navajo Refining Company

13111097 Work Order:

RO Discharge Sampling **Project:**

Batch ID: R157966 Instrument ID VOA4 Method: SW8260 **MSD** Sample ID: 13111133-18AMSD Units: µg/L Analysis Date: 12/3/2013 12:20 AM Client ID: SeqNo: 3455095 Prep Date: DF: 50 Run ID: VOA4_131202B RPD SPK Ref RPD Ref Control Value Value Limit Limit PQL SPK Val %REC %RPD Qual Analyte Result 3089 50 0 124 1,1,1-Trichloroethane 2500 75-130 3155 2.12 20 2652 50 2500 0 0.529 1,1,2,2-Tetrachloroethane 106 74-123 2666 20 1,1,2-Trichloroethane 2695 50 2500 0 108 80-120 2735 1.46 20 2965 50 2500 0 3070 1,1-Dichloroethane 119 80-120 3.49 20 3103 50 2500 0 20 1,1-Dichloroethene 124 75-130 3219 3.66 2731 50 2500 0 1,2-Dibromoethane 109 80-120 2732 0.0308 20 50 0 2864 1,2-Dichloroethane 2758 2500 110 79-120 3.75 20 50 Benzene 3376 2500 594.7 111 80-120 3496 3.49 20 Carbon tetrachloride 2791 50 2500 0 112 75-125 2951 5.57 20 Chloroform 2880 50 2500 0 115 70-130 2976 3.27 20 2748 50 2500 85.48 106 80-120 2839 20 Ethylbenzene 3.27 Methylene chloride 3032 100 2500 0 121 65-133 3128 3.11 20 Tetrachloroethene 2615 50 2500 0 105 75-130 2714 3.7 20 Toluene 2670 50 2500 24.06 106 2769 20 80-121 3.61 Trichloroethene 2736 2500 0 109 3.26 20 50 75-120 2827 Vinyl chloride 3146 50 2500 0 126 70-135 3229 2.63 20 Xylenes, Total 8081 150 7500 157.3 106 80-124 8364 3.44 20 Surr: 1,2-Dichloroethane-d4 2870 50 2500 0 115 71-125 2902 1.11 20 Surr: 4-Bromofluorobenzene 2914 50 2500 0 117 70-125 2930 0.566 20 2964 50 0 2992 0.949 Surr: Dibromofluoromethane 2500 119 74-125 20

The following samples were analyzed in this batch:

Surr: Toluene-d8

Note:

50 2500	0	111	75-125	2772	(
13111097-	131110	97-			

2769

50

Navajo Refining Company Client:

Work Order: 13111097

Project: RO Discharge Sampling QC BATCH REPORT

Batch ID: R	157787 Instrument ID	WetChem		Metho	d: SM450	0H+ B	(Dissolve	e)			
LCS	Sample ID: WLCS-W11126	S-R157787				Units: pH	Units	Analys	is Date: 11	/26/2013	09:00 AM
Client ID:		Run I	D: WETCH	HEM_13112	6B	SeqNo: 345	0021	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН		6	0.100	6		0 100	98-102				
DUP	Sample ID: 13111121-01E	Dup				Units: pH	Units	Analys	is Date: 11	/26/2013	09:00 AM
DUP Client ID:	Sample ID: 13111121-01E		D: WETCH	HEM_13112	6B	Units: pH SeqNo: 345		Analysi Prep Date:	is Date: 11	DF: 1	09:00 AM
	Sample ID: 13111121-01E		D: WETCH PQL	HEM_13112 SPK Val	6B SPK Ref Value	•		Prep Date:	is Date: 11 %RPD		09:00 AM Qual
Client ID:	Sample ID: 13111121-01E	Run I		_	SPK Ref	SeqNo: 345	0073 Control	Prep Date:		DF: 1 RPD	
Client ID:		Run I	PQL	_	SPK Ref	SeqNo: 345	0073 Control	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R	157905 Instrument	D Balance1		Metho	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-11261	3-R157905				Units: mg/	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run I	D: BALAN	ICE1_13112	26C	SeqNo: 345	3367	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	U	10.0								
LCS	Sample ID: WLCS-11261	3-R157905				Units: mg/	L	Analysi	s Date: 1 ′	1/26/2013	05:30 PM
Client ID:		Run I	D: BALAN	ICE1_13112	26C	SeqNo: 345	3368	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	1016	10.0	1000		0 102	85-115				
DUP	Sample ID: 13111054-056	CDUP				Units: mg/	L	Analysi	s Date: 1 ′	1/26/2013	05:30 PM
Client ID:		Run I	D: Balan	ICE1_13112	26C	SeqNo: 345	3347	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	213600	10.0					207500	2.9	10	
DUP	Sample ID: 13111187-011	DUP				Units: mg/	L	Analysi	s Date: 1 ′	1/26/2013	05:30 PM
Client ID:		Run I	D: BALAN	ICE1_13112	26C	SeqNo: 345	3366	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Fil	4586	10.0					4570	0.349	10	
The followi	ing samples were analyzed	in this batch	13	3111097-01	F 13	3111097-02F					

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R	157956	Instrument ID ICS210	00	Metho	d: E300			(Dissolve	e)			
MBLK	Sample ID:	WBLKW2-R157956				Unit	s: mg /	L	Analys	sis Date: 12	2/2/2013 0	7:09 PM
Client ID:			Run ID: ICS21	00_131202D		SeqNo	o: 345	4587	Prep Date:		DF: 1	
Analyte		Resu	ılt PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)		U 0.200									
LCS	Sample ID:	WLCSW2-R157956				Unit	s: mg /	L	Analys	sis Date: 12	2/2/2013 0	7:24 PM
Client ID:			Run ID: ICS21	00_131202D		SeqNo	o: 345	4588	Prep Date:		DF: 1	
Analyte		Resu	ılt PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	7.89	91 0.200	8		0	98.6	90-110				
MS	Sample ID:	13111093-01FMSZ				Unit	s: mg /	L	Analys	sis Date: 12	2/2/2013 0	7:53 PM
Client ID:			Run ID: ICS21	00_131202D		SeqNo	o: 345	4590	Prep Date:		DF: 5	
Analyte		Resu	ılt PQL	SPK Val	SPK Ref Value		REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.6	59 1.00	20		0	98.4	80-120	ı			
MSD	Sample ID:	13111093-01FMSDZ				Unit	s: mg /	L	Analys	sis Date: 12	2/2/2013 0	8:07 PM
Client ID:			Run ID: ICS21	00_131202D		SeqNo	o: 345	4591	Prep Date:		DF: 5	
Analyte		Resu	ult PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.3	36 1.00	20		0	96.8	80-120	19.69	1.66	20	
The followi	ng samples v	vere analyzed in this b		3111097-)1G	13 02	3111097 2G	7_					

Navajo Refining Company

Work Order: 1

13111097

Project:

Client:

RO Discharge Sampling

Batch ID: R	158074 Instrum	ent ID Gall01		Metho	d: M4500	CN E&G	(Dissolv	e)			
MBLK	Sample ID: MB-R158	8074-R158074				Units: m	ıg/L	Analys	is Date: 12	2/3/2013 ()8:45 AM
Client ID:		Run I	ID: GALLO	1_131203B		SeqNo: 34	457369	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U	0.0200								
LCS	Sample ID: LCS-R15	8074-R158074				Units: m	ıg/L	Analys	is Date: 12	2/3/2013 0)8:45 AM
Client ID:		Run I	ID: GALL0	1_131203B		SeqNo: 34	457370	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.1872	0.0200	0.2		0 93.0	6 80-120				
LCSD	Sample ID: WLCSDV	V1120313-R158074	4			Units: m	ıg/L	Analys	is Date: 12	2/3/2013 ()8:45 AM
Client ID:		Run I	ID: GALLO	1_131203B		SeqNo: 34	457378	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.1917	0.0200	0.2		0 95.9	9 80-120	0.1872	2.36	20	
MS	Sample ID: 13111251	1-01ams				Units: m	ıg/L	Analys	is Date: 12	2/3/2013 0)8:45 AM
Client ID:		Run I	ID: GALL0	1_131203B		SeqNo: 34	457374	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%RE	Control C Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		0.208	0.0200	0.2	0.003	35 102	2 80-120				
The followi	ing samples were anal	yzed in this batch:	13	111097- H	13 02	3111097- 2H					

Client: Navajo Refining Company

Work Order: 13111097

Project: RO Discharge Sampling

Batch ID: R	158112	Instrument ID ICS2100		Method	l: E300		(Dissolve)			
MBLK	Sample ID): WBLKW1-R158112				Units: mg/	L	Analys	is Date: 12	2/4/2013 0	9:28 AN
Client ID:		Run	ID: ICS210	0_131204A		SeqNo: 345	7845	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.500								
Fluoride		U	0.100								
Sulfate		U	0.500								
LCS	Sample ID): WLCSW1-R158112				Units: mg/	L	Analys	is Date: 12	2/4/2013 0	9:42 AN
Client ID:		Run	ID: ICS210	0_131204A		SeqNo: 345	7846	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		21.17	0.500	20		0 106	90-110				
luoride		4.291	0.100	4		0 107	90-110				
Sulfate		20.15	0.500	20		0 101	90-110				
MS	Sample ID): 1312062-06CMS				Units: mg/	L	Analys	is Date: 12	2/4/2013 1	1:35 AN
Client ID:		Run	ID: ICS210	0_131204A		SeqNo: 345	7853	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		18.64	0.500	10	7 00	6 113	80-120				
00		10.04			7.30	0 113	000				
		3.347	0.100	2	1.0		80-120				
luoride			0.100 0.500			1 117					0
Fluoride Sulfate	Sample ID	3.347		2	1.0	1 117	80-120 80-120	Analys	is Date: 12	2/4/2013 1	
Fluoride Sulfate MSD	Sample ID	3.347 72.56 D: 1312062-06CMSD	0.500	2	1.0 62.1	1 117 6 104	80-120 80-120 L	Analys Prep Date:	is Date: 12	2/4/2013 1 DF: 1	
Fluoride Sulfate MSD Client ID:	Sample ID	3.347 72.56 D: 1312062-06CMSD	0.500	2 10	1.0 62.1	1 117 6 104 Units: mg /	80-120 80-120 L	•	is Date: 12 %RPD		
Fluoride Sulfate MSD Client ID:	Sample ID	3.347 72.56 D: 1312062-06CMSD Run	0.500	2 10 0_131204A	1.0 62.1 SPK Ref	1 117 6 104 Units: mg/ SeqNo: 345 %REC	80-120 80-120 L 7854 Control	Prep Date: RPD Ref		DF: 1	1:50 A
Fluoride Sulfate MSD Client ID: Analyte Chloride	Sample ID	3.347 72.56 D: 1312062-06CMSD Run Result	0.500 ID: ICS210 PQL	2 10 0_131204A SPK Val	1.0 62.1 SPK Ref Value	1 117 6 104 Units: mg/ SeqNo: 345 %REC 6 113	80-120 80-120 L 7854 Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	1:50 AN
Fluoride Sulfate MSD Client ID: Analyte Chloride Fluoride Sulfate	Sample ID	3.347 72.56 D: 1312062-06CMSD Run Result 18.58	0.500 ID: ICS210 PQL 0.500	2 10 0_131204A SPK Val	1.0 62.1 SPK Ref Value 7.30	1 117 6 104 Units: mg/ SeqNo: 345 %REC 6 113 1 116	80-120 80-120 L 7854 Control Limit 80-120	Prep Date: RPD Ref Value 18.64	%RPD 0.328	DF: 1 RPD Limit	1:50 AN

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

ALS Environmental

Date: 07-Jan-14

Client: Navajo Refining Company
Project: RO Discharge Sampling

QUALIFIERS,
ACRONIZACIO

WorkOrder: 13111097

ACRONYMS, UNITS

workorder.	13111077
Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
Units Reported	Description
°C	Celsius degrees
mg/L	Milligrams per Liter
pH Units	S

QF Page 1 of 1

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING				Date/Time	Received:	21-Nov-1	3 09:1 <u>5</u>		
Work Order:	<u>13111097</u>				Received b	y:	<u>NDR</u>			
Checklist comp	leted by <u>Ladnnie B. Dillen</u> eSignature	22	2-Nov-13 Date	Rev	viewed by:	eSignature				Date
Matrices: Carrier name:	water FedEx Priority Overnight									
Shipping contain	ner/cooler in good condition?		Yes	✓	No 🗌	Not Pres	ent \square			
Custody seals i	ntact on shipping container/coole	er?	Yes	✓	No 🗌	Not Pres	ent \square			
Custody seals i	intact on sample bottles?		Yes		No 🗌	Not Pres	ent 🗹			
Chain of custoo	ly present?		Yes	✓	No 🗌					
Chain of custoo	dy signed when relinquished and	received?	Yes	✓	No 🗌					
Chain of custoo	ly agrees with sample labels?		Yes	✓	No \square					
Samples in pro	per container/bottle?		Yes	✓	No 🗌					
Sample contain	ners intact?		Yes	✓	No 🗌					
Sufficient samp	le volume for indicated test?		Yes	✓	No 🗌					
All samples rec	eived within holding time?		Yes	✓	No \square					
Container/Tem	p Blank temperature in complian	ce?	Yes	✓	No 🗌					
Temperature(s))/Thermometer(s):		2.3 C/2	2.3 C u/c	<u> </u>	<u>IR</u>	<u>1</u>			
Cooler(s)/Kit(s)	:		3730							
Date/Time sam	ple(s) sent to storage:			3 07:12				_		
Water - VOA vi	als have zero headspace?		Yes	✓	No 🗀	No VOA vials	s submitted			
Water - pH acc	eptable upon receipt?		Yes	✓	No 🗌	N/A				
pH adjusted? pH adjusted by	:		Yes		No 🗹	N/A				
Login Notes:	Trip Blank logged in w/out to	est codes								
	========									
Client Contacte	d:	Date Contacted:			Person	Contacted:				
Contacted By:		Regarding:								
Comments:										
CorrectiveActio	n:							CI	DC Dago	1 of 1



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 of

94265 COC ID:

ALS Project Manager:

13111097

NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling



VOC (8260) NM GIV LIST

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RO Discharge/Sampling Project Information

Project Name

Customer Information

Purchase Order

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Work Order	THE THE PROPERTY OF THE PROPER		Project Number	.			B GRO	GRO (8015M)				
Company Name	Navajo Refining Company		Bill To Company	SYSSYS	Navajo Refining Company		c DRO,	DRO, ORO (8015M) LVI	Ŋ			
Send Report To	Robert Combs		Invoice Attn	Robert Combs	combs		AS TI O	LL SVOC (8270) NM GW List	3W List			
Address	501 East Main		Address	501 East Main s	t Main		E Dissol	Dissolved Metals (6020/7000) Select List Anions (300) Cl, F, SO4	0/7000) Selec	Ti-		
City/State/Zip	Artesia, NM 88211		City/State/Zip	1222-52	Artesia, NM 88211		G Total	Total Cyanide (SM 4500)	(00			
Phone	(575) 746-5382		Phone	e (575) 746-5382	6-5382		H pH, TOS	SC			A to the state of	ATTENDED TO SECURE OF SECURE
Fax	(575) 746-5421		Fax	x (575) 746-5421	6-5421	achter controller in the cut in property of the controller in the	Nitrat	Nitrate-Nitrite as N (Preserved)	eserved			
e-Mail-Address		THE RESIDENCE OF THE PARTY OF T	e-Mail Address	·			J Radiu	Radium 226/228				
No.	Sample Description	-	Date	Time	Matrix Pres.	s. # Bottles	AB	CD	E F	В	I J He	Hold
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Sampler(s) Please Print & Sign	rint & Sign	J.	Shipment Method	fethod	Required Tu	=	200	Other	11000	Results Due Date	e Date:	
Relinquished Tr.		Time		Described her	1 010 A	W Sto It with Days	O VVN Days	12 Man Tate CO Barr Village Little Amendia	טייי עביינע שייי	After Acres and a		
- *Sometimen	4	10/13 FOR		ceived by.				1 tray 1.41 . tel.	ram Nueger	WILL FU CAUIS		
Relinquished by:	7	Time:		Received by (Laboratory)	N	9.15.	Cooler ID	Cooler Temp.		OC Package: (Check One Box Below) V Level II Std QC	Below) TRRP CheckList	Līšt
Logged by (Laboratory):); Date;	Time:	Ö	recked by (Lab	oratory):					Level III Std OC/Raw Data Level IV SW846/3LP	TRRP Level IV	>
Preservative Key: 1-HGI	1-HCI 2-HNO, 3-H ₂ SO,	o₄ 4-NaOH	5-Na ₂ S ₂ O ₃	6-NaHSO₄	7-Other	8-4°C 9-5035			☐ Olher /E	Olher / EDD	And the fame income of	
MANUAL DESIGNATION OF THE PARTY												

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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ALS Environmen

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

:aI ्	CUS	STODY SEAL	Seal Broken By:
	Date: 11/20//3	Time: /5:00	Property (Contraction of Contraction
	Name: Eric Se	raecsén	Quite: /
	் Company:	V ARCADE	i 111240

3139 -1990



Cincinnati, OH +1 513 733 5336

Fort Collins, CO +1 970 490 1511

Holland, Mi +1 616 399 6070

Everett, WA +1 425 356 2600

Chair of Custody Form

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Houston, TX +1 281 530 5656

Salt Lake City, UT +1 801 266 7700

Parameter/Method Request for Analysis

VOC (8250) NM GW LIST

T. œ

RO Discharge/Sampling Project information

Project Name

Customer Information

Purchase Order

Dissolved Metals (6020/7000) Select List

I.I. SVOC (8270) NM GW List

DRO, ORO (8015M) LVI

O 0

Navajo Refining Company

Bill To Company Invoice Attm

Navajo Refining Company

Company Name

Work Order

Robert Combs 501 East Main

Send Report To

Project Number

GRO (BOTSM)

ALS Work Order #:

ALS Project Manager:

Middletown, PA +1 717 944 5541

South Charleston, WV +1 304 356 3168 York, PA +1 717 505 5280 Spring City, PA +1 610 948 4903

ironmental.

TRRP Check.

V Level II Std OC/Raw Date

10 Day TAT, CC Pam Kneger with Arcadis

Cooler Temp.

Cooler ID

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Received by (Laboratory):

Received by:

Shipment Method

Sampler(s) Please Print & Sign

S. J. J 3eling@lished.by: Checked by (Laboratory)

Elisio:

Date:

ogged by (Laboratory):

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Required Turnarcland Times (Check Box)

Std 10 WK Days

Std 10 WK Days

2 WK Days

2 WK Days

Notes:

Results Due Date:

TRAPLET |

Hold

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Bottles

Pres.

Pertrix

NAVAJO REFINING: Navajo Refining Company

1377

200

M NOO LANG

11/20113

Project: RO Discharge Sampling

Radium 226/228

Mrate-Mirite as N (Preserved)

Total Cyanide (SM 4500)

Ç I

Artesia, NIM 88211

City/State/Zlp

Artesia, NM 98211

City/State/Zip

Address

(575) 746-5421 (675) 746-5382

æ u_

e-Mail Address

m

4 0 6 4 0 0 5

Phone

(675) 746-5382 (575) 746-5421

Phone

rax X

e-Mail Address

Date

Sample Description

五元五

Anions (300) CI, F, SQ4

W L

501 East Main Robert Combs

Address

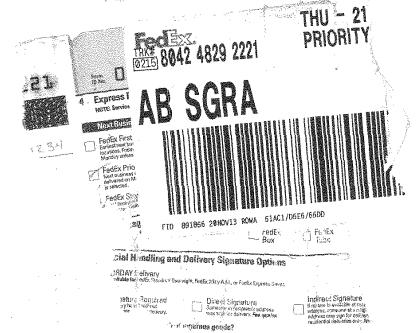
and the second of the second o	TOTAL AND THE PROPERTY OF THE	Copyright 2011 by ALS Environ the reverse.
	n 1-HCi 2-HNO, 3-H,SD, 4-NaOH 5-Na,S,O, 6-NeHSO, 7-Other 8-4°C 9-6035	ite: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the revers 3. The Chain of Custody is a legal document. All information must be commissed were expressly limited to the terms and conditions stated on the revers
	Yeservative Key:	ite: 1, Any change 2. Unless offic 3. The Chain



ALS Environmental

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

	. i 1160. Albakkin
CUSTODY SEAL	Seal Broken By:
Date: (1/20/13 Time: 1500 Name: E. Bergerien Company: ARCADIS	1 Date:



20400.

31301



December 16, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re: ALS Workorder: 13-11-470

Project Name: None Submitted Project Number: 13111097

Dear Ms. West:

Two water samples were received from ALS Environmental on November 25, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Jeff Kujawa
Project Manager

JRK/jl

Enclosure (s): Report

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80S24 | PHONE +1 970 490 1511 | FAX +1 970 490 1522

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





1311470

Case Narrative

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

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.

Al-S aborato	ory Certifications						
Accreditation Body	License or Certification Number						
Alaska (AK)	UST-086						
Alaska (AK)	CO01099						
Arizona (AZ)	AZ0742						
California (CA)	06251CA						
Colorado (CO)	CO01099						
Connecticut (CT)	PH-0232						
Florida (FL)	E87914						
Idaho (ID)	CO01099						
Kansas (KS)	E-10381						
Kentucky (KY)	90137						
L-A-B (DoD ELAP/ISO 170250)	L2257						
Maryland (MD)	285						
Missouri	175						
Nebraska	NE-OS-24-13						
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)	CO01099						
Washington	C1280						

Sample Number(s) Cross-Reference Table

OrderNum: 1311470

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 13111097 Client PO Number: 10-13111097

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RO South	1311470-1		WATER	20-Nov-13	11:00
MW-119	1311470-2		WATER	20-Nov-13	10:00

Subcontractor: ALS Environmental 225 Commerce Drive

(800) 443-1511 (970) 490-1522 TEL: FAX:

Houston House Acet

Salesperson

Acct #;

Fort Collins, CO 80524

CHAIN-OF-CUSTODY RECORD Date: 22-Nov-13 COC ID: 15485

Page 1 of 1

Due Date 05-Dec-13

ਤੋਂ	Customer Information	Ā	Project Information	Deremeter/Mathod Descriptor Anglish
Purchase Order	10-13111097	Project Name	13111097	A Radium 226 228 Sub to At S Et Colline
Work Order		Project Number		
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	9
Send Report To	Sonia West	Inv Attn	Accounts Payable	0
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	9
Phone	(281) 530-5656	Phone	(281) 530-5656	
Fax	(281) 530-5887	Fax	(281) 530-5887	
eMail Address	Sonia. West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	
Sample ID		Matrix Collection Date 24hr	Date 24hr Bottle	
13111097-011 (RO South)	South)	Water 20/Nov/20	£	1
13111097-02I (MW-119)	(-119)	Water 20/Nov/20	0/Nov/2013 10:00 (1) 1LPHNO3	X
)		The second secon	· · · · · · · · · · · · · · · · · · ·

Report/QC Level Std Cooler IDs 0000 Date-Time
Date-Time WO 13111097- Please analyze for Radium 226/228 Date/Time Comments: Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS)	470		
Client: ALS TX. Workorder No: 1511	110	1 10	
Project Manager:	. Date:]	1/25/13	
Does this project require any special handling in addition to standard ALS procedures?		YES	∅
Are custody seals on shipping containers intact?	NONE	YES	NO
Are Custody seals on sample containers intact?	NONE	YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?		(ES	NO
Are the COC and bottle labels complete and legible?	+	(ES	NO
Is the COC in agreement with samples received? (IDs. dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)	<u> </u>	(E)	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	(YES	NO
3. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(FES)	NO_
Are all aqueous non-preserved samples pH 4-9?	(V/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(ES)	NO
Were all samples placed in the proper containers for the requested analyses?		(ES)	NO
12. Are all samples within holding times for the requested analyses?		(ES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(Es	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	W/A	YES	NO
Amount of sediment: dusting moderate heavy	N/A	YES	(NO)
		YES	60
16. Were the samples shipped on ice? 17. Were cooler temperatures measured at 0.1-6.0°C? 18. gun used*: #2 #4	(RAD)	YES	(OD)
Cooler #: Temperature (°C): AMB No. of custody seals on cooler: External µR/hr reading: 12 Background µR/hr reading: 10 Background µR/hr reading: 10	er Form 008.)		
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (ES / NO / NA (If no, se			· · · · · · · · · · · · · · · · · · ·
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, E	ACETT#1 A	AD AIO.	
If applicable, was the client contacted? YES / NO / No Contact: Project Manager Signature / Date: **IR Gun #2: Oakton, SN 29922500201-0066	Date/Ti	ime:	

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Ref: BFSW/JBAGRORA Dep: Environmental

Date: 22No∪13 Wgt: 30.75 LBS

SHIPPING: SPECIAL: HANDLING: 0.00 TOTAL:

58.82 6.18 5.00 70.00

Svcs: PRIORITY OVERNIGHT TRCK: 5813 7984 9778

DV:

ORIGIN ID:SGRA (281) 530-5656 SHIPPING DEPT ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US

SHIP DATE: 22NOV13 ACTWGT: 30.8 LB CAO: 300130/CAFE2704 DIMS: 26x14x14 IN

BILL SENDER

TO ROY FRENCH SAMPLE CONTROL. **ALS ENVIRONMENTAL** 225 COMMERCE DRIVE

FORT COLLINS CO 80524 (970) 490-1611 DEPT: ENVIRONMENTAL

FedEx Express

TRK# 0201 5813 7984 9778

MON - 25 NOV 10:30A PRIORITY OVERNIGHT

XH FTCA

80524 co-us DEN

Part # 156148-434 RIT2 04/13





SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

Project:13111097Work Order:1311470Sample ID:RO SouthLab ID:1311470-1Legal Location:Matrix:WATER

Collection Date: 11/20/2013 11:00 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	ATION - METHOD 903.1		PAI 783		Prep Date: 11/26/201	3 PrepBy: PJW
Ra-226	0.78 (+/- 0.28)	LT	0.1	pCi/l	NA	12/4/2013 13:06
Carr: BARIUM	95.6		40-110	%REC	NA	12/4/2013 13:06
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 12/5/2013	PrepBy: JTL
Ra-228	1.08 (+/- 0.43)		0.66	pCi/l	NA	12/10/2013 11:41
Carr: BARIUM	96.7		40-110	%REC	NA	12/10/2013 11:41

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111097
 Work Order:
 1311470

 Sample ID:
 MW-119
 Lab ID:
 1311470-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 10:00 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	ATION - METHOD 903.1		PAI 783		Prep Date: 11/26/201	3 PrepBy: PJW
Ra-226	ND (+/- 0.11)	U	0.19	pCi/l	NA	12/4/2013 13:06
Carr: BARIUM	93.6		40-110	%REC	NA	12/4/2013 13:06
RADIUM-228 ANALYSIS BY	Y GFPC		PAI 724		Prep Date: 12/5/2013	PrepBy: JTL
Ra-228	1.08 (+/- 0.43)		0.66	pCi/l	NA	12/10/2013 11:41
Carr: BARIUM	96.7		40-110	%REC	NA	12/10/2013 11:41

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 13-Dec-13

 Project:
 13111097
 Work Order:
 1311470

 Sample ID:
 MW-119
 Lab ID:
 1311470-2

Legal Location: Matrix: WATER

Collection Date: 11/20/2013 10:00 **Percent Moisture:**

Report Dilution
Analyses Result Qual Limit Units 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.

LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

 $\mbox{\ensuremath{\mathsf{H}}}$ - 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
LIMS Version: 6.680

SAMPLE SUMMARY REPORT

Date: 13-Dec-13 **Client: ALS** Environmental

13111097 Work Order: 1311470 **Project:** Sample ID: MW-119 **Lab ID:** 1311470-2 Matrix: WATER

Collection Date: 11/20/2013 10:00 **Percent Moisture:**

Report **Dilution** Analyses Result **Date Analyzed** Qual Limit Units **Factor**

- 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

Legal Location:

- bunker C

ALS Environmental -- FC LIMS Version: 6.680

AR Page 4 of 4

Client: ALS Environmental

Work Order: 1311470 **Project:** 13111097

Date: 12/13/2013 4:03

QC BATCH REPORT

E131126-1-2	lr	nstrument ID:	Alpha Scin		Method:	Ra-226 by	Radon E	manation - Me			
Sample ID:	RE131126-1					Units: pCi/	1	Analysi	s Date: 12	e: 12/4/2013 13:44	
		Ru	un ID: RE131 1	126-1A				Prep Date: 11/26	6/2013	DF: NA	١.
		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
		49 (+/- 12)	0	45.31		108	67-120				Р
IUM		14690		15800		93	40-110				
Sample ID:	RE131126-1					Units: pCi/	1	Analysi	s Date: 12	2/4/2013 1	3:44
		Ru	un ID: RE131 1	126-1A				Prep Date: 11/26/2013		DF: NA	
		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
		49 (+/- 12)	0	45.31		109	67-120	49	0.0219	2.13	Р
IUM		15010		15800		95	40-110	14690			
Sample ID:	RE131126-1					Units: pCi/]	Analysi	s Date: 12	2/4/2013 1	3:06
		Ru	un ID: RE131 1	126-1A				Prep Date: 11/26	6/2013	DF: NA	١
		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
		ND	0.04								U
IUM		14170		15800		89.7	40-110				
1	Sample ID:	Sample ID: RE131126-1 UM	Sample ID: RE131126-1 Result 49 (+/- 12) IUM 14690 Sample ID: RE131126-1 Result 49 (+/- 12) IUM 15010 Sample ID: RE131126-1 Result Result Age (+/- 12) IUM 15010	Sample ID: RE131126-1 Result ReportLimit 49 (+/- 12) 0 IUM 14690 Sample ID: RE131126-1 Result ReportLimit 49 (+/- 12) 0 IUM 15010 Sample ID: RE131126-1 Result ReportLimit 49 (+/- 12) 0 IUM 15010 Result ReportLimit Result ReportLimit Result ReportLimit Result ReportLimit Result ReportLimit Result ReportLimit	Sample ID: RE131126-1A Result ReportLimit SPK Val 49 (+/- 12) 0 45.31 IUM 14690 15800 Sample ID: RE131126-1 Result ReportLimit SPK Val 49 (+/- 12) 0 45.31 IUM 15010 15800 Sample ID: RE131126-1 Run ID: RE131126-1A Result ReportLimit SPK Val ND 0.04	Sample ID: RE131126-1A Result ReportLimit SPK Val Value 49 (+/- 12) 0 45.31 15800 Sample ID: RE131126-1 Result ReportLimit SPK Val Value SPK Ref Value 49 (+/- 12) 0 45.31 45.	Sample ID: RE131126-1 Run ID: RE131126-1A SPK Ref Value %REC	Sample ID: RE131126-14 Result ReportLimit SPK Val Value %REC Control Limit	Sample ID: RE131126-14 Report Result Report R	Sample ID: RE131126-1 Units: pCi/I Analysis Date: 12 Result ReportLimit ReportLi	Sample ID: RE131126-14 Run ID: RE131126-1A Prep Date: 11/26/2013 DER NA

Client: ALS Environmental

Work Order: 1311470 **Project:** 13111097

Batch ID: R	A131204-1-2	Ir	nstrument ID:	:LB4100-C		Method:	Radium-2	28 Analys	sis by GFPC			
LCS	Sample ID:	RA131204-1					Units: pCi/	Ί	Analysi	s Date: 12	2/10/2013	11:01
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5/	2013	DF: N A	Α.
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228			8.6 (+/- 2.2)	0.8	9.251		93.3	70-130				Р
Carr: BAF	RIUM		32650		33400		97.8	40-110				
LCSD	Sample ID:	RA131204-1					Units: pCi/	1	Analysi	s Date: 12	2/10/2013	11:01
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5/	2013	DF: N A	A
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228			9.6 (+/- 2.4)	0.9	9.251		104	70-130	8.6	0.291	2.13	Р
Carr: BAF	RIUM		31700		33400		94.9	40-110	32650			
MB	Sample ID:	RA131204-1					Units: pCi/	1	Analysi	s Date: 12	2/10/2013	13:22
Client ID:			Rı	un ID: RA1312	204-1A				Prep Date: 12/5 /	2013	DF: NA	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
	·			0.04								
Ra-228			ND	0.64								U



18-Dec-2013

Robert Combs Navajo Refining Company PO Box 1490 Artesia, NM 88211-1490

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

Re: RO Discharge Sampling Work Order: 13111187

Dear Robert,

ALS Environmental received 3 samples on 22-Nov-2013 02:00 PM 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 53.

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

Sincerely,

Electronically approved by: Dayna.Fisher

Sonie West

Sonia West Project Manager ENP ACCREONE

Certificate No: T104704231-13-12

ALS Environmental

Date: 18-Dec-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111187

Work Order Sample Summary

Lab Samp ID	Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	<u>Hold</u>
13111187-01	MW-116	Water		11/20/2013 16:30	11/22/2013 14:00)
13111187-02	DUP-01	Water		11/20/2013	11/22/2013 14:00) 🗌
13111187-03	Trip Blank 110613-73	Water		11/23/2013	11/22/2013 14:00) \square

ALS Environmental

Date: 18-Dec-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111187

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 degrees C.

Batch 74990B, TPH DRO/ORO 8015, Sample LLCSDW-131126: The LCSD RPD for surrogate 2-Fluorobiphenyl was outside of the control limits. The surrogate recoveries were within the control limits for the LCS and LCSD.

Batch 74938, Dissolved Metals 6020, Sample 1311934-06C: MS/MSD are for an unrelated sample.

Batch 74973, Semivolatiles 8270, Sample SLCSW1-131126: Insufficient sample was received for MS/MSD.

Batch R157973, Volatiles 8260, Sample 13111059-52A: MS/MSD are for an unrelated sample.

Batch R158097, Volatiles 8260, Sample 13111198-01A: MS/MSD are for an unrelated sample.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 11/20/2013 04:30 PM

Work Order: 13111187

Lab ID: 13111187-01

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Met	hod: SW8015M		Prep: SW3	3511 / 11/27/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.054	mg/L	1	12/3/2013 21:28
TPH (Oil Range)	U		0.043	0.11	mg/L	1	12/3/2013 21:28
Surr: 2-Fluorobiphenyl	110			60-135	%REC	1	12/3/2013 21:28
GASOLINE RANGE ORGANICS - SW8018	5C	Met	hod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	12/3/2013 03:25
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	12/3/2013 03:25
DISSOLVED METALS		Met	hod: SW6020		Prep: SW3	3010A / 11/25/13	Analyst: ALR
Aluminum	0.00814	J	0.0040	0.0100	mg/L	1	11/26/2013 18:50
Arsenic	0.00525		0.0010	0.00500	mg/L	1	11/26/2013 05:10
Barium	0.00989		0.00090	0.00500	mg/L	1	11/26/2013 18:50
Boron	0.312		0.020	0.0500	mg/L	1	11/27/2013 13:17
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 18:50
Calcium	606		4.3	25.0	mg/L	50	11/26/2013 17:24
Chromium	U		0.0010	0.00500	mg/L	1	11/26/2013 05:10
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 05:10
Copper	U		0.0010	0.00500	mg/L	1	11/26/2013 05:10
Iron	U		0.078	0.200	mg/L	1	11/26/2013 05:10
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 18:50
Manganese	0.00920		0.0025	0.00500	mg/L	1	11/26/2013 05:10
Molybdenum	0.00350	J	0.0015	0.00500	mg/L	1	11/26/2013 18:50
Nickel	0.00245	J	0.0010	0.00500	mg/L	1	11/26/2013 05:10
Potassium	1.30		0.084	0.200	mg/L	1	11/26/2013 18:50
Selenium	0.00611		0.0010	0.00500	mg/L	1	11/26/2013 05:10
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 18:50
Sodium	235		4.2	10.0	mg/L	50	11/26/2013 17:24
Uranium	0.0391		0.0050	0.00500	mg/L	1	11/26/2013 18:50
Zinc	0.0311		0.0025	0.00500	mg/L	1	11/26/2013 05:10
LOW-LEVEL SEMIVOLATILES		Met	hod: SW8270		Prep: SW:	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 16:40
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 16:40
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 16:40
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 16:40
Surr: 2,4,6-Tribromophenol	37.0			34-129	%REC	1	11/26/2013 16:40
Surr: 2-Fluorobiphenyl	45.8			40-125	%REC	1	11/26/2013 16:40
Surr: 2-Fluorophenol	36.6			20-120	%REC	1	11/26/2013 16:40
Surr: 4-Terphenyl-d14	55.3			40-135	%REC	1	11/26/2013 16:40
Surr: Nitrobenzene-d5	41.6			41-120	%REC	1	11/26/2013 16:40

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 11/20/2013 04:30 PM

Work Order: 13111187

Lab ID: 13111187-01

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Phenol-d6	38.5			20-120	%REC	1	11/26/2013 16:40
LOW LEVEL VOLATILES - SW8260C		Met	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 18:14
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 18:14
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 18:14
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 18:14
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 18:14
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 18:14
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 18:14
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 18:14
Surr: 1,2-Dichloroethane-d4	125			71-125	%REC	1	12/3/2013 18:14
Surr: 4-Bromofluorobenzene	114			70-125	%REC	1	12/3/2013 18:14
Surr: Dibromofluoromethane	120			74-125	%REC	1	12/3/2013 18:14
Surr: Toluene-d8	116			75-125	%REC	1	12/3/2013 18:14
MISCELLANEOUS ANALYSIS		Met	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	12/18/2013
ANIONS - EPA 300.0 (1993)		Met	hod: E300				Analyst: JKP
Chloride	331		10	25.0	mg/L	50	12/4/2013 16:47
Fluoride	1.61		0.050	0.100	mg/L	1	12/4/2013 13:32
Sulfate	2,470		10	25.0	mg/L	50	12/4/2013 16:47
Nitrate/Nitrite (as N)	0.457	J	0.15	1.00	mg/L	5	12/2/2013 23:46
CYANIDE - SM4500CN E		Met	hod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Met	hod:SM4500H	+ B			Analyst: KL
рН	6.81	Н	0.10	0.100	pH Units	1	11/26/2013 09:00
Temp Deg C @pH	20.1	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Met	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-116

Collection Date: 11/20/2013 04:30 PM

Date: 18-Dec-13

Work Order: 13111187

Lab ID: 13111187-01

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	4,570	5.0	10.0	mg/L	1	11/26/2013 17:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: DUP-01 **Collection Date:** 11/20/2013

Work Order: 13111187

Lab ID: 13111187-02

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	thod: SW8015M	1	Prep: SW	3511 / 11/26/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	11/27/2013 14:19
TPH (Oil Range)	U		0.043	0.11	mg/L	1	11/27/2013 14:19
Surr: 2-Fluorobiphenyl	114			60-135	%REC	1	11/27/2013 14:19
GASOLINE RANGE ORGANICS - SW80	15C	Me	thod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	12/3/2013 03:43
Surr: 4-Bromofluorobenzene	98.1			70-130	%REC	1	12/3/2013 03:43
DISSOLVED METALS		Me	thod: SW6020		Prep: SW	3010A / 11/25/13	Analyst: ALR
Aluminum	0.00730	J	0.0040	0.0100	mg/L	1	11/26/2013 05:14
Arsenic	0.00526		0.0010	0.00500	mg/L	1	11/26/2013 05:14
Barium	0.0110		0.00090	0.00500	mg/L	1	11/26/2013 05:14
Boron	0.307		0.020	0.0500	mg/L	1	11/27/2013 13:20
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 05:14
Calcium	616		4.3	25.0	mg/L	50	11/26/2013 17:29
Chromium	U		0.0010	0.00500	mg/L	1	11/26/2013 05:14
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 05:14
Copper	U		0.0010	0.00500	mg/L	1	11/26/2013 05:14
Iron	0.132	J	0.078	0.200	mg/L	1	11/26/2013 05:14
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 05:14
Manganese	0.00576		0.0025	0.00500	mg/L	1	11/26/2013 05:14
Molybdenum	0.00336	J	0.0015	0.00500	mg/L	1	11/26/2013 05:14
Nickel	0.00144	J	0.0010	0.00500	mg/L	1	11/26/2013 05:14
Potassium	1.37		0.084	0.200	mg/L	1	11/26/2013 05:14
Selenium	0.00582		0.0010	0.00500	mg/L	1	11/26/2013 05:14
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 05:14
Sodium	235		4.2	10.0	mg/L	50	11/26/2013 17:29
Uranium	0.0387		0.0050	0.00500	mg/L	1	11/26/2013 05:14
Zinc	0.0218		0.0025	0.00500	mg/L	1	11/26/2013 05:14
LOW-LEVEL SEMIVOLATILES		Me	thod: SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 17:22
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 17:22
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 17:22
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 17:22
Surr: 2,4,6-Tribromophenol	39.3			34-129	%REC	1	11/26/2013 17:22
Surr: 2-Fluorobiphenyl	46.4			40-125	%REC	1	11/26/2013 17:22
Surr: 2-Fluorophenol	37.5			20-120	%REC	1	11/26/2013 17:22
Surr: 4-Terphenyl-d14	68.5			40-135	%REC	1	11/26/2013 17:22
Surr: Nitrobenzene-d5	42.4			41-120	%REC	1	11/26/2013 17:22

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: DUP-01 Collection Date: 11/20/2013 Work Order: 13111187

Lab ID: 13111187-02 **Matrix:** WATER

Date: 18-Dec-13

Report **Dilution Date Analyzed** Limit MDL **Factor** Analyses Result Qual Units Surr: Phenol-d6 38.2 20-120 %REC 11/26/2013 17:22 Method: SW8260 **LOW LEVEL VOLATILES - SW8260C** Analyst: AKP U 1,1,1-Trichloroethane 0.00020 mg/L 12/3/2013 18:38 0.0010 1 1,1,2,2-Tetrachloroethane U 0.00050 0.0010 mg/L 1 12/3/2013 18:38 1,1,2-Trichloroethane U 0.00030 0.0010 mg/L 12/3/2013 18:38 U mg/L 1,1-Dichloroethane 0.00020 0.0010 1 12/3/2013 18:38 1,1-Dichloroethene U 0.00020 0.0010 12/3/2013 18:38 mg/L U 1,2-Dibromoethane 0.00020 0.0010 mg/L 1 12/3/2013 18:38 1,2-Dichloroethane U 0.00020 0.0010 mg/L 1 12/3/2013 18:38 U 0.0010 Benzene 0.00020 mg/L 1 12/3/2013 18:38 Carbon tetrachloride U 0.00050 0.0010 mg/L 12/3/2013 18:38 Chloroform U 0.00020 0.0010 mg/L 12/3/2013 18:38 Ethylbenzene U 0.00030 0.0010 mg/L 1 12/3/2013 18:38 Methylene chloride U 0.00040 0.0020 mg/L 12/3/2013 18:38 Tetrachloroethene U 0.00030 0.0010 mg/L 1 12/3/2013 18:38 Toluene U 0.00020 0.0010 mg/L 12/3/2013 18:38 Trichloroethene U 0.00020 0.0010 mg/L 1 12/3/2013 18:38 Vinyl chloride U 0.00020 0.0010 12/3/2013 18:38 mg/L Xylenes, Total U 0.00050 0.0010 mg/L 12/3/2013 18:38 Surr: 1,2-Dichloroethane-d4 124 71-125 %REC 12/3/2013 18:38 70-125 %REC Surr: 4-Bromofluorobenzene 111 1 12/3/2013 18:38 Surr: Dibromofluoromethane 120 74-125 %REC 1 12/3/2013 18:38 Surr: Toluene-d8 12/3/2013 18:38 116 75-125 %REC 1 **MISCELLANEOUS ANALYSIS** Method: NA Analyst: SUB 1 12/18/2013 Miscellaneous Analysis See Attached 0 ANIONS - EPA 300.0 (1993) Method: E300 Analyst: JKP Chloride 331 25.0 mg/L 50 12/4/2013 17:02 10 Fluoride 1.51 0.050 0.100 mg/L 1 12/4/2013 13:46 2,470 50 Sulfate 10 25.0 mg/L 12/4/2013 17:02 0.487 Nitrate/Nitrite (as N) J 1.00 12/3/2013 0.15 mg/L 5 Method: M4500CN E&G CYANIDE - SM4500CN E Analyst: KKB Cyanide U 0.0050 0.0200 mg/L 12/3/2013 08:45 Method: SM4500H+ B PH - SM4500H+ B Analyst: KL 6.86 Н 0.10 0.100 pH Units 1 11/26/2013 09:00 pΗ °C Temp Deg C @pH 19.3 Н 11/26/2013 09:00 1 TOTAL DISSOLVED SOLIDS Method: M2540C Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 13111187

 Sample ID:
 DUP-01
 Lab ID:
 13111187-02

 Collection Date:
 11/20/2013
 Matrix:
 WATER

Analyses	Result Qual	MDL	Report Limit Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	4,210	5.0	10.0 mg/L	1	11/25/2013 11:40

Date: 18-Dec-13

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** Trip Blank 110613-73

Collection Date: 11/23/2013

Work Order: 13111187

Lab ID: 13111187-03

Date: 18-Dec-13

Matrix: WATER

Analyses	Result Oual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Analyses	Result Qual	MIDL	Lillit	Units	r actor	
LOW LEVEL VOLATILES - SW8260C	Me	ethod:SW8260				Analyst: AKP
1,1,1-Trichloroethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	12/4/2013 16:34
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	12/4/2013 16:34
1,1-Dichloroethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
1,1-Dichloroethene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
1,2-Dibromoethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
1,2-Dichloroethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Benzene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Carbon tetrachloride	U	0.00050	0.0010	mg/L	1	12/4/2013 16:34
Chloroform	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Ethylbenzene	U	0.00030	0.0010	mg/L	1	12/4/2013 16:34
Methylene chloride	U	0.00040	0.0020	mg/L	1	12/4/2013 16:34
Tetrachloroethene	U	0.00030	0.0010	mg/L	1	12/4/2013 16:34
Toluene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Trichloroethene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Vinyl chloride	U	0.00020	0.0010	mg/L	1	12/4/2013 16:34
Xylenes, Total	U	0.00050	0.0010	mg/L	1	12/4/2013 16:34
Surr: 1,2-Dichloroethane-d4	119		71-125	%REC	1	12/4/2013 16:34
Surr: 4-Bromofluorobenzene	106		70-125	%REC	1	12/4/2013 16:34
Surr: Dibromofluoromethane	114		74-125	%REC	1	12/4/2013 16:34
Surr: Toluene-d8	109		75-125	%REC	1	12/4/2013 16:34

Work Order:

Batch ID R157905

13111187-01F MW-116

13111187

Client:

Navajo Refining Company

Test Name: Total Dissolved Solids

Water

11/20/2013 4:30:00 PM

Project: RO Discharge Sampling

Sample ID	Client Sai	mple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
Batch ID	74938	Test Name: D	issolved Metals					
13111187-011	E MW-116		Water	11/20/2013 4:30:00 PM		11/25/2013 10:00 AM	11/26/2013 05:10 AM	
						11/25/2013 10:00 AM	11/26/2013 05:24 PM	
						11/25/2013 10:00 AM	11/26/2013 06:50 PM	
						11/25/2013 10:00 AM	11/27/2013 01:17 PM	
13111187-02	E DUP-01			11/20/2013		11/25/2013 10:00 AM	11/26/2013 05:14 AM	
						11/25/2013 10:00 AM	11/26/2013 05:29 PM	
						11/25/2013 10:00 AM	11/27/2013 01:20 PM	
Batch ID	<u>74973</u>	Test Name: Lo	ow-Level Semiv	<u>volatiles</u>				
13111187-01	MW-116		Water	11/20/2013 4:30:00 PM		11/26/2013 07:34 AM	11/26/2013 04:40 PM	
13111187-02	DUP-01			11/20/2013		11/26/2013 07:34 AM	11/26/2013 05:22 PM	
Batch ID	74990B	Test Name: T	PH DRO/ORO	8015C				
13111187-02	C DUP-01		Water	11/20/2013		11/26/2013 01:33 PM	11/27/2013 02:19 PM	
Batch ID	<u>75019</u>	Test Name: T	PH DRO/ORO	8015C				
13111187-010	C MW-116		Water	11/20/2013 4:30:00 PM		11/27/2013 09:52 AM	12/3/2013 09:28 PM	
Batch ID	R157759	Test Name: To	otal Dissolved S	Solids				
13111187-02	F DUP-01		Water	11/20/2013			11/25/2013 11:40 AM	
Batch ID	R157787	Test Name: pH	H - SM4500H+	<u>B</u>				
13111187-01	F MW-116		Water	11/20/2013 4:30:00 PM			11/26/2013 09:00 AM	
13111187-02	F DUP-01			11/20/2013			11/26/2013 09:00 AM	

11/26/2013 05:30 PM

DATES REPORT

Work Order: 13111187

13111187-02F DUP-01

Batch ID R158719

13111187-01I MW-116

13111187-02I DUP-01

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID Client Sa	ample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
<u>Batch ID</u> R157956	Test Name: A	anions - EPA 30	00.0 (1993)				
13111187-01G MW-116	i	Water	11/20/2013 4:30:00 PM			12/2/2013 11:46 PM	
13111187-02G DUP-01			11/20/2013			12/3/2013	
<u>Batch ID</u> <u>R157973</u>	Test Name: L	ow Level Volat	iles - SW8260C				
13111187-01A MW-116	i	Water	11/20/2013 4:30:00 PM			12/3/2013 06:14 PM	
13111187-02A DUP-01			11/20/2013			12/3/2013 06:38 PM	
<u>Batch ID</u> <u>R158023</u>	Test Name: C	Sasoline Range (Organics - SW8015C				
13111187-01B MW-116	i	Water	11/20/2013 4:30:00 PM			12/3/2013 03:25 AM	
13111187-02B DUP-01			11/20/2013			12/3/2013 03:43 AM	
Batch ID <u>R158074</u>	Test Name: C	Cyanide - SM450	00CN E				
13111187-01 MW-116	i	Water	11/20/2013 4:30:00 PM			12/3/2013 08:45 AM	
13111187-02 DUP-01			11/20/2013			12/3/2013 08:45 AM	
<u>Batch ID</u> R158097	Test Name: L	ow Level Volat	iles - SW8260C				
13111187-03A Trip Blan	nk 110613-73	Water	11/23/2013			12/4/2013 04:34 PM	
<u>Batch ID</u> R158112	Test Name: A	nions - EPA 30	00.0 (1993)				
13111187-01F MW-116	i	Water	11/20/2013 4:30:00 PM			12/4/2013 01:32 PM	
						12/4/2013 04:47 PM	

12/4/2013 01:46 PM 12/4/2013 05:02 PM

12/18/2013

12/18/2013

DATES REPORT

11/20/2013

11/20/2013 4:30:00 PM

11/20/2013

Test Name: Miscellaneous Analysis

Water

ALS Environmental Date: 18-Dec-13

Client: Navajo Refining Company QC BATCH REPORT Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: 74990B	Instrument ID FID-16		Metho	d: SW801	5M						
MBLK Sample ID:	LBLKW-131126-74990B				U	Jnits: mg /l	L	Analys	is Date: 11	/27/2013	03:29 AM
Client ID:	Run	ID: FID-16 _	_131126A		Se	qNo: 345 7	7741	Prep Date: 11/2	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.07386	0.0050	0.06061		0	122	60-135	0			
LCS Sample ID:	LLCSW-131126-74990B				U	Jnits: mg/ l	L	Analys	is Date: 11	/27/2013	03:55 AM
Client ID:	Run	ID: FID-16 _	_131126A		Se	qNo: 345 7	7742	Prep Date: 11/2	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5893	0.050	0.6061		0	97.2	70-130				
TPH (Oil Range)	0.5302	0.10	0.6061		0	87.5	70-130				
Surr: 2-Fluorobiphenyl	0.07808	0.0050	0.06061		0	129	60-135	0			
LCSD Sample ID:	LLCSDW-131126-74990B				L	Jnits: mg/ l	L	Analys	is Date: 11	/27/2013	04:21 AM
Client ID:	Run	ID: FID-16 _	_131126A		Se	qNo: 345 7	7743	Prep Date: 11/2	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5356	0.050	0.6061		0	88.4	70-130	0.5893	9.55	20	
TPH (Oil Range)	0.5714	0.10	0.6061		0	94.3	70-130	0.5302	7.49	20	
Surr: 2-Fluorobiphenyl	0.05932	0.0050	0.06061		0	97.9	60-135	0.07808	27.3	20	R

The following samples were analyzed in this batch:

Note:

13111187-02C

Navajo Refining Company Client:

Work Order: 13111187

RO Discharge Sampling

Project:

Batch ID: 75019	Instrument ID FID-16		Method	d: SW801	5M						
MBLK Sample ID:	LBLKW-131127-75019				Ĺ	Jnits: mg/ l	L	Analys	is Date: 12	2/3/2013 0	3:17 PM
Client ID:	Rur	n ID: FID-16 _	_131127A		Se	qNo: 345 7	707	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.06882	0.0050	0.06061		0	114	60-135	0			
LCS Sample ID:	LLCSW-131127-75019				Ĺ	Jnits: mg/ l	L	Analys	is Date: 12	2/3/2013 0	3:43 PM
Client ID:	Rur	n ID: FID-16 _	_131127A		Se	qNo: 345 7	709	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7182	0.050	0.6061		0	119	70-130				
TPH (Oil Range)	0.6655	0.10	0.6061		0	110	70-130				
Surr: 2-Fluorobiphenyl	0.0758	0.0050	0.06061		0	125	60-135	0			
LCSD Sample ID:	LLCSDW-131127-75019				ι	Jnits: mg/ l	L	Analys	is Date: 12	2/3/2013 0	4:10 PM
Client ID:	Rur	n ID: FID-16 _	_131127A		Se	qNo: 345 7	711	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6627	0.050	0.6061		0	109	70-130	0.7182	8.04	20	
TPH (Oil Range)	0.6411	0.10	0.6061		0	106	70-130	0.6655	3.75	20	
Surr: 2-Fluorobiphenyl	0.07659	0.0050	0.06061		0	126	60-135	0.0758	1.04	20	

The following samples were analyzed in this batch:

Note:

13111187-01C

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R1	158023 Inst	trument ID FID-9		Method	d: SW801	5						
MBLK	Sample ID: GBL	KW2-131202-R158023	3			U	nits: mg /	L	Anal	ysis Date: 12	2/2/2013 0	8:31 PN
Client ID:		Run	ID: FID-9_	131202C		Sec	qNo: 345 6	5298	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Rai	nge Organics	U	0.0500									
	romofluorobenzene	0.09923	0.00500	0.1		0	99.2	70-130		0		
LCS	Sample ID: GLCS	SW2-131202-R158023	3			U	nits: mg/	L	Anal	ysis Date: 12	2/2/2013 0	7:54 PN
Client ID:		Run	ID: FID-9_	131202C		Sec	qNo: 345 6	297	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Rai	nge Organics	1.033	0.0500	1		0	103	70-130				
	romofluorobenzene	0.1002	0.00500	0.1		0	100	70-130		0		
MS	Sample ID: 1311	1253-02BMS				U	nits: mg/	L	Anal	ysis Date: 12	2/3/2013 1	2:24 AN
	Sample ID: 1311		i ID: FID-9_ ′	131202C			nits: mg/ l qNo: 345 6		Anal	ysis Date: 12	2/3/2013 1 DF: 1	2:24 AN
Client ID:	Sample ID: 1311		i ID: FID-9_ ′	131202C SPK Val	SPK Ref Value		·		·	ysis Date: 12 %RPD		12:24 AN Qual
Client ID: Analyte	Sample ID: 1311	Run					qNo: 345 6	Control	Prep Date:	•	DF: 1 RPD	
Client ID: Analyte Gasoline Rai	· 	Run Result	PQL	SPK Val		Sed	%REC	Control Limit	Prep Date:	•	DF: 1 RPD	
Client ID: Analyte Gasoline Rai Surr: 4-Bri	nge Organics	Result 1.049 0.09964	PQL 0.0500	SPK Val		0 0	9No: 3456 %REC 105	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
	nge Organics romofluorobenzene	Result 1.049 0.09964 1253-02BMSD	PQL 0.0500	SPK Val 1 0.1		0 0	%REC 105 99.6	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Client ID: Analyte Gasoline Rat Surr: 4-Bro MSD Client ID:	nge Organics romofluorobenzene	Result 1.049 0.09964 1253-02BMSD	PQL 0.0500 0.00500	SPK Val 1 0.1		0 0	%REC 105 99.6	Control Limit 70-130 70-130	Prep Date: RPD Ref Value Anal	%RPD	DF: 1 RPD Limit	Qual
Client ID: Analyte Gasoline Rai Surr: 4-Bro MSD Client ID: Analyte	nge Organics romofluorobenzene	Result 1.049 0.09964 1253-02BMSD Run	PQL 0.0500 0.00500	SPK Val 1 0.1	Value SPK Ref	0 0	%REC 105 99.6 nits: mg/l	Control Limit 70-130 70-130 3312 Control	Prep Date: RPD Ref Value Analy Prep Date: RPD Ref	%RPD 0 ysis Date: 12 %RPD	DF: 1 RPD Limit 2/3/2013 1 DF: 1 RPD	Qual 2:42 AN

Client: Navajo Refining Company

Work Order: 13111187

Batch ID: 749	Instrument ID ICP7500		Method:	SW602	0	(Dissolve	e)			
MBLK	Sample ID: MBLKW6-112513-74938				Units: mg/	L	Analy	sis Date: 1	1/26/2013	03:51 PM
Client ID:	R	un ID: ICP750	0_131126A		SeqNo: 345 0	394	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.005079	0.0100								J
Arsenic	U	0.00500								
Barium	U	0.00500								
Boron	U	0.0500								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00500								
Cobalt	U	0.00500								
Copper	U	0.00500								
Iron	U	0.200								
Lead	U	0.00500								
Manganese	U	0.00500								
Molybdenum	U	0.00500								
Nickel	U	0.00500								
Potassium	U	0.200								
Selenium	U	0.00500								
Silver	U	0.00500								
Sodium	U	0.200								
Uranium	U	0.00500								
Zinc	0.00409	0.00500								J

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICP7500		Method	: SW602	0	((Dissolve	e)			
LCS	Sample ID: MLCSW6-112513-74938				l	Jnits: mg/	L	Analy	sis Date: 1	1/26/2013	04:21 AM
Client ID:	Rui	n ID: ICP750	0_131125A		Se	qNo: 344 9	9549	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1099	0.0100	0.1		0	110	80-120				
Arsenic	0.05141	0.00500	0.05		0	103	80-120				
Barium	0.05065	0.00500	0.05		0	101	80-120				
Boron	0.4911	0.0500	0.5		0	98.2	80-120				
Cadmium	0.04961	0.00200	0.05		0	99.2	80-120				
Calcium	5.056	0.500	5		0	101	80-120				
Chromium	0.0519	0.00500	0.05		0	104	80-120				
Cobalt	0.05168	0.00500	0.05		0	103	80-120				
Copper	0.05218	0.00500	0.05		0	104	80-120				
Iron	5.202	0.200	5		0	104	80-120				
Lead	0.05065	0.00500	0.05		0	101	80-120				
Manganese	0.05367	0.00500	0.05		0	107	80-120				
Molybdenum	0.0493	0.00500	0.05		0	98.6	80-120				
Nickel	0.05122	0.00500	0.05		0	102	80-120				
Potassium	4.989	0.200	5		0	99.8	80-120				
Selenium	0.05042	0.00500	0.05		0	101	80-120				
Silver	0.05165	0.00500	0.05		0	103	80-120				
Uranium	0.09498	0.00500	0.1		0	95	80-120				
Zinc	0.05473	0.00500	0.05		0	109	80-120				
LCS	Sample ID: MLCSW6-112513-74938				L	Jnits: mg/	L	Analy	sis Date: 1	1/26/2013	03:56 PM
Client ID:	Rui	n ID: ICP750	0_131126A		Se	qNo: 345 0	395	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	5.183	0.200	5		0	104	80-120		701.11.12		
Jouluill	5.183	0.200	5		U	104	00-120				

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

Client: Navajo Refining Company

Work Order: 13111187

Copper

Manganese

Iron

Nickel

Zinc

Note:

Selenium

Project: RO Discharge Sampling

Troject.	RO Discharge San	.pg									
Batch ID: 749	Instrument ID	ICP7500		Method	: SW6020		(Dissolve	e)			
MS	Sample ID: 1311934-06CMS	3				Units: mg /	L	Anal	/sis Date: 1	1/26/2013	04:40 AM
Client ID:		Rur	n ID: ICP750	0_131125A	S	eqNo: 344 9	9553	Prep Date: 11	/25/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum		0.1146	0.0100	0.1	0.007725	107	75-125				
Barium		36.63	0.00500	0.05	38.83	-4400	75-125				SEO
Boron		12.36	0.0500	0.5	12.27	18	75-125				SEO
Cadmium		0.04905	0.00200	0.05	0.00008766	97.9	75-125				
Lead		0.05122	0.00500	0.05	-0.0001674	103	75-125				
Molybdenum		0.05261	0.00500	0.05	0.0007769	104	75-125				
Potassium		9.723	0.200	5	4.865	97.2	75-125				
Silver		0.04794	0.00500	0.05	-0.0004062	96.7	75-125				
Sodium		U	0.200	5	0	0	75-125				SX
Uranium		0.1013	0.00500	0.1	-0.0001365	101	75-125				
MS	Sample ID: 1311934-06CMS	3				Units: mg /	L	Anal	/sis Date: 1	1/26/2013	04:31 PM
Client ID:		Rur	n ID: ICP750	0_131126A	S	eqNo: 345 (0593	Prep Date: 11	/25/2013	DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic		0.0573	0.00500	0.05	0.005024	105	75-125				
Calcium		67.4	0.500	5	64.91	49.8	75-125				SO
Chromium		0.05177	0.00500	0.05	0	104	75-125				
Cobalt		0.04989	0.00500	0.05	0.0008988	98	75-125				

0.04791

0.09802

0.04913

0.0515

0.06288

6.283

0.00500

0.00500

0.00500

0.00500

0.00500

0.200

0.05

0.05

0.05

0.05

0.05

5

0

0

0

1.625

0.05231

0.01235

95.8

93.2

91.4

98.3

103

101

75-125

75-125

75-125

75-125

75-125

75-125

Client: Navajo Refining Company

Work Order: 13111187

Batch ID: 7493	Instrument ID ICP7500		Method	: SW6020		(Dissolve)			
MSD	Sample ID: 1311934-06CMSD				Units: mg/	L	Analysi	s Date: 11	/26/2013	04:45 AM
Client ID:	Ru	ın ID: ICP7500	_131125A	S	eqNo: 344 9	9554	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1108	0.0100	0.1	0.007725	103	75-125	0.1146	3.37	25	
Arsenic	0.05436	0.00500	0.05	0.005024	98.7	75-125	0.05636	3.61	25	
Barium	35.64	0.00500	0.05	38.83	-6380	75-125	36.63	2.74	25	SEO
Boron	12.21	0.0500	0.5	12.27	-12	75-125	12.36	1.22	25	SEO
Cadmium	0.0469	0.00200	0.05	0.00008766	93.6	75-125	0.04905	4.48	25	
Calcium	66.04	0.500	5	64.91	22.6	75-125	67.12	1.62	25	so
Chromium	0.0486	0.00500	0.05	0.000705	95.8	75-125	0.05175	6.28	25	
Cobalt	0.04761	0.00500	0.05	0.0008988	93.4	75-125	0.05009	5.08	25	
Copper	0.04531	0.00500	0.05	-0.0003358	91.3	75-125	0.04751	4.74	25	
Iron	6.027	0.200	5	1.625	88	75-125	6.403	6.05	25	
Lead	0.04965	0.00500	0.05	-0.0001674	99.6	75-125	0.05122	3.11	25	
Manganese	0.09378	0.00500	0.05	0.05231	82.9	75-125	0.1004	6.82	25	
Molybdenum	0.05151	0.00500	0.05	0.0007769	101	75-125	0.05261	2.11	25	
Nickel	0.04559	0.00500	0.05	0.0007887	89.6	75-125	0.0489	7.01	25	
Potassium	9.507	0.200	5	4.865	92.8	75-125	9.723	2.25	25	
Selenium	0.04751	0.00500	0.05	0.0008209	93.4	75-125	0.05051	6.12	25	
Silver	0.047	0.00500	0.05	-0.0004062	94.8	75-125	0.04794	1.98	25	
Sodium	U	0.200	5	0	0	75-125	0	0	25	SX
Uranium	0.0989	0.00500	0.1	-0.0001365	99	75-125	0.1013	2.4	25	
Zinc	0.06053	0.00500	0.05	0.01235	96.4	75-125	0.06357	4.9	25	

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Instrument ID ICP7500		Wictifoc	: SW602	.0	(Dissolve	<i>*)</i>			
: 1311934-06CDUP				Units: mg/l	L	Analysi	s Date: 11	/26/2013	04:30 AM
Run	ID: ICP750	0_131125A		SeqNo: 344 9	9551	Prep Date: 11/2	5/2013	DF: 1	
Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
0.00616	0.0100					0.007725	0	25	J
	0.00500					0.005024	4.09	25	
U	0.00200					0.00008766	0	25	
63.59	0.500					64.91	2.05	25	
U	0.00500					0.000705	0	25	-
0.0008663	0.00500					0.0008988	0	25	J
U	0.00500					-0.0003358	0	25	
1.38	0.200					1.625	16.3	25	
U	0.00500					-0.0001674	0	25	
0.04698	0.00500					0.05231	10.7	25	
U	0.00500					0.0007769	0	25	
U	0.00500					0.0007887	0	25	
4.664	0.200					4.865	4.22	25	
0.001275	0.00500					0.0008209	0	25	J
U	0.00500					-0.0004062	0	25	
U	0.00500					-0.0001365	0	25	
0.01187	0.00500					0.01235	3.96	25	
: 1311934-06CDUP				Units: mg/l	L_	Analysi	s Date: 11	/26/2013	04:06 PM
Run	ID: ICP750	0_131126A		SeqNo: 345 (542	Prep Date: 11/2	5/2013	DF: 50	
Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
33.96	0.250					37.96	11.1	25	
10.02	2.50					11.28	11.8	25	
	Result 0.00616 0.005234 U 63.59 U 0.0008663 U 1.38 U 0.04698 U U U 4.664 0.001275 U U 0.01187 : 1311934-06CDUP Run Result 33.96	Result PQL 0.00616 0.0100 0.005234 0.00500 U 0.00200 63.59 0.500 U 0.00500	Result PQL SPK Val 0.00616 0.0100 0.005234 0.00500 U 0.00200 63.59 0.500 U 0.00500 0.0008663 0.00500 U 0.00500 1.38 0.200 U 0.00500 U SPK Val Result PQL SPK Val	Result PQL SPK Value 0.00616 0.0100 0.005234 0.00500 U 0.00200 63.59 0.500 U 0.00500 SPK Ref Value SPK Ref Value	Run ID: ICP7500_131125A Result PQL SPK Val SPK Ref Value %REC 0.00616 0.0100 0.005234 0.00500 U 0.00200 63.59 0.500 U 0.00500 0.0008663 0.00500 U 0.00500 W 0.00500 U 0.00500	Run ID: ICP7500_131125A SeqNo: 3449551 Result PQL SPK Ref Value Control Limit 0.00616 0.0100 0.00500	Result PQL SPK Val	Result PQL SPK Val SeqNo:3449551 Prep Date: 11/25/2013 Result PQL SPK Val SPK Ref Value NREC Control Limit RPD Ref Value NRPD Ref Va	Result

Client: Navajo Refining Company

Work Order: 13111187

Surr: Phenol-d6

Note:

Project: RO Discharge Sampling

Batch ID: 74973 Inst	trument ID SV-4		Metho	d: SW827	70						
MBLK Sample ID: SBLK	(W1-131126-74973				ι	Jnits: µg/l	_	Analy	/sis Date: 1	1/26/2013	05:05 PM
Client ID:	Run	ID: SV-4_1	31126A		Se	eqNo: 345	1914	Prep Date: 11	/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.583	0.20	5		0	71.7	34-129		0		
Surr: 2-Fluorobiphenyl	3.466	0.20	5		0	69.3	40-125		0		
Surr: 2-Fluorophenol	3.106	0.20	5		0	62.1	20-120		0		
Surr: 4-Terphenyl-d14	4.479	0.20	5		0	89.6	40-135		0		
Surr: Nitrobenzene-d5	3.192	0.20	5		0	63.8	41-120		0		
Surr: Phenol-d6	2.816	0.20	5		0	56.3	20-120		0		
LCS Sample ID: SLCS	SW1-131126-74973				ι	Jnits: µg/l	-	Analy	ysis Date: 1	1/26/2013	05:25 PM
Client ID:	Run	ID: SV-4_1	31126A		Se	eqNo: 345	1915	Prep Date: 11	/26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.803	0.20	5		0	76.1	45-120				
2-Methylnaphthalene	3.701	0.20	5		0	74	50-120				
Benzo(a)pyrene	4.305	0.20	5		0	86.1	45-120				
Naphthalene	3.749	0.20	5		0	75	45-120				
Surr: 2,4,6-Tribromophenol	4.877	0.20	5		0	97.5	34-129		0		
Surr: 2-Fluorobiphenyl	3.823	0.20	5		0	76.5	40-125		0		
Surr: 2-Fluorophenol	3.367	0.20	5		0	67.3	20-120		0		
Surr: 4-Terphenyl-d14	3.983	0.20	5		0	79.7	40-135		0		
Surr: Nitrobenzene-d5	3.45	0.20	5		0	69	41-120		0		

3.572

0.20

71.4

20-120

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: 74973 Instrument ID SV-4 Method: SW8270

LCSD Sample ID: SLCSDW1	-131126-74973				L	Jnits: µg/L	-	Analysi	s Date: 11	/26/2013	05:46 PM
Client ID:	Run II): SV-4_1	31126A		Se	qNo: 345	1916	Prep Date: 11/2	6/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.143	0.20	5		0	82.9	45-120	3.803	8.56	20	
2-Methylnaphthalene	4.022	0.20	5		0	80.4	50-120	3.701	8.3	20	
Benzo(a)pyrene	4.867	0.20	5		0	97.3	45-120	4.305	12.2	20	
Naphthalene	3.815	0.20	5		0	76.3	45-120	3.749	1.74	20	
Surr: 2,4,6-Tribromophenol	4.519	0.20	5		0	90.4	34-129	4.877	7.63	0	
Surr: 2-Fluorobiphenyl	3.597	0.20	5		0	71.9	40-125	3.823	6.09	0	
Surr: 2-Fluorophenol	3.41	0.20	5		0	68.2	20-120	3.367	1.28	0	
Surr: 4-Terphenyl-d14	4.253	0.20	5		0	85.1	40-135	3.983	6.55	0	
Surr: Nitrobenzene-d5	3.315	0.20	5		0	66.3	41-120	3.45	3.98	0	
Surr: Phenol-d6	3.376	0.20	5		0	67.5	20-120	3.572	5.65	0	

The following samples were analyzed in this batch:

13111187-01D 13111187-02D

Note:

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Metho	d: SW826	60					
MBLK Sample ID: V	BLKW-131203-R157973				Units: µg/l	_	Analy	/sis Date: 1	2/3/2013	11:13 AM
Client ID:	Run I	D: VOA4_	131203A		SeqNo: 345	5211	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	3.0								
Surr: 1,2-Dichloroethane-	d4 59.13	1.0	50		0 118	71-125		0		
Surr: 4-Bromofluorobenze	ene 53.31	1.0	50		0 107	70-125		0		
Surr: Dibromofluorometha	nne 56.76	1.0	50		0 114	74-125		0		
Surr: Toluene-d8	55.64	1.0	50		0 111	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Method	: SW8260)						
LCS Sample ID: Y	VLCSW-131203-R157973				U	nits: µg/L		Analy	sis Date: 1	2/3/2013	10:24 AM
Client ID:	Run	ID: VOA4_	131203A		Sec	qNo: 3455	5210	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	59.56	1.0	50		0	119	75-130				
1,1,2,2-Tetrachloroethane	51.02	1.0	50		0	102	74-123				
1,1,2-Trichloroethane	51.66	1.0	50	(0	103	80-120				
1,1-Dichloroethane	57.26	1.0	50		0	115	80-120				
1,1-Dichloroethene	60.43	1.0	50	(0	121	75-130				
1,2-Dibromoethane	52.61	1.0	50		0	105	80-120				
1,2-Dichloroethane	52.48	1.0	50	(0	105	79-120				
Benzene	54.13	1.0	50		0	108	80-120				
Carbon tetrachloride	54.33	1.0	50		0	109	75-125				
Chloroform	55.19	1.0	50		0	110	70-130				
Ethylbenzene	52.55	1.0	50		0	105	80-120				
Methylene chloride	58.04	2.0	50		0	116	65-133				
Tetrachloroethene	52.04	1.0	50		0	104	75-130				
Toluene	52.2	1.0	50		0	104	80-121				
Trichloroethene	53.23	1.0	50	(0	106	75-125				
Vinyl chloride	60.81	1.0	50		0	122	70-135				
Xylenes, Total	155	3.0	150		0	103	80-124				
Surr: 1,2-Dichloroethane	e-d4 58.37	1.0	50		0	117	71-125		0		
Surr: 4-Bromofluorobena	zene 57.61	1.0	50		0	115	70-125		0		
Surr: Dibromofluorometh	nane 59.15	1.0	50		0	118	74-125		0		
Surr: Toluene-d8	55.4	1.0	50		0	111	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Method	: SW8260						
MS Sample ID:	13111059-52AMS				Units: µg/L	_	Analy	/sis Date: 1	2/3/2013	02:30 PM
Client ID:	R	un ID: VOA4 _	131203A	S	eqNo: 345 (6152	Prep Date:		DF: 1 0	0
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	626.1	10	500	0	125	75-130				
1,1,2,2-Tetrachloroethane	541.3	10	500	0	108	74-123				
1,1,2-Trichloroethane	555.3	10	500	0	111	80-120				
1,1-Dichloroethane	606.3	10	500	0	121	80-120				S
1,1-Dichloroethene	635.9	10	500	0	127	75-130				
1,2-Dibromoethane	559.5	10	500	0	112	80-120				
1,2-Dichloroethane	578.5	10	500	0	116	79-120				
Benzene	1480	10	500	863	123	80-120				S
Carbon tetrachloride	578.7	10	500	0	116	79-120				
Chloroform	589	10	500	0	118	70-130				
Ethylbenzene	552.4	10	500	0	110	80-120				
Methylene chloride	614.1	20	500	0	123	65-133				
Tetrachloroethene	546.5	10	500	0	109	75-130				
Toluene	547.3	10	500	0	109	80-121				
Trichloroethene	560.1	10	500	0	112	75-125				
Vinyl chloride	646.2	10	500	0	129	70-135				
Xylenes, Total	1648	30	1500	0	110	80-124				
Surr: 1,2-Dichloroethane	e-d4 588	10	500	0	118	71-125		0		
Surr: 4-Bromofluorobena	zene 575.5	10	500	0	115	70-125		0		
Surr: Dibromofluorometh	nane 601	10	500	0	120	74-125		0		
Surr: Toluene-d8	551.9	10	500	0	110	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4	Method:	SW8260
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MSD Sample ID: 13111059-	52AMSD			I	Units: µg/l	-	Analysi	is Date: 12	2/3/2013 0	2:55 PN
Client ID:	Run II	D: VOA4_	131203A	Se	eqNo: 345	6153	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	600.4	10	500	0	120	75-130	626.1	4.2	20	
1,1,2,2-Tetrachloroethane	545.7	10	500	0	109	74-123	541.3	0.807	20	
1,1,2-Trichloroethane	543	10	500	0	109	80-120	555.3	2.25	20	
1,1-Dichloroethane	582.3	10	500	0	116	80-120	606.3	4.04	20	
1,1-Dichloroethene	615.2	10	500	0	123	75-130	635.9	3.3	20	
1,2-Dibromoethane	551.1	10	500	0	110	80-120	559.5	1.51	20	
1,2-Dichloroethane	561.4	10	500	0	112	79-120	578.5	3	20	
Benzene	1416	10	500	863	111	80-120	1480	4.41	20	
Carbon tetrachloride	552.9	10	500	0	111	75-125	578.7	4.56	20	
Chloroform	565.8	10	500	0	113	70-130	589	4.02	20	
Ethylbenzene	538.3	10	500	0	108	80-120	552.4	2.58	20	
Methylene chloride	597.4	20	500	0	119	65-133	614.1	2.75	20	
Tetrachloroethene	527.1	10	500	0	105	75-130	546.5	3.63	20	
Toluene	529.4	10	500	0	106	80-121	547.3	3.32	20	
Trichloroethene	543.2	10	500	0	109	75-120	560.1	3.06	20	
Vinyl chloride	622.9	10	500	0	125	70-135	646.2	3.68	20	
Xylenes, Total	1594	30	1500	0	106	80-124	1648	3.35	20	
Surr: 1,2-Dichloroethane-d4	583.2	10	500	0	117	71-125	588	0.823	20	
Surr: 4-Bromofluorobenzene	566.1	10	500	0	113	70-125	575.5	1.64	20	
Surr: Dibromofluoromethane	592.2	10	500	0	118	74-125	601	1.48	20	
Surr: Toluene-d8	550.2	10	500	0	110	75-125	551.9	0.308	20	

The following samples were analyzed in this batch:

Note:

13111187-01A 13111187-02A

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Metho	d: SW82 6	60					
MBLK Sample ID: V	BLKW-131203-R158097				Units: µg/l		Analy	/sis Date: 1	2/4/2013	11:14 AM
Client ID:	Run I	D: VOA4_	131204A		SeqNo: 345	7811	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	3.0								
Surr: 1,2-Dichloroethane-	-d4 59.21	1.0	50		0 118	71-125		0		
Surr: 4-Bromofluorobenze	ene 53.57	1.0	50		0 107	70-125		0		
Surr: Dibromofluorometh	ane 56.22	1.0	50		0 112	74-125		0		
Surr: Toluene-d8	54.63	1.0	50		0 109	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Method	: SW8260)						
LCS Sample ID: V	VLCSW-131203-R158097				U	Inits: µg/L		Analy	/sis Date: 1	2/4/2013	10:24 AM
Client ID:	Run	n ID: VOA4_	131204A		Se	qNo: 345 7	7810	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	52.63	1.0	50		0	105	75-130				
1,1,2,2-Tetrachloroethane	48.12	1.0	50		0	96.2	74-123				
1,1,2-Trichloroethane	47.64	1.0	50		0	95.3	80-120				
1,1-Dichloroethane	51.47	1.0	50	-	0	103	80-120				
1,1-Dichloroethene	54.46	1.0	50		0	109	75-130				
1,2-Dibromoethane	48.08	1.0	50	-	0	96.2	80-120				
1,2-Dichloroethane	48.27	1.0	50		0	96.5	79-120				
Benzene	49.75	1.0	50	-	0	99.5	80-120				
Carbon tetrachloride	48.69	1.0	50		0	97.4	75-125				
Chloroform	50.04	1.0	50	-	0	100	70-130				
Ethylbenzene	46.88	1.0	50		0	93.8	80-120				
Methylene chloride	54	2.0	50	-	0	108	65-133				
Tetrachloroethene	46.21	1.0	50		0	92.4	75-130				
Toluene	47.06	1.0	50	-	0	94.1	80-121				
Trichloroethene	48.1	1.0	50		0	96.2	75-125				
Vinyl chloride	54.76	1.0	50		0	110	70-135				
Xylenes, Total	138.9	3.0	150		0	92.6	80-124				
Surr: 1,2-Dichloroethane	e-d4 55.92	1.0	50		0	112	71-125		0		
Surr: 4-Bromofluorobenz	zene 55.89	1.0	50		0	112	70-125		0		
Surr: Dibromofluorometh	nane 57.37	1.0	50		0	115	74-125		0		
Surr: Toluene-d8	53.5	1.0	50		0	107	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Method	: SW8260						
MS Sample ID: 13	3111198-01AMS				Units: µg/L	-	Analy	ysis Date: 1	2/4/2013	12:28 PM
Client ID:	Ru	n ID: VOA4_	131204A	Se	eqNo: 345	7814	Prep Date:		DF: 2	5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1565	25	1250	0	125	75-130				
1,1,2,2-Tetrachloroethane	1361	25	1250	0	109	74-123				
1,1,2-Trichloroethane	1429	25	1250	0	114	80-120				
1,1-Dichloroethane	1517	25	1250	0	121	80-120				S
1,1-Dichloroethene	1610	25	1250	0	129	75-130				
1,2-Dibromoethane	1365	25	1250	0	109	80-120				
1,2-Dichloroethane	1452	25	1250	0	116	79-120				
Benzene	3558	25	1250	1977	126	80-120				S
Carbon tetrachloride	1397	25	1250	0	112	79-120				
Chloroform	1470	25	1250	0	118	70-130				
Ethylbenzene	2723	25	1250	1058	133	80-120				S
Methylene chloride	1547	50	1250	0	124	65-133				
Tetrachloroethene	1260	25	1250	0	101	75-130				
Toluene	1499	25	1250	133.1	109	80-121				
Trichloroethene	1378	25	1250	0	110	75-125				
Vinyl chloride	1635	25	1250	0	131	70-135				
Xylenes, Total	11600	75	3750	5692	158	80-124				S
Surr: 1,2-Dichloroethane-	<i>d4</i> 1441	25	1250	0	115	71-125		0		
Surr: 4-Bromofluorobenze	ene 1440	25	1250	0	115	70-125		0		
Surr: Dibromofluorometha	ane 1495	25	1250	0	120	74-125		0		
Surr: Toluene-d8	1390	25	1250	0	111	75-125		0		

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4	Method:	SW8260

MSD Sample ID: 13111198-0	1AMSD			ι	Jnits: µg/L	-	Analysi	is Date: 12	/4/2013 1	2:52 PN
Client ID:	Run I	D: VOA4_	131204A	Se	eqNo: 345 7	7815	Prep Date:		DF: 25	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1520	25	1250	0	122	75-130	1565	2.94	20	
1,1,2,2-Tetrachloroethane	1357	25	1250	0	109	74-123	1361	0.296	20	
1,1,2-Trichloroethane	1370	25	1250	0	110	80-120	1429	4.2	20	
1,1-Dichloroethane	1478	25	1250	0	118	80-120	1517	2.59	20	
1,1-Dichloroethene	1550	25	1250	0	124	75-130	1610	3.84	20	
1,2-Dibromoethane	1342	25	1250	0	107	80-120	1365	1.71	20	
1,2-Dichloroethane	1420	25	1250	0	114	79-120	1452	2.27	20	
Benzene	3437	25	1250	1977	117	80-120	3558	3.46	20	
Carbon tetrachloride	1414	25	1250	0	113	75-125	1397	1.2	20	
Chloroform	1438	25	1250	0	115	70-130	1470	2.17	20	
Ethylbenzene	2521	25	1250	1058	117	80-120	2723	7.73	20	
Methylene chloride	1513	50	1250	0	121	65-133	1547	2.19	20	
Tetrachloroethene	1246	25	1250	0	99.6	75-130	1260	1.15	20	
Toluene	1447	25	1250	133.1	105	80-121	1499	3.53	20	
Trichloroethene	1353	25	1250	0	108	75-120	1378	1.84	20	
Vinyl chloride	1598	25	1250	0	128	70-135	1635	2.3	20	
Xylenes, Total	10640	75	3750	5692	132	80-124	11600	8.62	20	S
Surr: 1,2-Dichloroethane-d4	1420	25	1250	0	114	71-125	1441	1.51	20	
Surr: 4-Bromofluorobenzene	1417	25	1250	0	113	70-125	1440	1.67	20	
Surr: Dibromofluoromethane	1473	25	1250	0	118	74-125	1495	1.43	20	
Surr: Toluene-d8	1345	25	1250	0	108	75-125	1390	3.33	20	

The following samples were analyzed in this batch:

Note:

13111187-03A

Client: Navajo Refining Company

Work Order: 13111187

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R1	I57759 Instrument II	D Balance1		Metho	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-112513	-R157759				Units: mg/	L	Analy	sis Date: 1	1/25/2013	11:40 AM
Client ID:		Run I	D: BALAN	CE1_13112	:5D	SeqNo: 344	9363	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	U	10.0								
LCS	Sample ID: WLCS-112513	-R157759				Units: mg/	L	Analy	sis Date: 1	1/25/2013	11:40 AM
Client ID:		Run I	D: BALAN	CE1_13112	:5D	SeqNo: 344	9364	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	980	10.0	1000		0 98	85-115				
DUP	Sample ID: 13111054-04C	DUP				Units: mg/	L	Analy	sis Date: 1	1/25/2013	11:40 AM
Client ID:		Run I	D: BALAN	CE1_13112	:5D	SeqNo: 345	2230	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolv	ved Solids (Residue, Filt	200700	10.0					19930	0 0.73	3 10	
The following	ng samples were analyzed	in this batch:	13	111187-02	=						

Navajo Refining Company Client:

Work Order: 13111187

RO Discharge Sampling **Project:**

Batch ID: F	R157787	Instrument ID WetChem		Method	: SM450	0H+ B	(Dissolve	e)			
LCS	Sample ID: W	/LCS-W11126-R157787				Units: pH I	Units	Analys	is Date: 11	/26/2013	09:00 AM
Client ID:		Run	ID: WETCH	HEM_131126	8B	SeqNo: 345 6	0021	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН		6	0.100	6		0 100	98-102				
DUP	Sample ID: 13	3111121-01EDup				Units: pH I	Units	Analys	is Date: 11	/26/2013	09:00 AM
						•		•			
Client ID:		Run	ID: WETCH	HEM_131126	SB	SeqNo: 345 0	0073	Prep Date:		DF: 1	
Client ID: Analyte		Run Result	ID: WETC F	IEM_131126 SPK Val	SPK Ref Value	SeqNo: 345 0	0073 Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
					SPK Ref	·	Control	RPD Ref	%RPD	RPD	Qual H
Analyte	С @рН	Result	PQL		SPK Ref	·	Control	RPD Ref Value	%RPD	RPD Limit	

Navajo Refining Company

Work Order: 13111187

Client:

Project: RO Discharge Sampling

Batch ID: R	157905 Instrument	ID Balance1		Method	: M2540	C ((Dissolve	e)			
MBLK	Sample ID: WBLK-11261	3-R157905				Units: mg/l	L _.	Analysi	s Date: 1 ′	1/26/2013	05:30 PN
Client ID:		Run	D: BALAN	CE1_13112	6C	SeqNo: 3453	3367	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Filt	U	10.0								
LCS	Sample ID: WLCS-11261	3-R157905				Units: mg/l	L	Analysi	s Date: 1	1/26/2013	05:30 PM
Client ID:		Run	D: BALAN	CE1_13112	6C	SeqNo: 345 3	3368	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Filt	1016	10.0	1000		0 102	85-115				
DUP	Sample ID: 13111054-05 0	CDUP				Units: mg/l	<u></u>	Analysi	s Date: 1 ′	1/26/2013	05:30 PM
Client ID:		Run	D: BALAN	CE1_13112	6C	SeqNo: 345 3	3347	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	ved Solids (Residue, Filt	213600	10.0					207500	2.9	10	
						Units: mg/l	L	Analysi	s Date: 1'	1/26/2013	05:30 PM
DUP	Sample ID: 13111187-011	FDUP				•					
	•		D: BALAN	CE1_13112	6C	SeqNo: 345 3	3366	Prep Date:		DF: 1	
Client ID: M	•		ID: BALAN PQL	CE1_13112 0 SPK Val	SPK Ref Value	•	3366 Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Client ID: M	•	Run			SPK Ref	SeqNo: 345 3	Control	RPD Ref	%RPD 0.349	RPD Limit	Qual

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111187

Batch ID: R	157956	Instrument ID ICS2100		Method	d: E300			(Dissolve	e)			
MBLK	Sample ID:	WBLKW2-R157956				U	nits: mg/	L	Analy	/sis Date: 1	2/2/2013 (7:09 PM
Client ID:		Ru	un ID: ICS21 0	00_131202D		Se	qNo: 345 4	4587	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	U	0.200									
LCS	Sample ID:	WLCSW2-R157956				U	nits: mg/	L	Analy	/sis Date: 1	2/2/2013 (7:24 PM
Client ID:		Ru	un ID: ICS21 0	00_131202D		Se	qNo: 345 4	4588	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	7.891	0.200	8		0	98.6	90-110	ı			
MS	Sample ID:	13111093-01FMSZ				U	nits: mg/	L	Analy	/sis Date: 1	2/2/2013 (7:53 PM
Client ID:		Ru	un ID: ICS21 0	00_131202D		Se	qNo: 345 4	4590	Prep Date:		DF: 5	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.69	1.00	20		0	98.4	80-120	ı			
MSD	Sample ID:	13111093-01FMSDZ				U	nits: mg/	L	Analy	sis Date: 1	2/2/2013 (08:07 PM
Client ID:		Ru	un ID: ICS21 0	00_131202D		Se	qNo: 345 4	4591	Prep Date:		DF: 5	
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrit	e (as N)	19.36	1.00	20		0	96.8	80-120	19.6	9 1.66	3 20	
The followi	ng samples v	vere analyzed in this bate		3111187- 1G		3111 ⁻ 2G	187-					

Client: Navajo Refining Company

Work Order: 13111187

Batch ID: R	R158074 Instrument ID Gall01		Method	: M4500	CN E&G	(Dissolve	e)			
MBLK	Sample ID: MB-R158074-R158074				Units: m	g/L	Analys	is Date: 12	2/3/2013 0	8:45 AN
Client ID:	F	Run ID: GALL	01_131203B		SeqNo: 34	57369	Prep Date:		DF: 1	
Analyte	Resul	t PQL	SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	U	J 0.0200)							
LCS	Sample ID: LCS-R158074-R158074				Units: m	g/L	Analys	is Date: 12	2/3/2013 0	8:45 AM
Client ID:	F	Run ID: GALL	01_131203B		SeqNo: 34	57370	Prep Date:		DF: 1	
Analyte	Resul	t PQL	SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.1872	2 0.0200	0.2		0 93.6	80-120				
LCSD	Sample ID: WLCSDW1120313-R15	8074			Units: m	g/L	Analys	is Date: 12	2/3/2013 0	8:45 AM
Client ID:	F	Run ID: GALL	01_131203B		SeqNo: 34	57378	Prep Date:		DF: 1	
Analyte	Resul	t PQL	. SPK Val	SPK Ref Value	%RE	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.1917	7 0.0200	0.2		0 95.9	80-120	0.1872	2.36	20	
									1212042.0	8·45 AM
MS	Sample ID: 13111251-01ams				Units: m	g/L	Analys	is Date: 12	2/3/2013 0	00 /
MS Client ID:	·	Run ID: GALL	01_131203B		Units: m SeqNo: 34	•	Analys Prep Date:	is Date: 12	DF: 1	
	·			SPK Ref Value		57374 Control	•	is Date: 12 %RPD		Qual
Client ID:	F	t PQL	SPK Val		SeqNo: 34 %RE	Control	Prep Date: RPD Ref Value		DF: 1 RPD	

Client: Navajo Refining Company

Work Order: 13111187

Batch ID: R	158112	Instrument ID ICS2100		Method	: E300	((Dissolve)			
MBLK	Sample ID	D: WBLKW1-R158112				Units: mg/l	L	Analys	sis Date: 12	2/4/2013 0	9:28 AN
Client ID:		Run	ID: ICS210	0_131204A	5	SeqNo: 345 7	7845	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.500								
Fluoride		U	0.100								
Sulfate		U	0.500								
LCS	Sample ID	D: WLCSW1-R158112				Units: mg/l	L	Analys	sis Date: 12	2/4/2013 0	9:42 AN
Client ID:		Run	ID: ICS210	0_131204A	5	SeqNo: 3457	7846	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		21.17	0.500	20	0	106	90-110				
				4	0) 107	90-110				
Fluoride		4.291	0.100	+	U						
		4.291 20.15	0.100	20	0		90-110				
Sulfate	Sample IE			•			90-110	Analys	sis Date: 12	2/4/2013 1	1:35 AN
Sulfate MS	Sample IE	20.15 D: 1312062-06CMS		20	0) 101	90-110 L	Analys	sis Date: 12	2/4/2013 1 DF: 1	1:35 AN
Fluoride Sulfate MS Client ID:	Sample IE	20.15 D: 1312062-06CMS	0.500	20	0) 101 Units: mg /l	90-110 L	•	sis Date: 12 %RPD		1:35 AN Qual
MS Client ID:	Sample IE	20.15 D: 1312062-06CMS	0.500	20 0_131204A	0 SPK Ref	Units: mg/ l SeqNo: 345 7 %REC	90-110 L 7853 Control	Prep Date:		DF: 1 RPD	
MS Client ID: Analyte Chloride	Sample IE	20.15 D: 1312062-06CMS Run Result	0.500 ID: ICS210 PQL	20 0_131204A SPK Val	SPK Ref Value	Units: mg/l SeqNo: 3457 %REC	90-110 L 7853 Control Limit	Prep Date:		DF: 1 RPD	
Sulfate MS Client ID: Analyte Chloride Fluoride	Sample ID	20.15 D: 1312062-06CMS Run Result 18.64	0.500 ID: ICS210 PQL 0.500	20 0_131204A SPK Val	SPK Ref Value 7.306	Units: mg/l SeqNo: 3457 %REC 3 113	90-110 L 7853 Control Limit 80-120	Prep Date:		DF: 1 RPD	
Sulfate MS Client ID: Analyte Chloride Fluoride Sulfate		20.15 C: 1312062-06CMS Run Result 18.64 3.347	0.500 ID: ICS210 PQL 0.500 0.100	20 0_131204A SPK Val 10 2	SPK Ref Value 7.306	Units: mg/l SeqNo: 3457 %REC 3 113	90-110 L 7853 Control Limit 80-120 80-120 80-120	Prep Date: RPD Ref Value		DF: 1 RPD Limit	Qual
Sulfate MS Client ID:		20.15 P: 1312062-06CMS Result 18.64 3.347 72.56 P: 1312062-06CMSD	0.500 ID: ICS210 PQL 0.500 0.100	20 0_131204A SPK Val 10 2 10	SPK Ref Value 7.306 1.01 62.16	Units: mg/l SeqNo: 3457 %REC 6 113 1 117 6 104	90-110 L 7853 Control Limit 80-120 80-120 80-120	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Sulfate MS Client ID: Analyte Chloride Fluoride Sulfate MSD		20.15 P: 1312062-06CMS Result 18.64 3.347 72.56 P: 1312062-06CMSD	0.500 ID: ICS210 PQL 0.500 0.100 0.500	20 0_131204A SPK Val 10 2 10	SPK Ref Value 7.306 1.01 62.16	Units: mg/l SeqNo: 3457 %REC 3 113 117 3 104 Units: mg/l	90-110 L 7853 Control Limit 80-120 80-120 80-120	Prep Date: RPD Ref Value Analys	%RPD	DF: 1 RPD Limit 2/4/2013 1 DF: 1 RPD	Qual
MS Client ID: Analyte Chloride Fluoride Sulfate MSD Client ID:		20.15 P: 1312062-06CMS Result 18.64 3.347 72.56 P: 1312062-06CMSD	0.500 ID: ICS210 PQL 0.500 0.100 0.500	20 0_131204A SPK Val 10 2 10	SPK Ref Value 7.306 1.01 62.16	Units: mg/l SeqNo: 3457 %REC 3 113 117 3 104 Units: mg/l	90-110 K 7853 Control Limit 80-120 80-120 80-120 L 7854	Prep Date: RPD Ref Value Analys Prep Date:	%RPD	DF: 1 RPD Limit	Qual
Sulfate MS Client ID: Analyte Chloride Fluoride Sulfate MSD		20.15 P: 1312062-06CMS Run Result 18.64 3.347 72.56 P: 1312062-06CMSD Run	0.500 ID: ICS210 PQL 0.500 0.100 0.500 ID: ICS210	20 0_131204A SPK Val 10 2 10 0_131204A	SPK Ref Value 7.306 1.01 62.16	Units: mg/l SeqNo: 3457 %REC 6 113 117 6 104 Units: mg/l SeqNo: 3457 %REC	90-110 K 7853 Control Limit 80-120 80-120 80-120 L 7854 Control	Prep Date: RPD Ref Value Analys Prep Date: RPD Ref	%RPD sis Date: 12 %RPD	DF: 1 RPD Limit 2/4/2013 1 DF: 1 RPD	Qual O 1:50 AM
Sulfate MS Client ID: Analyte Chloride Fluoride Sulfate MSD Client ID: Analyte		20.15 C: 1312062-06CMS Run Result 18.64 3.347 72.56 C: 1312062-06CMSD Run Result	0.500 ID: ICS210 PQL 0.500 0.100 0.500 ID: ICS210 PQL	20 0_131204A SPK Val 10 2 10 0_131204A SPK Val	SPK Ref Value 7.306 1.01 62.16 SPK Ref Value	Units: mg/l SeqNo: 3457 %REC 3 113 117 3 104 Units: mg/l SeqNo: 3457 %REC 3 113	90-110 K 7853 Control Limit 80-120 80-120 80-120 L 7854 Control Limit	Prep Date: RPD Ref Value Analys Prep Date: RPD Ref Value	%RPD sis Date: 12 %RPD 0.328	DF: 1 RPD Limit 2/4/2013 1 DF: 1 RPD Limit	Qual O 1:50 AM

ALS Environmental Date: 18-Dec-13

Client: Navajo Refining Company **QUALIFIERS, Project: RO** Discharge Sampling ACRONYMS, UNITS

WorkOrder: 13111187

pH Units

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
Units Reported	Description
$^{\circ}\mathrm{C}$	Celsius degrees
mg/L	Milligrams per Liter

Sample Receipt Checklist

Client Name:	e: <u>NAVAJO REFINING</u>		Date/Time Received: 22-Nov						<u>4:00</u>	
Work Order:	13111187				Received b	y:	<u>TXY</u>			
Checklist comp	pleted by Lahnnie B. Allen eSignature	2	23-Nov-13	Rev	iewed by:	Sonia N	Oest			04-Dec-13
Matrices: Carrier name:	water FedEx Priority Overnight		Date			eoignature				Date
Shipping conta	iner/cooler in good condition?		Yes	✓	No 🗌	Not Pre	sent			
Custody seals	intact on shipping container/coole	er?	Yes	✓	No 🗌	Not Pre	esent			
Custody seals	intact on sample bottles?		Yes		No 🗌	Not Pre	esent	✓		
Chain of custoo	dy present?		Yes	✓	No 🗌					
Chain of custoo	dy signed when relinquished and	received?	Yes	✓	No 🗌					
Chain of custoo	dy agrees with sample labels?		Yes	✓	No 🗌					
Samples in pro	per container/bottle?		Yes	✓	No 🗌					
Sample contain	ners intact?		Yes	✓	No 🗌					
Sufficient samp	ole volume for indicated test?		Yes	✓	No 🗌					
All samples red	ceived within holding time?		Yes	✓	No 🗌					
Container/Tem	p Blank temperature in compliand	ce?	Yes	✓	No 🗆					
Temperature(s)/Thermometer(s):		2.2 C/2	2.2 C u/o	2	IF	R 1			
Cooler(s)/Kit(s)	:		<u>5564</u>							
Date/Time sam	iple(s) sent to storage:			13 09:30						
Water - VOA vi	als have zero headspace?		Yes		No 🗆	No VOA via	als subm	nitted L		
	eptable upon receipt?		Yes		No 🗔	N/A \square				
pH adjusted? pH adjusted by	:		Yes -		No 🗸	N/A				
Login Notes:	Trip Blank logged in for ana	lysis per historical	events.							
Client Contacte	ed:	Date Contacted:			Person	Contacted:				
Contacted By:		Regarding:								
Comments:										
Competitive A										
CorrectiveAction	OT:								SDC.	Dago 1 of 1

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NAVAJO REFINING: Navajo Refining Company Project: RO Discharge Sampling 13111187 Dissolved Metals (6020/7000) Select List Nitrate-Nitrite as N (Preserved) LL SVOC (8270) NM GW List VOC (uzou) nm cvv Llst DRO, ORO (8015M) LVI Total Cyanide (SM 4500) Anions (300) CI, F, SO4 Radium 226/229 GRO (B015M) pH, TDS Chain of Custody Form ⋖ B ပ ۵ ш п ---Ö 7 Ι 87148 ALS Project Manager: COC ID: Navajo Refining Company RO Discharge/Sampling Page ___ Project Information Artesia, NM 88211 (575) 746-5382 (575) 746-5421 Robert Combs 501 East Main Holland, MI +1 616 399 6070 Fort Callins, CO +1 970 490 1511 Project Name Bill To Company Invoice Attn Phone Project Number 쨢 City/State/Zip Address e-Mail Address Cincinnatí, OH +1 513 733 5336 Everett, WA +1 425 356 2600 Navajo Refining Company Customer Information Artesia, NM 88211 (575) 746-5382 (575) 746-5421 Robert Combs 501 East Main Company Name Phone Fax Purchase Order Send Report To Work Order e-Mail Address Address City/State/Zip

e-twai Address	e-Mall Address	Oress			¥	Radium 226/228				
No. Sample Description	Date	Time	Matrix Pres.	# Bottles	АВ	<u>م</u>	ш	5	- =	Plold
339 of	11/20/13	16.35	Ligard	<u></u>	/	\	1	1	\	\
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		6087	<u></u>	/	/	/	/	/	1
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5										
9										
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8										
o										
10	•									
Sampler(s) Please Print & Sign	Shipment	ant Method	Required Turns	Required Turnaround Time: (Check Box) Other Std 10 WK Days 2 WK Days 3 WK Days 3 WK Days 3 WK Days 3 WK Days 3 WK Days 3 WK Days 4 WK Days	ieck Box) 5 WK Dav	Other S WK Day	/s 24 Hour		Results Due Date:	ate:
Kelihquished by All Late:	A (Time)	Received by:		2	Notes:	10 Day TAT. CC Pam Krueger with Arcadis	CC Pam Kru	eger with A	Arcadis	
Reinquistled by:	12 Tan	Received by (Laboratory):	oratory);	And the state of t	Coater ID	Cooler Temp.	🛢 variotiska	ge: (Check	OC Package: (Check One Box Below)	ow)
Logged by (Laboratory): Date:	Time:	Checked by (Laboratory):	oratory):		325			vel III Std O	Level III Std OC/Raw Data	ئے ا
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄	4-NaOH 5-Na ₂ S ₂ O ₃	J. 6-NaHSO.	7-Other 8-4°C	9-5035			5 €][][Level IV SW84 Other / EDD	Fe/CI,P	
The state of the s	1									

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.

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Seal Broken By: CUSTODY SEAL 110C Date: ALS Environmental 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Val Dei Tel. +1 281 530 5656 Date: !/ Fax. +1 281 530 5887 00497 Package
Express US Airbill 01000 8042 4829 2232 1 From Date Sender's Name Phone 731 787-1781 Company oFedEx 1.800.463.3339 Address 5 2 Your Internal Billing Reference **CUSTODY SEAL** Şeal Broken By: ALS Environmental Time: 1200 e: 1/21/13 10450 Standliff Rd., Suite 210 Ecic Dav Houston, Texas 77099 meser ARCADIS C Na Tel. +1 281 530 5656 Fax. +1 281 530 5887 Package Express US Airbill 01000 8042 4829 2243 5564 1 From Date 11/21/15 Sender's Name Company FedEx 1,800,463,3339 Address Dest /Roor/Suite/Roon 2 Your Internal Billing Reference



December 17, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re:

ALS Workorder:

13-11-497

Project Name:

None Submitted

Project Number:

13111187

Dear Ms. West:

Two water samples were received from ALS Environmental on November 26, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

Jeff Kujawa Project Manager

JRK/jl

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

Enulronmental



1311497

Case Narrative

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

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.

ALS Laborato	ry Certifications
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nebraska	NE-OS-24-13
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)	CO01099
Washington	C1280

Sample Number(s) Cross-Reference Table

OrderNum: 1311497

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 13111187 Client PO Number: 10-13111187

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-116	1311497-1		WATER	20-Nov-13	16:30
DUP-01	1311497-2		WATER	20-Nov-13	



Subcontractor:
ALS Environmental
225 Commerce Drive

TEL: FAX:

Acct #:

Fort Collins, CO 80524

(800) 443-1511 (970) 490-1522

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 23-Nov-13 COC ID: 15501 Due Date 03-Dec-13

•				
	Salesperson	Houston House Acct	cet	
ō	Customer Information		Project Information	Parameter/Method Request for Analysis
Purchase Order	10-13111187	Project Name	e 13111187	A Radium 226, 228 Sub to ALS Ft. Collins
Work Order		Project Number	ber	
Company Name	ALS Group USA, Corp.	Bill To Compa	Company ALS Group USA, Corp.	
Send Report To	Sonia West	Inv Attn	Accounts Payable	Q
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	p Houston, Texas 77099-4338	9
Phone	(281) 530-5656	Phone	(281) 530-5656	
Fax	(281) 530-5887	Fax	(281) 530-5887	
eMail Address	Sonia. West@alsglobal.com	eMail CC	jumoke.lawal@alsglobal.com	
Sample ID	(Matrix Colle	Collection Date 24hr Bottle	Land And And And And And And And And And A
13111187-011 (MW-116)		Water 20/h	20/Nov/2013 16:30 (2) 1LPHNO3	×
13111187-02I (DUP-01)	IP-01) (7)	Water	20/Nov/2013 (2) 1LPHNO3	λ (

Report/QC Level Cooler IDs Date:Time
U 26/13 1020
Date:Time Received by: WO 13111187 - Please analyze for Radium 226/228 Date/Time -Comments: Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: YALS TX Workorder No: \3\\\	197		
		what -	-
Project Manager: TKK Initials: TLR	Date: _	11/26/13	-
Does this project require any special handling in addition to standard ALS procedures?	.,	YES	(NÔ)
2 Are custody seals on shipping containers intact?	NONE	Œ\$	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?		Œŝ	NO
5. Are the COC and bottle labels complete and legible?		©	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of		YŒs	NO
containers, matrix, requested analyses, etc.)			
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(E)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(ES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(ES	NO
11. Were all samples placed in the proper containers for the requested analyses?		Œ\$	NO
12. Are all samples within holding times for the requested analyses?		Æ\$	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		Œ\$	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		YES	NO
Amount of sediment: dusting moderateheavy	N/A	YES	(i)
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	YES)	NO
Cooler #:	ONLY :		
Temperature (°C):			
DOT Survey			
Acceptance Information External μR/hr reading: Background μR/hr reading: ()			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (ES) NO / NA (If no, see	Form 008.)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX	CEPT#1 A	ND #16.	
If applicable, was the client contacted? YES / NO / NO Contact:	Date/Tir	ne:	
Project Manager Signature / Date:	_		
/ //			
*IR Gun #2: Oakton, SN 29922500201-0066 Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002			. 1

Form 201r24.xls (06/04/2012)

Part # 156148-434 RIT2 04/13 . 5813 7984 9929

ROY FRENCH SAMPLE CONTROL.
ALS ENVIRONMENTAL
225 COMMERCE DRIVE ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US ID:SGRA (281) 530-5656 G DEPT

BILL SENDER

51901/0556/6503

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111187
 Work Order:
 1311497

 Sample ID:
 MW-116
 Lab ID:
 1311497-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 16:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 12/3/2013	PrepBy: PJW
Ra-226	0.1 (+/- 0.16)	LT	0.09	pCi/l	NA	12/12/2013 13:08
Carr: BARIUM	96		40-110	%REC	NA	12/12/2013 13:08
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 12/2/2013	PrepBy: JTL
Ra-228	1.73 (+/- 0.49)		0.46	pCi/l	NA	12/6/2013 10:45
Carr: BARIUM	96		40-110	%REC	NA	12/6/2013 10:45

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111187
 Work Order:
 1311497

 Sample ID:
 DUP-01
 Lab ID:
 1311497-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
RA-226 BY RADON EMANA	ATION - METHOD 903.1		PAI 783		Prep Date: 12/3/2013	PrepBy: PJW
Ra-226	ND (+/- 0.15)	U	0.23	pCi/l	NA	12/12/2013 13:08
Carr: BARIUM	96.3		40-110	%REC	NA	12/12/2013 13:08
RADIUM-228 ANALYSIS BY	Y GFPC		PAI 724		Prep Date: 12/2/2013	PrepBy: JTL
Ra-228	1.23 (+/- 0.39)		0.47	pCi/l	NA	12/6/2013 10:45
Carr: BARIUM	96.3		40-110	%REC	NA	12/6/2013 10:45

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111187
 Work Order:
 1311497

 Sample ID:
 DUP-01
 Lab ID:
 1311497-2

Legal Location: Matrix: WATER

Collection Date: 11/20/2013 **Percent Moisture:**

Report Dilution
Analyses Result Qual Limit Units 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.
- LT Result is less than requested MDC but greater than achieved MDC.

- 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
LIMS Version: 6.680

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111187
 Work Order:
 1311497

 Sample ID:
 DUP-01
 Lab ID:
 1311497-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/20/2013 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units 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

LIMS Version: 6.680

AR Page 4 of 4

Client: ALS Environmental

Work Order: 1311497 **Project:** 13111187

Date: 12/16/2013 12:3

QC BATCH REPORT

Batch ID: R	E131203-1-1	Instr	ument ID:	Alpha Scin		Method:	Ra-226 by	Radon E	manation - Me			
LCS	Sample ID:	RE131203-1					Units: pCi/	1	Analysi	s Date: 1	2/12/2013	13:42
Client ID:			Ru	un ID: RE131 2	203-1A				Prep Date: 12/3/	2013	DF: N /	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		29.1	(+/- 7.4)	0.4	30.2		96.4	67-120				Р
Carr: BAR	IUM		31990		33300		96.1	40-110				
LCSD	Sample ID:	RE131203-1					Units: pCi/	l	Analysi	s Date: 1	2/12/2013	13:42
Client ID:			Ru	un ID: RE131 2	203-1A				Prep Date: 12/3/	2013	DF: N /	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		29.3	(+/- 7.4)	0.3	30.2		97	67-120	29.1	0.0157	2.13	Р
Carr: BAR	IUM		31200		33300		93.7	40-110	31990			
МВ	Sample ID:	RE131203-1					Units: pCi/	l	Analysi	s Date: 1	2/12/2013	13:42
Client ID:			Ru	un ID: RE131 2	203-1A				Prep Date: 12/3/	2013	DF: NA	A
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226			ND	0.37								U
Carr: BAR	IUM		31950		33300		95.9	40-110				

Client: ALS Environmental

Work Order: 1311497 **Project:** 13111187

Batch ID: R	A131202-1-2	Instrument I	D: LB4100-A		Method:	Radium-2	28 Analys	sis by GFPC			
LCS	Sample ID:	RA131202-1				Units: pCi/	Ί	Analysi	s Date: 1	2/6/2013 1	0:56
Client ID:			Run ID: RA131	202-1A				Prep Date: 12/2	/2013	DF: N A	A
Analyte		Resu	ılt ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		8.9 (+/- 2.	1) 0.5	9.263		95.8	70-130				Р
Carr: BAR	RIUM	3199	00	33300		96.1	40-110				
LCSD	Sample ID:	RA131202-1				Units: pCi/	ī	Analysi	s Date: 1	2/6/2013 1	0:56
Client ID:			Run ID: RA131	202-1A				Prep Date: 12/2	/2013	DF: N A	A
Analyte		Resu	ılt ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		9.3 (+/- 2.2	2) 0.6	9.263		100	70-130	8.9	0.128	2.13	Р
Carr: BAR	RIUM	3120	00	33300		93.7	40-110	31990			
MB	Sample ID:	RA131202-1				Units: pCi/	Ί	Analysi	s Date: 1	2/6/2013 1	0:56
Client ID:			Run ID: RA131	202-1A				Prep Date: 12/2	/2013	DF: NA	4
Analyte		Resu	ılt ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
Ra-228		N	D 0.57								U
		3195	_	33300		95.9	40-110				



18-Dec-2013

Robert Combs Navajo Refining Company PO Box 1490 Artesia, NM 88211-1490

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

Re: RO Discharge Sampling Work Order: 13111188

Dear Robert,

ALS Environmental received 3 samples on 22-Nov-2013 02:00 PM 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 52.

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

Sincerely,

Electronically approved by: Dayna.Fisher

Sonie West

Sonia West Project Manager

Certificate No: T104704231-13-12

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

ALS Environmental

Date: 18-Dec-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111188

Work Order Sample Summary

Lab Samp ID Client Sample ID	<u>Matrix</u>	Tag Number	Collection Date	Date Received	<u>Hold</u>
13111188-01 MW-114	Water		11/21/2013 09:30	11/22/2013 14:00	\Box
13111188-02 MW-115	Water		11/21/2013 08:30	11/22/2013 14:00)
13111188-03 Trip Blank 110613-71	Water		11/21/2013	11/22/2013 14:00	\Box

ALS Environmental

Date: 18-Dec-13

Client: Navajo Refining Company
Project: RO Discharge Sampling

Work Order: 13111188

Case Narrative

The analyses for Radium 226 and Radium 228 were subcontracted to ALS Environmental in Ft. Collins, CO.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 degrees C.

Batch 74938, Dissolved Metals 6020, Sample 1311934-06C: MS/MSD are for an unrelated sample.

Batch 74973, Semivolatiles 8270, Sample SLCSW1-131126: Insufficient sample was received for MS/MSD.

Batch R157973, Volatiles 8260, Sample 13111059-52A: MS/MSD are for an unrelated sample.

Batch R158097, Volatiles 8260, Sample 13111198-01A: MS/MSD are for an unrelated sample.

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 11/21/2013 09:30 AM

Work Order: 13111188

Lab ID: 13111188-01

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Me	ethod:SW8015M	l	Prep: SW	3511 / 11/27/13	Analyst: RPM
TPH (Diesel Range)	U		0.021	0.053	mg/L	1	12/3/2013 21:54
TPH (Oil Range)	U		0.042	0.11	mg/L	1	12/3/2013 21:54
Surr: 2-Fluorobiphenyl	110			60-135	%REC	1	12/3/2013 21:54
GASOLINE RANGE ORGANICS - SW801	5C	Me	ethod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	12/3/2013 04:02
Surr: 4-Bromofluorobenzene	96.9			70-130	%REC	1	12/3/2013 04:02
DISSOLVED METALS		Me	ethod:SW6020		Prep: SW	3010A / 11/25/13	Analyst: ALR
Aluminum	0.00813	J	0.0040	0.0100	mg/L	1	11/26/2013 05:19
Arsenic	0.00539		0.0010	0.00500	mg/L	1	11/26/2013 05:19
Barium	0.0112		0.00090	0.00500	mg/L	1	11/26/2013 05:19
Boron	0.816		0.040	0.100	mg/L	2	11/27/2013 13:22
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 05:19
Calcium	558		4.3	25.0	mg/L	50	11/26/2013 17:34
Chromium	0.00119	J	0.0010	0.00500	mg/L	1	11/26/2013 05:19
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 05:19
Copper	U		0.0010	0.00500	mg/L	1	11/26/2013 05:19
Iron	0.167	J	0.078	0.200	mg/L	1	11/26/2013 05:19
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 05:19
Manganese	0.0350		0.0025	0.00500	mg/L	1	11/26/2013 05:19
Molybdenum	0.00815		0.0015	0.00500	mg/L	1	11/26/2013 05:19
Nickel	0.00369	J	0.0010	0.00500	mg/L	1	11/26/2013 05:19
Potassium	0.678		0.084	0.200	mg/L	1	11/26/2013 05:19
Selenium	0.00451	J	0.0010	0.00500	mg/L	1	11/26/2013 05:19
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 05:19
Sodium	250		4.2	10.0	mg/L	50	11/26/2013 17:34
Uranium	0.0856		0.0050	0.00500	mg/L	1	11/26/2013 05:19
Zinc	0.0806		0.0025	0.00500	mg/L	1	11/26/2013 05:19
LOW-LEVEL SEMIVOLATILES		Ме	ethod:SW8270		Prep: SW	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 17:41
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 17:41
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 17:41
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 17:41
Surr: 2,4,6-Tribromophenol	37.4			34-129	%REC	1	11/26/2013 17:41
Surr: 2-Fluorobiphenyl	46.8			40-125	%REC	1	11/26/2013 17:41
Surr: 2-Fluorophenol	37.3			20-120	%REC	1	11/26/2013 17:41
Surr: 4-Terphenyl-d14	58.6			40-135	%REC	1	11/26/2013 17:41
Surr: Nitrobenzene-d5	42.1			41-120	%REC	1	11/26/2013 17:41

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 11/21/2013 09:30 AM

Work Order: 13111188

Lab ID: 13111188-01

Matrix: WATER

Date: 18-Dec-13

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Phenol-d6	35.9			20-120	%REC	1	11/26/2013 17:41
LOW LEVEL VOLATILES - SW8260C		Metl	hod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 19:03
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 19:03
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 19:03
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 19:03
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 19:03
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 19:03
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 19:03
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 19:03
Surr: 1,2-Dichloroethane-d4	125			71-125	%REC	1	12/3/2013 19:03
Surr: 4-Bromofluorobenzene	113			70-125	%REC	1	12/3/2013 19:03
Surr: Dibromofluoromethane	120			74-125	%REC	1	12/3/2013 19:03
Surr: Toluene-d8	118			75-125	%REC	1	12/3/2013 19:03
MISCELLANEOUS ANALYSIS		Metl	hod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	12/18/2013
ANIONS - EPA 300.0 (1993)		Metl	hod: E300				Analyst: JKP
Chloride	422		10	25.0	mg/L	50	12/4/2013 18:57
Fluoride	1.37		0.050	0.100	mg/L	1	12/4/2013 14:01
Sulfate	3,060		10	25.0	mg/L	50	12/4/2013 18:57
Nitrate/Nitrite (as N)	U		0.15	1.00	mg/L	5	12/3/2013 00:15
CYANIDE - SM4500CN E		Metl	hod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Metl	hod: SM4500 H	+ B			Analyst: KL
рН	6.73	Н	0.10	0.100	pH Units	1	11/26/2013 09:00
Temp Deg C @pH	20.6	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Metl	hod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-114

Collection Date: 11/21/2013 09:30 AM

Date: 18-Dec-13

Work Order: 13111188

Lab ID: 13111188-01

Matrix: WATER

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	5,390	5.0	10.0	mg/L	1	11/27/2013 17:30

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 11/21/2013 08:30 AM

W 1 0 1 12111100

Work Order: 13111188

Lab ID: 13111188-02

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TPH DRO/ORO 8015C		Met	hod: SW8015M		Prep: SW3	3511 / 11/27/13	Analyst: RPM
TPH (Diesel Range)	U		0.020	0.051	mg/L	1	12/3/2013 22:21
TPH (Oil Range)	U		0.041	0.10	mg/L	1	12/3/2013 22:21
Surr: 2-Fluorobiphenyl	115			60-135	%REC	1	12/3/2013 22:21
GASOLINE RANGE ORGANICS - SW8015	5C	Met	hod: SW8015				Analyst: KKP
Gasoline Range Organics	U		0.020	0.0500	mg/L	1	12/3/2013 05:52
Surr: 4-Bromofluorobenzene	99.3			70-130	%REC	1	12/3/2013 05:52
DISSOLVED METALS		Met	hod: SW6020		Prep: SW3	3010A / 11/25/13	Analyst: ALR
Aluminum	0.00714	J	0.0040	0.0100	mg/L	1	11/26/2013 05:24
Arsenic	0.00616		0.0010	0.00500	mg/L	1	11/26/2013 05:24
Barium	0.0110		0.00090	0.00500	mg/L	1	11/26/2013 05:24
Boron	0.858		0.040	0.100	mg/L	2	11/27/2013 13:24
Cadmium	U		0.00080	0.00200	mg/L	1	11/26/2013 05:24
Calcium	606		4.3	25.0	mg/L	50	11/26/2013 17:39
Chromium	U		0.0010	0.00500	mg/L	1	11/26/2013 05:24
Cobalt	U		0.00080	0.00500	mg/L	1	11/26/2013 05:24
Copper	U		0.0010	0.00500	mg/L	1	11/26/2013 05:24
Iron	U		0.078	0.200	mg/L	1	11/26/2013 05:24
Lead	U		0.00070	0.00500	mg/L	1	11/26/2013 05:24
Manganese	0.0249		0.0025	0.00500	mg/L	1	11/26/2013 05:24
Molybdenum	0.00738		0.0015	0.00500	mg/L	1	11/26/2013 05:24
Nickel	0.00206	J	0.0010	0.00500	mg/L	1	11/26/2013 05:24
Potassium	0.709		0.084	0.200	mg/L	1	11/26/2013 05:24
Selenium	0.00506		0.0010	0.00500	mg/L	1	11/26/2013 05:24
Silver	U		0.00080	0.00500	mg/L	1	11/26/2013 05:24
Sodium	261		4.2	10.0	mg/L	50	11/26/2013 17:39
Uranium	0.0874		0.0050	0.00500	mg/L	1	11/26/2013 05:24
Zinc	0.0257		0.0025	0.00500	mg/L	1	11/26/2013 05:24
LOW-LEVEL SEMIVOLATILES		Met	hod: SW8270		Prep: SW:	3510 / 11/26/13	Analyst: ACN
1-Methylnaphthalene	U		0.000030	0.00020	mg/L	1	11/26/2013 18:00
2-Methylnaphthalene	U		0.000034	0.00020	mg/L	1	11/26/2013 18:00
Benzo(a)pyrene	U		0.000030	0.00020	mg/L	1	11/26/2013 18:00
Naphthalene	U		0.000050	0.00020	mg/L	1	11/26/2013 18:00
Surr: 2,4,6-Tribromophenol	41.8			34-129	%REC	1	11/26/2013 18:00
Surr: 2-Fluorobiphenyl	57.3			40-125	%REC	1	11/26/2013 18:00
Surr: 2-Fluorophenol	43.5			20-120	%REC	1	11/26/2013 18:00
Surr: 4-Terphenyl-d14	72.9			40-135	%REC	1	11/26/2013 18:00
Surr: Nitrobenzene-d5	47.8			41-120	%REC	1	11/26/2013 18:00

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID: MW-115

Collection Date: 11/21/2013 08:30 AM

Work Order: 13111188

Lab ID: 13111188-02

Date: 18-Dec-13

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Phenol-d6	42.4			20-120	%REC	1	11/26/2013 18:00
LOW LEVEL VOLATILES - SW8260C		Meth	nod: SW8260				Analyst: AKP
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
1,1,2,2-Tetrachloroethane	U		0.00050	0.0010	mg/L	1	12/3/2013 19:28
1,1,2-Trichloroethane	U		0.00030	0.0010	mg/L	1	12/3/2013 19:28
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
1,2-Dibromoethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Benzene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Carbon tetrachloride	U		0.00050	0.0010	mg/L	1	12/3/2013 19:28
Chloroform	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12/3/2013 19:28
Methylene chloride	U		0.00040	0.0020	mg/L	1	12/3/2013 19:28
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	12/3/2013 19:28
Toluene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Trichloroethene	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Vinyl chloride	U		0.00020	0.0010	mg/L	1	12/3/2013 19:28
Xylenes, Total	U		0.00050	0.0010	mg/L	1	12/3/2013 19:28
Surr: 1,2-Dichloroethane-d4	123			71-125	%REC	1	12/3/2013 19:28
Surr: 4-Bromofluorobenzene	109			70-125	%REC	1	12/3/2013 19:28
Surr: Dibromofluoromethane	119			74-125	%REC	1	12/3/2013 19:28
Surr: Toluene-d8	114			75-125	%REC	1	12/3/2013 19:28
MISCELLANEOUS ANALYSIS		Meth	nod: NA				Analyst: SUB
Miscellaneous Analysis	See Attached		0			1	12/18/2013
ANIONS - EPA 300.0 (1993)		Meth	nod: E300				Analyst: JKP
Chloride	428		10	25.0	mg/L	50	12/4/2013 19:11
Fluoride	1.36		0.050	0.100	mg/L	1	12/4/2013 14:15
Sulfate	3,090		10	25.0	mg/L	50	12/4/2013 19:11
Nitrate/Nitrite (as N)	U		0.15	1.00	mg/L	5	12/3/2013 00:29
CYANIDE - SM4500CN E		Meth	nod: M4500CN	E&G			Analyst: KKB
Cyanide	U		0.0050	0.0200	mg/L	1	12/3/2013 08:45
PH - SM4500H+ B		Meth	nod: SM4500H	+ B			Analyst: KL
pH	6.73	Н	0.10	0.100	pH Units	1	11/26/2013 09:00
Temp Deg C @pH	20.2	Н	0		°C	1	11/26/2013 09:00
TOTAL DISSOLVED SOLIDS		Meth	nod: M2540C				Analyst: KAH

Client: Navajo Refining Company

Project: RO Discharge Sampling Work Order: 13111188

Sample ID: MW-115 Lab ID: 13111188-02

Collection Date: 11/21/2013 08:30 AM Matrix: WATER

Analyses	Result Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids (Residue, Filterable)	5,370	5.0	10.0	mg/L	1	11/27/2013 17:30

Date: 18-Dec-13

Client: Navajo Refining Company

Project: RO Discharge Sampling **Sample ID:** Trip Blank 110613-71

Collection Date: 11/21/2013

Work Order: 13111188

Lab ID: 13111188-03

Date: 18-Dec-13

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	0.00020	0.0010	mg/L	1	12/4/2013 16:58
1,1,2,2-Tetrachloroethane	U	0.00050	0.0010	mg/L	1	12/4/2013 16:58
1,1,2-Trichloroethane	U	0.00030	0.0010	mg/L	1	12/4/2013 16:58
1,1-Dichloroethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
1,1-Dichloroethene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
1,2-Dibromoethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
1,2-Dichloroethane	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Benzene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Carbon tetrachloride	U	0.00050	0.0010	mg/L	1	12/4/2013 16:58
Chloroform	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Ethylbenzene	U	0.00030	0.0010	mg/L	1	12/4/2013 16:58
Methylene chloride	U	0.00040	0.0020	mg/L	1	12/4/2013 16:58
Tetrachloroethene	U	0.00030	0.0010	mg/L	1	12/4/2013 16:58
Toluene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Trichloroethene	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Vinyl chloride	U	0.00020	0.0010	mg/L	1	12/4/2013 16:58
Xylenes, Total	U	0.00050	0.0010	mg/L	1	12/4/2013 16:58
Surr: 1,2-Dichloroethane-d4	120		71-125	%REC	1	12/4/2013 16:58
Surr: 4-Bromofluorobenzene	110		70-125	%REC	1	12/4/2013 16:58
Surr: Dibromofluoromethane	114		74-125	%REC	1	12/4/2013 16:58
Surr: Toluene-d8	111		75-125	%REC	1	12/4/2013 16:58

Work Order: 13111188

Client: Navajo Refining Company

Project: RO Discharge Sampling

	Sample ID	Client Sam	ple ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
11/25/2013 10:00 AM	Batch ID 74	938	Test Name:	Dissolved Metals					
11/25/2013 10:00 AM	13111188-01E	MW-114		Water	11/21/2013 9:30:00 AM		11/25/2013 10:00 AM	11/26/2013 05:19 AM	
11/21/2013 8/30/00 AM							11/25/2013 10:00 AM	11/26/2013 05:34 PM	
11/25/2013 10:00 AM							11/25/2013 10:00 AM	11/27/2013 01:22 PM	
Batch ID 74-973 Test Name Low-Level Semivolatiles Satch ID 74-973 Test Name Low-Level Semivolatiles Satch ID 74-973 Test Name Low-Level Semivolatiles Satch ID 75-19 Test Name	13111188-02E	MW-115			11/21/2013 8:30:00 AM		11/25/2013 10:00 AM	11/26/2013 05:24 AM	
Test Name: Low-Level Semivolatiles Low-Level Semivolatiles							11/25/2013 10:00 AM	11/26/2013 05:39 PM	
11/21/2013 9:30:00 AM							11/25/2013 10:00 AM	11/27/2013 01:24 PM	
Test Name The DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name TPH DRO/ORO 8015C Test Name Test Nam	Batch ID 74	973	Test Name:	Low-Level Semiv	<u>olatiles</u>				
Second Patch ID 75019 Test Name: TPH DRO/ORO 8015C	13111188-01	MW-114		Water	11/21/2013 9:30:00 AM		11/26/2013 07:34 AM	11/26/2013 05:41 PM	
13111188-01C MW-114 Water 11/21/2013 9:30:00 AM 11/27/2013 09:52 AM 12/3/2013 09:54 PM 13111188-02C MW-115 11/21/2013 8:30:00 AM 11/27/2013 09:52 AM 12/3/2013 10:21 PM 13111188-01F MW-114 Water 11/21/2013 9:30:00 AM 11/26/2013 09:00	13111188-02 D	MW-115			11/21/2013 8:30:00 AM		11/26/2013 07:34 AM	11/26/2013 06:00 PM	
13111188-02C MW-115 11/21/2013 8:30:00 AM 11/27/2013 09:52 AM 12/3/2013 10:21 PM 13111188-01F MW-114 Water 11/21/2013 9:30:00 AM 11/26/2013 09:00 AM 11/27/2013 05:30 PM 13111188-01F MW-114 Water 11/21/2013 8:30:00 AM 11/27/2013 05:30 PM 13111188-01G MW-114 Water 11/21/2013 9:30:00 AM 12/3/2013 12:15 AM	Batch ID 75	019	Test Name:	TPH DRO/ORO	8015C				
Batch ID R157787 Test Name: pH - SM4500H+ B 11/21/2013 9:30:00 AM 11/26/2013 09:00 AM 11/27/2013 05:30 PM 11/27/2013 05:	13111188-01C	MW-114		Water	11/21/2013 9:30:00 AM		11/27/2013 09:52 AM	12/3/2013 09:54 PM	
13111188-01F MW-114 Water 11/21/2013 9:30:00 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/2013 09:00 AM 11/26/2013 12:15 AM 11/26/2013 09:00 AM 11/26/20	13111188-02C	MW-115			11/21/2013 8:30:00 AM		11/27/2013 09:52 AM	12/3/2013 10:21 PM	
13111188-02F MW-115 11/21/2013 8:30:00 AM 11/26/2013 09:00 AM Batch ID R157947 Test Name: Total Dissolved Solids	Batch ID R1	157787	Test Name:	pH - SM4500H+	<u>B</u>				
Batch ID R157947 Test Name: Total Dissolved Solids 13111188-01F MW-114 Water 11/21/2013 9:30:00 AM 11/27/2013 05:30 PM 13111188-02F MW-115 11/21/2013 8:30:00 AM 11/27/2013 05:30 PM Batch ID R157956 Test Name: Anions - EPA 300.0 (1993) Test Name: 11/21/2013 9:30:00 AM 12/3/2013 12:15 AM	13111188-01F	MW-114		Water	11/21/2013 9:30:00 AM			11/26/2013 09:00 AM	
13111188-01F MW-114 Water 11/21/2013 9:30:00 AM 11/27/2013 05:30 PM 13111188-02F MW-115 11/21/2013 8:30:00 AM 11/27/2013 05:30 PM 11/27/2013 05:30	13111188-02F	MW-115			11/21/2013 8:30:00 AM			11/26/2013 09:00 AM	
13111188-02F MW-115 11/21/2013 8:30:00 AM 11/27/2013 05:30 PM Batch ID R157956 Test Name: Anions - EPA 300.0 (1993) 13111188-01G MW-114 Water 11/21/2013 9:30:00 AM 12/3/2013 12:15 AM	Batch ID R1	157947	Test Name:	Total Dissolved S	<u>olids</u>				
Batch ID R157956 Test Name: Anions - EPA 300.0 (1993) 13111188-01G MW-114 Water 11/21/2013 9:30:00 AM 12/3/2013 12:15 AM	13111188-01F	MW-114		Water	11/21/2013 9:30:00 AM			11/27/2013 05:30 PM	
13111188-01G MW-114 Water 11/21/2013 9:30:00 AM 12/3/2013 12:15 AM	13111188-02F	MW-115			11/21/2013 8:30:00 AM			11/27/2013 05:30 PM	
	Batch ID R1	157956	Test Name:	Anions - EPA 300	0.0 (1993)				
13111188-02G MW-115 11/21/2013 8:30:00 AM 12/3/2013 12:29 AM	13111188-01G	MW-114		Water	11/21/2013 9:30:00 AM			12/3/2013 12:15 AM	
	13111188-02G	MW-115			11/21/2013 8:30:00 AM			12/3/2013 12:29 AM	

DATES REPORT

Work Order: 13111188

Client: Navajo Refining Company

Project: RO Discharge Sampling

Sample ID Cl	ient Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date	
Batch ID R15	7973 <u>Test N</u>	ame: Low Level Volat	iles - SW8260C				
3111188-01A M	W-114	Water	11/21/2013 9:30:00 AM			12/3/2013 07:03 PM	
3111188-02A M	W-115		11/21/2013 8:30:00 AM			12/3/2013 07:28 PM	
Batch ID R15	8023 <u>Test N</u>	ame: Gasoline Range (Organics - SW8015C				
3111188-01B M	W-114	Water	11/21/2013 9:30:00 AM			12/3/2013 04:02 AM	
Batch ID R158	8029 <u>Test N</u>	ame: Gasoline Range (Organics - SW8015C				
3111188-02B M	W-115	Water	11/21/2013 8:30:00 AM			12/3/2013 05:52 AM	
Batch ID R158	8074 Test N	ame: Cyanide - SM450	00CN E				
3111188-01 M	W-114	Water	11/21/2013 9:30:00 AM			12/3/2013 08:45 AM	
т 3111188-02 М	W-115		11/21/2013 8:30:00 AM			12/3/2013 08:45 AM	
Batch ID R158	8097 Test N	ame: Low Level Volat	iles - SW8260C				
3111188-03A Tr	ip Blank 110613-7	1 Water	11/21/2013			12/4/2013 04:58 PM	
Batch ID R158	8112 Test N	ame: Anions - EPA 30	0.0 (1993)				
3111188-01F M	W-114	Water	11/21/2013 9:30:00 AM			12/4/2013 02:01 PM	
						12/4/2013 06:57 PM	
3111188-02F M	W-115		11/21/2013 8:30:00 AM			12/4/2013 02:15 PM	
						12/4/2013 07:11 PM	
Batch ID R158	8719 Test N	ame: Miscellaneous Ar	nalysis				
3111188-01I M	W-114	Water	11/21/2013 9:30:00 AM			12/18/2013	
3111188-02I M	W-115		11/21/2013 8:30:00 AM			12/18/2013	

DATES REPORT

Date: 18-Dec-13

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: 75019	Instrument ID FID-16		Metho	d: SW801	5M						
MBLK Sample ID:	LBLKW-131127-75019				ι	Jnits: mg /l	L	Analys	is Date: 12	/3/2013 0	3:17 PM
Client ID:	Run I	D: FID-16 _	131127A		Se	qNo: 345 7	7707	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050									
TPH (Oil Range)	U	0.10									
Surr: 2-Fluorobiphenyl	0.06882	0.0050	0.06061		0	114	60-135	0			
LCS Sample ID:	LLCSW-131127-75019				ι	Jnits: mg/ l	L __	Analys	is Date: 12	/3/2013 0	3:43 PM
Client ID:	Run I	D: FID-16 _	131127A		Se	qNo: 345 7	7709	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7182	0.050	0.6061		0	119	70-130				
TPH (Oil Range)	0.6655	0.10	0.6061		0	110	70-130				
Surr: 2-Fluorobiphenyl	0.0758	0.0050	0.06061		0	125	60-135	0			
LCSD Sample ID:	LLCSDW-131127-75019				ι	Jnits: mg/ l	L	Analys	is Date: 12	/3/2013 0	4:10 PM
Client ID:	Run I	D: FID-16 _	_131127A		Se	qNo: 345 7	7711	Prep Date: 11/2	7/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6627	0.050	0.6061		0	109	70-130	0.7182	8.04	20	
TPH (Oil Range)	0.6411	0.10	0.6061		0	106	70-130	0.6655	3.75	20	
Surr: 2-Fluorobiphenyl	0.07659	0.0050	0.06061		0	126	60-135	0.0758	1.04	20	
The following samples w	ere analyzed in this batch:	13	3111188-010	C 13	3111	188-02C					

Note:

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158023	Instrument ID FID-9		Metho	d: SW801	5						
MBLK Sample II	D: GBLKW2-131202-R1 5	58023			U	nits: mg /l	L	Ana	lysis Date: 1:	2/2/2013 0	8:31 PM
Client ID:		Run ID: FID-9	_131202C		Sec	qNo: 3456	S298	Prep Date:		DF: 1	
Analyte	Res	sult PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organi Surr: 4-Bromofluorob		U 0.0500			0	99.2	70-130		0		
LCS Sample II	D: GLCSW2-131202-R1 5	8023			U	nits: mg/ l	L	Ana	lysis Date: 1:	2/2/2013 0	7:54 PM
Client ID:		Run ID: FID-9	_131202C		Sec	qNo: 3456	S297	Prep Date:		DF: 1	
Analyte	Res	sult PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organi	cs 1.0	33 0.0500	1		0	103	70-130				
Surr: 4-Bromofluorob	enzene 0.10	0.00500	0.1		0	100	70-130		0		
MS Sample II	D: 13111253-02BMS				U	nits: mg/ l		Ana	lysis Date: 1	2/3/2013 1	2:24 AM
MS Sample II Client ID:	D: 13111253-02BMS	Run ID: FID-9	_131202C			nits: mg /l qNo: 345 6		Anal	lysis Date: 12	2/3/2013 1 DF: 1	2:24 AM
Client ID:	D: 13111253-02BMS Res		-	SPK Ref Value		_			lysis Date: 1 : %RPD		2:24 AM Qual
Client ID:	Res	sult PQL	SPK Val	Value		qNo: 3456	Control	Prep Date: RPD Ref		DF: 1 RPD	
Client ID:	Res	sult PQL	SPK Val	Value	Sed	9No: 3456	Control Limit	Prep Date: RPD Ref		DF: 1 RPD	
Client ID: Analyte Gasoline Range Organi Surr: 4-Bromofluorob	Res	sult PQL	SPK Val	Value	0 0	%REC 105	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Client ID: Analyte Gasoline Range Organi Surr: 4-Bromofluorob	Res cs 1.0 penzene 0.099	sult PQL	SPK Val 1 0.1	Value	0 0	%REC 105 99.6	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Client ID: Analyte Gasoline Range Organi Surr: 4-Bromofluorob MSD Sample II	Res cs 1.0 penzene 0.099	sult PQL 149 0.0500 164 0.00500 Run ID: FID-9	SPK Val 1 0.1	Value	0 0	%REC 105 99.6	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
Client ID: Analyte Gasoline Range Organi Surr: 4-Bromofluorob MSD Sample II Client ID:	Res cs 1.0 eenzene 0.099 D: 13111253-02BMSD	sult PQL 149 0.0500 164 0.00500 Run ID: FID-9 sult PQL	SPK Val 1 0.1 131202C SPK Val	Value SPK Ref Value	0 0	%REC 105 99.6 nits: mg/l	Control Limit 70-130 70-130 L 6312 Control	Prep Date: RPD Ref Value Ana Prep Date: RPD Ref	%RPD 0 lysis Date: 1: %RPD	DF: 1 RPD Limit 2/3/2013 1 DF: 1 RPD Limit	Qual 2:42 AM
Client ID: Analyte Gasoline Range Organi Surr: 4-Bromofluorob MSD Sample II Client ID: Analyte	Res CS 1.0 DENTE 13111253-02BMSD Res CS 0.99	Run ID: FID-9	SPK Val 1 0.1 131202C SPK Val	Value SPK Ref Value	0 0 U Sec	%REC 105 99.6 Inits: mg/liqNo: 3456 %REC	Control Limit 70-130 70-130 L S312 Control Limit	Prep Date: RPD Ref Value Ana Prep Date: RPD Ref Value	%RPD 0 lysis Date: 1: %RPD 49 5.7	DF: 1 RPD Limit 2/3/2013 1 DF: 1 RPD Limit	Qual 2:42 AM

Note:

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158029 Instrume	ent ID FID-9		Metho	d: SW801	5						
MBLK Sample ID: GBLKW1-	131203-R158029				U	nits: mg/	L	Analys	sis Date: 12	2/3/2013 0	5:34 AM
Client ID:	Run	ID: FID-9_ 1	131203A		Se	qNo: 345 6	6405	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 Surr: 4-Bromofluorobenzene	U 0.09734	0.0500 0.00500	0.1		0	97.3	70-130	C)		
LCS Sample ID: GLCSW1-	131203-R158029				U	nits: mg/	L	Analys	sis Date: 12	2/3/2013 0	4:58 AM
Client ID:	Run	ID: FID-9_ 1	131203A		Se	qNo: 345 6	6404	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	1.041	0.0500	1		0	104	70-130				
Surr: 4-Bromofluorobenzene	0.1003	0.00500	0.1		0	100	70-130	C)		
MS Sample ID: 13111336-					U	nits: mg /	L	Analys	sis Date: 12	2/3/2013 1	0:04 AM
	-02BMS	ID: FID-9 _1	31203A			nits: mg/ qNo: 345 6		Analys	sis Date: 12	2/3/2013 1 DF: 1	0:04 AM
MS Sample ID: 13111336-	-02BMS	ID: FID-9_ 1 PQL	31203A SPK Val	SPK Ref Value		ŭ		,	sis Date: 12 %RPD		0:04 AM Qual
MS Sample ID: 13111336-I	02BMS Run			Value		qNo: 345 6	6408 Control	Prep Date:		DF: 1	
MS Sample ID: 13111336- Client ID: Analyte	02BMS Run Result	PQL	SPK Val	Value	Se	qNo: 3456 %REC	Control Limit	Prep Date:	%RPD	DF: 1	
MS Sample ID: 13111336-0 Client ID: Analyte Gasoline Range Organics	Run Result 0.9142 0.09908	PQL 0.0500	SPK Val	Value	0 0	91.4	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
MS Sample ID: 13111336-Client ID: Analyte Gasoline Range Organics Surr: 4-Bromofluorobenzene	02BMS Run Result 0.9142 0.09908	PQL 0.0500	SPK Val 1 0.1	Value	0 0	91.4 99.1	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
MS Sample ID: 13111336-IClient ID: Analyte Gasoline Range Organics Surr: 4-Bromofluorobenzene MSD Sample ID: 13111336-I	02BMS Run Result 0.9142 0.09908	PQL 0.0500 0.00500	SPK Val 1 0.1	Value	0 0	%REC 91.4 99.1	Control Limit 70-130 70-130	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual
MS Sample ID: 13111336-C Client ID: Analyte Gasoline Range Organics Surr: 4-Bromofluorobenzene MSD Sample ID: 13111336-C Client ID:	02BMS Run Result 0.9142 0.09908 02BMSD Run	PQL 0.0500 0.00500 ID: FID-9_ 1	SPK Val 1 0.1	Value SPK Ref Value	0 0	91.4 99.1 Inits: mg/l	Control Limit 70-130 70-130 Control Control	Prep Date: RPD Ref Value Analys Prep Date: RPD Ref	%RPD	DF: 1 RPD Limit 2/3/2013 1 DF: 1 RPD Limit	Qual 0:22 AM

The following samples were analyzed in this batch:

Note:

13111188-02B

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICP7500		Method	SW602	0	(Dissolve	e)			
MBLK	Sample ID: MBLKW6-112513-74938			Units: mg/	L	Analysis Date: 11/26/2013 03:51 PM				
Client ID:	Ru	n ID: ICP750	_131126A		SeqNo: 345 0	394	Prep Date: 11	/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.005079	0.0100								J
Arsenic	U	0.00500								
Barium	U	0.00500								
Boron	U	0.0500								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00500								
Cobalt	U	0.00500								
Copper	U	0.00500								
Iron	U	0.200								
Lead	U	0.00500								
Manganese	U	0.00500								
Molybdenum	U	0.00500								
Nickel	U	0.00500								
Potassium	U	0.200								
Selenium	U	0.00500								
Silver	U	0.00500								
Sodium	U	0.200								
Uranium	U	0.00500								
Zinc	0.00409	0.00500								J

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 74938	8 Instrument ID ICP7500		Method	SW602	:0	-	(Dissolve)			
LCS S	Sample ID: MLCSW6-112513-74938				ι	Jnits: mg /	L	Anal	ysis Date: 1	1/26/2013	04:21 AM
Client ID:	Rur	ID: ICP7500_131125A			SeqNo: 3449549		9549	Prep Date: 11/25/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1099	0.0100	0.1		0	110	80-120				
Arsenic	0.05141	0.00500	0.05		0	103	80-120				
Barium	0.05065	0.00500	0.05		0	101	80-120				
Boron	0.4911	0.0500	0.5		0	98.2	80-120				
Cadmium	0.04961	0.00200	0.05		0	99.2	80-120				
Calcium	5.056	0.500	5		0	101	80-120				
Chromium	0.0519	0.00500	0.05		0	104	80-120				
Cobalt	0.05168	0.00500	0.05		0	103	80-120				
Copper	0.05218	0.00500	0.05		0	104	80-120				
Iron	5.202	0.200	5		0	104	80-120				
Lead	0.05065	0.00500	0.05		0	101	80-120				
Manganese	0.05367	0.00500	0.05		0	107	80-120				
Molybdenum	0.0493	0.00500	0.05		0	98.6	80-120				
Nickel	0.05122	0.00500	0.05		0	102	80-120				
Potassium	4.989	0.200	5		0	99.8	80-120				
Selenium	0.05042	0.00500	0.05		0	101	80-120				
Silver	0.05165	0.00500	0.05		0	103	80-120				
Uranium	0.09498	0.00500	0.1		0	95	80-120				
Zinc	0.05473	0.00500	0.05		0	109	80-120				
LCS S	Sample ID: MLCSW6-112513-74938				Į	Jnits: mg /	L	Anal	ysis Date: 1	1/26/2013	03:56 PM
Client ID:	Rur	n ID: ICP750	0_131126A	31126A SeqNo: 3450395 F					/25/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	5.183	0.200	5		0	104	80-120				

Note:

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 74	938 Instrument ID ICP7	500		Method	d: SW6020		(Dissolve))			
MS	Sample ID: 1311934-06CMS				Units: mg/L			sis Date: 1	1/26/2013	04:40 AN	
Client ID:		Run	ID: ICP750 0	_131125A	SeqNo: 3449553			Prep Date: 11/25/2013 DF: 1			
Analyte	Re	esult	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1	146	0.0100	0.1	0.007725	107	75-125				
Barium	36	6.63	0.00500	0.05	38.83	-4400	75-125				SEO
Boron	1:	2.36	0.0500	0.5	12.27	18	75-125				SEO
Cadmium	0.04	905	0.00200	0.05	0.00008766	97.9	75-125				
Lead	0.05	122	0.00500	0.05	-0.0001674	103	75-125				
Molybdenum	0.05	261	0.00500	0.05	0.0007769	104	75-125				
Potassium	9.	.723	0.200	5	4.865	97.2	75-125				
Silver	0.04	794	0.00500	0.05	-0.0004062	96.7	75-125				
Sodium		U	0.200	5	0	0	75-125				SX
Uranium	0.1	013	0.00500	0.1	-0.0001365	101	75-125				
MS	Sample ID: 1311934-06CMS					Units: mg/	L	Analy	sis Date: 1	1/26/2013	04:31 PM
Client ID:		Run	ID: ICP750 0	_131126A	S	eqNo: 3450593		Prep Date: 11/25/2013		DF: 1	
Analyte	Re	esult	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0	573	0.00500	0.05	0.005024	105	75-125				
Calcium		67.4	0.500	5	64.91	49.8	75-125				so
Chromium	0.05	5177	0.00500	0.05	0	104	75-125				
Cobalt	0.04	989	0.00500	0.05	0.0008988	98	75-125				
Copper	0.04	791	0.00500	0.05	0	95.8	75-125				
Iron	6.	.283	0.200	5	1.625	93.2	75-125				
Manganese	0.09	802	0.00500	0.05	0.05231	91.4	75-125				
Nickel	0.04	913	0.00500	0.05	0	98.3	75-125				
Selenium)515	0.00500	0.05	0	103	75-125				
Zinc	0.06	288	0.00500	0.05	0.01235	101	75-125				

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 749	Instrument ID ICP7500		Method	d: SW6020	((Dissolve	e)			
MSD	Sample ID: 1311934-06CMSD				Units: mg/L		Analysis Date: 11/26/2013 04:-			
Client ID:	Ru	un ID: ICP750	0_131125A	S	eqNo: 344 9	9554	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1108	0.0100	0.1	0.007725	103	75-125	0.1146	3.37	25	
Arsenic	0.05436	0.00500	0.05	0.005024	98.7	75-125	0.05636	3.61	25	
Barium	35.64	0.00500	0.05	38.83	-6380	75-125	36.63	2.74	25	SEO
Boron	12.21	0.0500	0.5	12.27	-12	75-125	12.36	1.22	25	SEO
Cadmium	0.0469	0.00200	0.05	0.00008766	93.6	75-125	0.04905	4.48	25	
Calcium	66.04	0.500	5	64.91	22.6	75-125	67.12	1.62	25	SO
Chromium	0.0486	0.00500	0.05	0.000705	95.8	75-125	0.05175	6.28	25	
Cobalt	0.04761	0.00500	0.05	0.0008988	93.4	75-125	0.05009	5.08	25	
Copper	0.04531	0.00500	0.05	-0.0003358	91.3	75-125	0.04751	4.74	25	
Iron	6.027	0.200	5	1.625	88	75-125	6.403	6.05	25	
Lead	0.04965	0.00500	0.05	-0.0001674	99.6	75-125	0.05122	3.11	25	
Manganese	0.09378	0.00500	0.05	0.05231	82.9	75-125	0.1004	6.82	25	
Molybdenum	0.05151	0.00500	0.05	0.0007769	101	75-125	0.05261	2.11	25	
Nickel	0.04559	0.00500	0.05	0.0007887	89.6	75-125	0.0489	7.01	25	
Potassium	9.507	0.200	5	4.865	92.8	75-125	9.723	2.25	25	
Selenium	0.04751	0.00500	0.05	0.0008209	93.4	75-125	0.05051	6.12	25	
Silver	0.047	0.00500	0.05	-0.0004062	94.8	75-125	0.04794	1.98	25	
Sodium	U	0.200	5	0	0	75-125	0	0	25	SX
Uranium	0.0989	0.00500	0.1	-0.0001365	99	75-125	0.1013	2.4	25	
Zinc	0.06053	0.00500	0.05	0.01235	96.4	75-125	0.06357	4.9	25	

Note:

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 74938	Instrument ID ICP7500		Method	: SW602	0 ((Dissolve	e)			
DUP Sa	ample ID: 1311934-06CDUP				Units: mg/l	L	Analysi	s Date: 11	/26/2013	04:30 AM
Client ID:	Run	ID: ICP750 0	0_131125A		SeqNo: 3449	9551	Prep Date: 11/2	5/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.00616	0.0100					0.007725	0	25	J
Arsenic	0.005234	0.00500					0.005024	4.09	25	
Cadmium	U	0.00200					0.00008766	0	25	
Calcium	63.59	0.500					64.91	2.05	25	
Chromium	U	0.00500					0.000705	0	25	
Cobalt	0.0008663	0.00500					0.0008988	0	25	J
Copper	U	0.00500					-0.0003358	0	25	
Iron	1.38	0.200					1.625	16.3	25	
Lead	U	0.00500					-0.0001674	0	25	
Manganese	0.04698	0.00500					0.05231	10.7	25	
Molybdenum	U	0.00500					0.0007769	0	25	
Nickel	U	0.00500					0.0007887	0	25	
Potassium	4.664	0.200					4.865	4.22	25	
Selenium	0.001275	0.00500					0.0008209	0	25	J
Silver	U	0.00500					-0.0004062	0	25	
Uranium	U	0.00500					-0.0001365	0	25	
Zinc	0.01187	0.00500					0.01235	3.96	25	
DUP Sa	ample ID: 1311934-06CDUP				Units: mg/l	L	Analysi	s Date: 11	/26/2013	04:06 PM
Client ID:	Run	ID: ICP750 0	0_131126A		SeqNo: 3450)542	Prep Date: 11/2	5/2013	DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	33.96	0.250					37.96	11.1	25	
Boron	10.02	2.50					11.28	11.8	25	
The fellowing a	amples were analyzed in this batch		111188-01E	40	111188-02E					

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

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: 74973 Instru	iment ID SV-4		Metho	d: SW827	0						
MBLK Sample ID: SBLKV	V1-131126-74973				l	Jnits: µg/l	_	Analy	sis Date: 1	1/26/2013	05:05 PM
Client ID:	Run I	D: SV-4_1	31126A		Se	eqNo: 345	1914	Prep Date: 11/	26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	U	0.20									
2-Methylnaphthalene	U	0.20									
Benzo(a)pyrene	U	0.20									
Naphthalene	U	0.20									
Surr: 2,4,6-Tribromophenol	3.583	0.20	5		0	71.7	34-129)		
Surr: 2-Fluorobiphenyl	3.466	0.20	5		0	69.3	40-125		0		
Surr: 2-Fluorophenol	3.106	0.20	5		0	62.1	20-120)		
Surr: 4-Terphenyl-d14	4.479	0.20	5		0	89.6	40-135		0		
Surr: Nitrobenzene-d5	3.192	0.20	5		0	63.8	41-120)		
Surr: Phenol-d6	2.816	0.20	5		0	56.3	20-120		0		
LCS Sample ID: SLCSV	V1-131126-74973				Ų	Jnits: µg/l	-	Analy	sis Date: 1	1/26/2013	05:25 PM
Client ID:	Run I	D: SV-4_1	31126A		Se	eqNo: 345	1915	Prep Date: 11/	26/2013	DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	3.803	0.20	5		0	76.1	45-120				
2-Methylnaphthalene	3.701	0.20	5		0	74	50-120				
Benzo(a)pyrene	4.305	0.20	5		0	86.1	45-120				
Naphthalene	3.749	0.20	5		0	75	45-120				
Surr: 2,4,6-Tribromophenol	4.877	0.20	5		0	97.5	34-129		9		
Surr: 2-Fluorobiphenyl	3.823	0.20	5		0	76.5	40-125		0		
Surr: 2-Fluorophenol	3.367	0.20	5		0	67.3	20-120		0		
Surr: 4-Terphenyl-d14	3.983	0.20	5		0	79.7	40-135		0		
Surr: Nitrobenzene-d5	3.45	0.20	5		0	69	41-120		0		
Surr: Phenol-d6	3.572	0.20	5		0	71.4	20-120		0		

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

LCSD Sample ID: SLCSDW1	-131126-74973				Units	s: µg/L		Analysi	s Date: 11	/26/2013	05:46 PM
Client ID:		D: SV-4_1 :	31126A	;		. 3 451		Prep Date: 11/2		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%	REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1-Methylnaphthalene	4.143	0.20	5	() ;	82.9	45-120	3.803	8.56	20	
2-Methylnaphthalene	4.022	0.20	5	() ;	80.4	50-120	3.701	8.3	20	
Benzo(a)pyrene	4.867	0.20	5	() !	97.3	45-120	4.305	12.2	20	
Naphthalene	3.815	0.20	5	()	76.3	45-120	3.749	1.74	20	
Surr: 2,4,6-Tribromophenol	4.519	0.20	5	()	90.4	34-129	4.877	7.63	0	
Surr: 2-Fluorobiphenyl	3.597	0.20	5	()	71.9	40-125	3.823	6.09	0	
Surr: 2-Fluorophenol	3.41	0.20	5	()	68.2	20-120	3.367	1.28	0	
Surr: 4-Terphenyl-d14	4.253	0.20	5	()	85.1	40-135	3.983	6.55	0	
Surr: Nitrobenzene-d5	3.315	0.20	5	()	66.3	41-120	3.45	3.98	0	
Surr: Phenol-d6	3.376	0.20	5	()	67.5	20-120	3.572	5.65	0	

QC BATCH REPORT

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Metho	d: SW82 6	80					
MBLK Sample ID: V	/BLKW-131203-R157973				Units: µg/l	_	Analy	/sis Date: 1	2/3/2013	11:13 AM
Client ID:	Run I	D: VOA4_	131203A		SeqNo: 345	5211	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	3.0								
Surr: 1,2-Dichloroethane	-d4 59.13	1.0	50		0 118	71-125		0		
Surr: 4-Bromofluorobenz	ene 53.31	1.0	50		0 107	70-125		0		
Surr: Dibromofluorometh	ane 56.76	1.0	50		0 114	74-125		0		
Surr: Toluene-d8	55.64	1.0	50		0 111	75-125		0		

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Method	: SW826	0						
LCS Sample ID: V	VLCSW-131203-R157973				L	Jnits: µg/L		Analy	sis Date: 1	2/3/2013	10:24 AM
Client ID:	Run	ID: VOA4_1	131203A		Se	qNo: 345 !	5210	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	59.56	1.0	50		0	119	75-130				
1,1,2,2-Tetrachloroethane	51.02	1.0	50		0	102	74-123				
1,1,2-Trichloroethane	51.66	1.0	50		0	103	80-120				
1,1-Dichloroethane	57.26	1.0	50		0	115	80-120				
1,1-Dichloroethene	60.43	1.0	50		0	121	75-130				
1,2-Dibromoethane	52.61	1.0	50		0	105	80-120				
1,2-Dichloroethane	52.48	1.0	50		0	105	79-120				
Benzene	54.13	1.0	50		0	108	80-120				
Carbon tetrachloride	54.33	1.0	50		0	109	75-125				
Chloroform	55.19	1.0	50		0	110	70-130				
Ethylbenzene	52.55	1.0	50		0	105	80-120				
Methylene chloride	58.04	2.0	50		0	116	65-133				
Tetrachloroethene	52.04	1.0	50		0	104	75-130				
Toluene	52.2	1.0	50		0	104	80-121				
Trichloroethene	53.23	1.0	50		0	106	75-125				
Vinyl chloride	60.81	1.0	50		0	122	70-135				
Xylenes, Total	155	3.0	150		0	103	80-124				
Surr: 1,2-Dichloroethane	e-d4 58.37	1.0	50		0	117	71-125		0		
Surr: 4-Bromofluorobenz	zene 57.61	1.0	50		0	115	70-125		0		
Surr: Dibromofluorometh	nane 59.15	1.0	50		0	118	74-125		0		
Surr: Toluene-d8	55.4	1.0	50		0	111	75-125		0		

0

Client: Navajo Refining Company

Work Order: 13111188

Surr: Toluene-d8

Note:

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4		Method	d: SW8260						
MS Sample ID: 1	13111059-52AMS			ı	Units: µg/I	_	Analy	sis Date: 1	2/3/2013	02:30 PM
Client ID:	R	un ID: VOA4 _	131203A	Se	eqNo: 345	6152	Prep Date:		DF: 1 0	0
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	626.1	10	500	0	125	75-130				
1,1,2,2-Tetrachloroethane	541.3	10	500	0	108	74-123				
1,1,2-Trichloroethane	555.3	10	500	0	111	80-120				
1,1-Dichloroethane	606.3	10	500	0	121	80-120				S
1,1-Dichloroethene	635.9	10	500	0	127	75-130				
1,2-Dibromoethane	559.5	10	500	0	112	80-120				
1,2-Dichloroethane	578.5	10	500	0	116	79-120				
Benzene	1480	10	500	863	123	80-120				S
Carbon tetrachloride	578.7	10	500	0	116	79-120				
Chloroform	589	10	500	0	118	70-130				
Ethylbenzene	552.4	10	500	0	110	80-120				
Methylene chloride	614.1	20	500	0	123	65-133				
Tetrachloroethene	546.5	10	500	0	109	75-130				
Toluene	547.3	10	500	0	109	80-121				
Trichloroethene	560.1	10	500	0	112	75-125				
Vinyl chloride	646.2	10	500	0	129	70-135				
Xylenes, Total	1648	30	1500	0	110	80-124				
Surr: 1,2-Dichloroethane	e-d4 588	10	500	0	118	71-125	i	0		
Surr: 4-Bromofluorobenz	zene 575.5	10	500	0	115	70-125		0		
Surr: Dibromofluorometh	nane 601	10	500	0	120	74-125		0		

0

110

75-125

551.9

10

500

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R157973	Instrument ID VOA4	Method:	SW8260
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MSD Sample ID: 13111059-	52AMSD			I	Units: µg/l	-	Analysi	is Date: 12	2/3/2013 0	2:55 PN
Client ID:	Run II	D: VOA4_	131203A	Se	eqNo: 345	6153	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	600.4	10	500	0	120	75-130	626.1	4.2	20	
1,1,2,2-Tetrachloroethane	545.7	10	500	0	109	74-123	541.3	0.807	20	
1,1,2-Trichloroethane	543	10	500	0	109	80-120	555.3	2.25	20	
1,1-Dichloroethane	582.3	10	500	0	116	80-120	606.3	4.04	20	
1,1-Dichloroethene	615.2	10	500	0	123	75-130	635.9	3.3	20	
1,2-Dibromoethane	551.1	10	500	0	110	80-120	559.5	1.51	20	
1,2-Dichloroethane	561.4	10	500	0	112	79-120	578.5	3	20	
Benzene	1416	10	500	863	111	80-120	1480	4.41	20	
Carbon tetrachloride	552.9	10	500	0	111	75-125	578.7	4.56	20	
Chloroform	565.8	10	500	0	113	70-130	589	4.02	20	
Ethylbenzene	538.3	10	500	0	108	80-120	552.4	2.58	20	
Methylene chloride	597.4	20	500	0	119	65-133	614.1	2.75	20	
Tetrachloroethene	527.1	10	500	0	105	75-130	546.5	3.63	20	
Toluene	529.4	10	500	0	106	80-121	547.3	3.32	20	
Trichloroethene	543.2	10	500	0	109	75-120	560.1	3.06	20	
Vinyl chloride	622.9	10	500	0	125	70-135	646.2	3.68	20	
Xylenes, Total	1594	30	1500	0	106	80-124	1648	3.35	20	
Surr: 1,2-Dichloroethane-d4	583.2	10	500	0	117	71-125	588	0.823	20	
Surr: 4-Bromofluorobenzene	566.1	10	500	0	113	70-125	575.5	1.64	20	
Surr: Dibromofluoromethane	592.2	10	500	0	118	74-125	601	1.48	20	
Surr: Toluene-d8	550.2	10	500	0	110	75-125	551.9	0.308	20	

The following samples were analyzed in this batch:

Note:

13111188-01A 13111188-02A

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Method	d: SW82 6	60					
MBLK Sample ID: V	/BLKW-131203-R158097				Units: µg/	L	Anal	ysis Date: 1	2/4/2013	11:14 AM
Client ID:	Run	ID: VOA4_	131204A		SeqNo: 345	7811	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	3.0								
Surr: 1,2-Dichloroethane	e-d4 59.21	1.0	50		0 118	71-125		0		
Surr: 4-Bromofluorobenz	zene 53.57	1.0	50		0 107	70-125	i	0		
Surr: Dibromofluorometh	nane 56.22	1.0	50		0 112	74-125		0		
Surr: Toluene-d8	54.63	1.0	50		0 109	75-125	i	0		

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Method	: SW826	0						
LCS Sample ID: V	VLCSW-131203-R158097				Į	Jnits: µg/L		Analy	/sis Date: 1	2/4/2013	10:24 AM
Client ID:	Run	ID: VOA4_	131204A		Se	qNo: 345 7	7810	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	52.63	1.0	50		0	105	75-130				
1,1,2,2-Tetrachloroethane	48.12	1.0	50		0	96.2	74-123				
1,1,2-Trichloroethane	47.64	1.0	50		0	95.3	80-120				
1,1-Dichloroethane	51.47	1.0	50		0	103	80-120				
1,1-Dichloroethene	54.46	1.0	50		0	109	75-130				
1,2-Dibromoethane	48.08	1.0	50		0	96.2	80-120				
1,2-Dichloroethane	48.27	1.0	50		0	96.5	79-120				
Benzene	49.75	1.0	50		0	99.5	80-120				
Carbon tetrachloride	48.69	1.0	50		0	97.4	75-125				
Chloroform	50.04	1.0	50		0	100	70-130				
Ethylbenzene	46.88	1.0	50		0	93.8	80-120				
Methylene chloride	54	2.0	50		0	108	65-133				
Tetrachloroethene	46.21	1.0	50		0	92.4	75-130				
Toluene	47.06	1.0	50		0	94.1	80-121				
Trichloroethene	48.1	1.0	50		0	96.2	75-125				
Vinyl chloride	54.76	1.0	50		0	110	70-135				
Xylenes, Total	138.9	3.0	150		0	92.6	80-124				
Surr: 1,2-Dichloroethane	e-d4 55.92	1.0	50		0	112	71-125		0		
Surr: 4-Bromofluorobenz	zene 55.89	1.0	50		0	112	70-125		0		
Surr: Dibromofluorometh	nane 57.37	1.0	50		0	115	74-125		0		
Surr: Toluene-d8	53.5	1.0	50		0	107	75-125		0		

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4		Method	d: SW8260						
MS Sample ID: 1	3111198-01AMS				Units: µg/l	_	Analy	/sis Date: 1	2/4/2013	12:28 PM
Client ID:	R	un ID: VOA4 _	131204A	S	eqNo: 345	7814	Prep Date:		DF: 2	5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1565	25	1250	0	125	75-130				
1,1,2,2-Tetrachloroethane	1361	25	1250	0	109	74-123				
1,1,2-Trichloroethane	1429	25	1250	0	114	80-120				
1,1-Dichloroethane	1517	25	1250	0	121	80-120				S
1,1-Dichloroethene	1610	25	1250	0	129	75-130				
1,2-Dibromoethane	1365	25	1250	0	109	80-120				
1,2-Dichloroethane	1452	25	1250	0	116	79-120				
Benzene	3558	25	1250	1977	126	80-120				S
Carbon tetrachloride	1397	25	1250	0	112	79-120				
Chloroform	1470	25	1250	0	118	70-130				
Ethylbenzene	2723	25	1250	1058	133	80-120				S
Methylene chloride	1547	50	1250	0	124	65-133				
Tetrachloroethene	1260	25	1250	0	101	75-130				
Toluene	1499	25	1250	133.1	109	80-121				
Trichloroethene	1378	25	1250	0	110	75-125				
Vinyl chloride	1635	25	1250	0	131	70-135				
Xylenes, Total	11600	75	3750	5692	158	80-124				S
Surr: 1,2-Dichloroethane	-d4 1441	25	1250	0	115	71-125		0		
Surr: 4-Bromofluorobenz	ene 1440	25	1250	0	115	70-125		0		
Surr: Dibromofluorometh	ane 1495	25	1250	0	120	74-125		0		
Surr: Toluene-d8	1390	25	1250	0	111	75-125		0		

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R158097	Instrument ID VOA4	Method: SW8260
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MSD Sample ID: 13111198-0	01AMSD			I	Units: µg/L	-	Analysi	is Date: 12	2/4/2013 1	2:52 PN
Client ID:	Run II	D: VOA4_	131204A	Se	eqNo: 345	7815	Prep Date:		DF: 25	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1520	25	1250	0	122	75-130	1565	2.94	20	
1,1,2,2-Tetrachloroethane	1357	25	1250	0	109	74-123	1361	0.296	20	
1,1,2-Trichloroethane	1370	25	1250	0	110	80-120	1429	4.2	20	
1,1-Dichloroethane	1478	25	1250	0	118	80-120	1517	2.59	20	
1,1-Dichloroethene	1550	25	1250	0	124	75-130	1610	3.84	20	
1,2-Dibromoethane	1342	25	1250	0	107	80-120	1365	1.71	20	
1,2-Dichloroethane	1420	25	1250	0	114	79-120	1452	2.27	20	
Benzene	3437	25	1250	1977	117	80-120	3558	3.46	20	
Carbon tetrachloride	1414	25	1250	0	113	75-125	1397	1.2	20	
Chloroform	1438	25	1250	0	115	70-130	1470	2.17	20	
Ethylbenzene	2521	25	1250	1058	117	80-120	2723	7.73	20	
Methylene chloride	1513	50	1250	0	121	65-133	1547	2.19	20	
Tetrachloroethene	1246	25	1250	0	99.6	75-130	1260	1.15	20	
Toluene	1447	25	1250	133.1	105	80-121	1499	3.53	20	
Trichloroethene	1353	25	1250	0	108	75-120	1378	1.84	20	
Vinyl chloride	1598	25	1250	0	128	70-135	1635	2.3	20	
Xylenes, Total	10640	75	3750	5692	132	80-124	11600	8.62	20	S
Surr: 1,2-Dichloroethane-d4	1420	25	1250	0	114	71-125	1441	1.51	20	
Surr: 4-Bromofluorobenzene	1417	25	1250	0	113	70-125	1440	1.67	20	
Surr: Dibromofluoromethane	1473	25	1250	0	118	74-125	1495	1.43	20	
Surr: Toluene-d8	1345	25	1250	0	108	75-125	1390	3.33	20	

The following samples were analyzed in this batch:

Note:

13111188-03A

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R	R157787 Instrumer	nt ID WetChem		Method	: SM450	0H+ B	(Dissolve	e)			
LCS	Sample ID: WLCS-W11	1126-R157787				Units: pH	Units	Analysi	is Date: 11	/26/2013	09:00 AM
Client ID:		Run II	D: WETCH	IEM_13112	6B	SeqNo: 345	0021	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
рН		6	0.100	6		0 100	98-102				
DUP	Sample ID: 13111121-0	01EDup				Units: pH	Units	Analysi	is Date: 11	/26/2013	09:00 AM
DUP Client ID:	Sample ID: 13111121-0		D: WETCH	IEM_13112	6B	Units: pH SeqNo: 345		Analysi Prep Date:	is Date: 11	/26/2013 DF: 1	09:00 AM
	Sample ID: 13111121-0		D: WETCH PQL	I EM_13112 0 SPK Val	SPK Ref Value	•		-	s Date: 11 %RPD		09:00 AM Qual
Client ID:	Sample ID: 13111121-0	Run II		_	SPK Ref	SeqNo: 345	0073 Control	Prep Date:		DF: 1 RPD	
Client ID:		Run II	PQL	_	SPK Ref	SeqNo: 345	0073 Control	Prep Date: RPD Ref Value	%RPD	DF: 1 RPD Limit	Qual

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

QC BATCH REPORT

Batch ID: R	157947 Instrument I	D Balance1		Metho	d: M2540	С	(Dissolve	e)			
MBLK	Sample ID: WBLK-112713	3-R157947				Units: mg	/L	Analys	is Date: 1	1/27/2013	05:30 PM
Client ID:		Run I	D: Balan	CE1_13112	?7E	SeqNo: 345	4369	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	U	10.0								
LCS	Sample ID: WLCS-112713	3-R157947				Units: mg	/L	Analys	is Date: 1	1/27/2013	05:30 PM
Client ID:		Run I	D: BALAN	CE1_13112	?7E	SeqNo: 345	4370	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	988	10.0	1000		0 98.8	85-115				
DUP	Sample ID: 13111154-01E	DUP				Units: mg	/L	Analys	is Date: 1	1/27/2013	05:30 PM
Client ID:		Run I	D: BALAN	CE1_13112	?7E	SeqNo: 345	4362	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissol	lved Solids (Residue, Filt	2472	10.0					2366	4.38	3 10	
The followi	ing samples were analyzed	in this batch:	13	111188-01	F 13	111188-02F					

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R	157956	Instrument ID ICS2100		Method	: E300		(Dissolve	e)			
MBLK	Sample ID: V	VBLKW2-R157956				Units: mg	/L	Analy	sis Date: 1	2/2/2013 (7:09 PM
Client ID:		Run	ID: ICS210	0_131202D		SeqNo: 348	4587	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	U	0.200								
LCS	Sample ID: V	VLCSW2-R157956				Units: mg	/L	Analy	sis Date: 1	2/2/2013 (7:24 PM
Client ID:		Run	ID: ICS210	0_131202D		SeqNo: 345	4588	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite	e (as N)	7.891	0.200	8		0 98.6	90-110	ı			
MS	Sample ID: 1	3111093-01FMSZ				Units: mg	/L	Analy	sis Date: 1	2/2/2013 (7:53 PM
Client ID:		Run	ID: ICS210	0_131202D		SeqNo: 345	4590	Prep Date:		DF: 5	
Client ID: Analyte		Run Result	ID: IC\$210	0_131202D SPK Val	SPK Ref Value	SeqNo: 345 %REC	Control Limit	Prep Date: RPD Ref Value	%RPD	DF: 5 RPD Limit	Qual
Analyte	e (as N)					·	Control	RPD Ref Value	%RPD	RPD	Qual
		Result	PQL	SPK Val		%REC	Control Limit 80-120	RPD Ref Value	%RPD	RPD Limit	
Analyte Nitrate/Nitrite		Result 19.69 3111093-01FMSDZ	PQL 1.00	SPK Val		%REC	Control Limit 80-120	RPD Ref Value		RPD Limit	
Analyte Nitrate/Nitrite		Result 19.69 3111093-01FMSDZ	PQL 1.00	SPK Val		%REC 0 98.4 Units: mg	Control Limit 80-120	RPD Ref Value		RPD Limit 2/2/2013 (
Analyte Nitrate/Nitrite MSD Client ID:	Sample ID: 1	Result 19.69 3111093-01FMSDZ Run	PQL 1.00	SPK Val 20 0_131202D	Value SPK Ref	%REC 0 98.4 Units: mg SeqNo: 348	Control Limit 80-120 //L 64591 Control	Analy Prep Date: RPD Ref Value	sis Date: 1	RPD Limit 2/2/2013 (DF: 5 RPD Limit	08:07 PM

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

Batch ID: R	R158074 Instrument ID Gall0	1		Method	l: M4500	CN E8	kG (Dissolve)			
MBLK	Sample ID: MB-R158074-R15807	4				Uni	its: mg/l	L	Analysi	s Date: 12	2/3/2013 0	8:45 AM
Client ID:		Run ID: 🤇	ALL01	_131203B		Seq	No: 3457	369	Prep Date:		DF: 1	
Analyte	Re:	sult	PQL	SPK Val	SPK Ref Value	(%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide		U 0.	0200									
LCS	Sample ID: LCS-R158074-R1580	74				Uni	its: mg/l	L	Analysi	s Date: 12	2/3/2013 0	8:45 AM
Client ID:		Run ID: C	ALL01	_131203B		Seq	No: 3457	370	Prep Date:		DF: 1	
Analyte	Res	sult	PQL	SPK Val	SPK Ref Value	C	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.18	372 0.	0200	0.2		0	93.6	80-120				
LCSD	Sample ID: WLCSDW1120313-R	158074				Uni	its: mg/l	L	Analysi	s Date: 12	2/3/2013 0	8:45 AM
Client ID:		Run ID: C	ALL01	_131203B		Seq	No: 3457	378	Prep Date:		DF: 1	
Analyte	Res	sult	PQL	SPK Val	SPK Ref Value	C	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.19	917 0.	0200	0.2		0	95.9	80-120	0.1872	2.36	20	
								1		a Data: 46	2/3/2013 0	8·45 ΔM
MS	Sample ID: 13111251-01ams					Uni	its: mg/l	_	Anaiysi	s Date: 14	./5/2015 0	U. 70 AIVI
MS Client ID:	Sample ID: 13111251-01ams	Run ID: G	SALL01	I_131203B			its: mg/i No: 345 7		Analysi Prep Date:	s Date: 12	DF: 1	0.40 AW
_	·	Run ID: G sult	GALL01 PQL	1 _131203B SPK Val	SPK Ref Value	Seq	·		•	%RPD		Qual
Client ID:	Res	sult				Seq	No: 345 7	'374 Control	Prep Date:		DF: 1 RPD	

Client: Navajo Refining Company

Work Order: 13111188

Project: RO Discharge Sampling

	158112	Instrument ID ICS2100		Method	: E300	(Dissolve)			
MBLK	Sample ID	: WBLKW1-R158112				Units: mg/l	L	Analys	sis Date: 12	2/4/2013 0	9:28 AN
Client ID:		Ru	ın ID: ICS210	0_131204A		SeqNo: 3457	' 845	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		U	0.500								
Fluoride		U	0.100								
Sulfate		U	0.500								
LCS	Sample ID	: WLCSW1-R158112				Units: mg/l	L	Analys	sis Date: 12	2/4/2013 0	9:42 AN
Client ID:		Ru	ın ID: ICS210	0_131204A		SeqNo: 3457	' 846	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride		21.17	0.500	20	(0 106	90-110				
Fluoride		4.291	0.100	4		0 107	90-110				
Sulfate		20.15	0.500	20	(0 101	90-110				
MS	Sample ID	: 1312062-06CMS				Units: mg/l	L	Analys	sis Date: 12	/4/2013 1	1:35 AN
Client ID:		Ru	ın ID: ICS210	0_131204A		SeqNo: 3457	853	Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
		18.64	0.500	10	7.306	6 113	80-120				
Chloride		10.0-									
		3.347	0.100	2	1.0	1 117	80-120				
Fluoride			0.100 0.500	2 10	1.0 ⁻ 62.10		80-120 80-120				0
Fluoride Sulfate	Sample ID	3.347					80-120	Analys	sis Date: 12	2/4/2013 1	
Chloride Fluoride Sulfate MSD Client ID:	Sample ID	3.347 72.56 : 1312062-06CMSD		10	62.10	6 104	80-120	Analys Prep Date:	sis Date: 12	2/ 4/2013 1 DF: 1	
Fluoride Sulfate MSD	Sample ID	3.347 72.56 : 1312062-06CMSD	0.500	10	62.10	6 104 Units: mg/l	80-120	•	sis Date: 12		
Fluoride Sulfate MSD Client ID:	Sample ID	3.347 72.56 : 1312062-06CMSD	0.500	10	62.10	6 104 Units: mg/l	80-120 L 7854	Prep Date:	sis Date: 12 %RPD	DF: 1	
Fluoride Sulfate MSD Client ID: Analyte	Sample ID	3.347 72.56 : 1312062-06CMSD Ru	0.500 un ID: ICS210	10 0_ 131204A	62.10 SPK Ref	0 104 Units: mg/l SeqNo: 3457 %REC	80-120 7854 Control	Prep Date:	%RPD	DF: 1	1:50 AN
Fluoride Sulfate MSD Client ID: Analyte Chloride	Sample ID	3.347 72.56 : 1312062-06CMSD Ru Result	0.500 in ID: ICS210 PQL	10 0_131204A SPK Val	62.16 SPK Ref Value	Units: mg/l SeqNo: 3457 %REC 6 113	80-120 Z Z S S Control Limit	Prep Date: RPD Ref Value	%RPD 0.328	DF: 1 RPD Limit	1:50 AN
Fluoride Sulfate MSD	Sample ID	3.347 72.56 : 1312062-06CMSD Ru Result 18.58	0.500 in ID: ICS210 PQL 0.500	10 0_131204A SPK Val	SPK Ref Value 7.300	Units: mg/l SeqNo: 3457 %REC 6 113 1 116	80-120 Z854 Control Limit 80-120	Prep Date: RPD Ref Value 18.64	%RPD 0.328 0.359	DF: 1 RPD Limit	1:50 AN

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

ALS Environmental Date: 18-Dec-13

Client: Navajo Refining Company **QUALIFIERS, Project: RO** Discharge Sampling ACRONYMS, UNITS

WorkOrder: 13111188

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
Acronym	<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
Units Reported	Description
$^{\circ}\mathrm{C}$	Celsius degrees
mg/L	Milligrams per Liter

pH Units

ALS Environmental

Sample Receipt Checklist

Client Name:	NAVAJO REFINING				Date/Time	Received:	<u>22-</u>	Nov-13	<u>14:00</u>	
Work Order:	<u>13111188</u>				Received b	y:	TX	<u>Y</u>		
Checklist comp	oleted by Lohnnie B. Dllen		23-Nov-13	;	Reviewed by:	Sonia	West			04-Dec-13
·	esignature		Date	=	,	eSignatur	е			Date
Matrices: Carrier name:	water FedEx Priority Overnight									
Shipping contain	iner/cooler in good condition?		Yes	✓	No 🗌	Not F	resent			
Custody seals i	intact on shipping container/coole	er?	Yes	✓	No 🗌	Not F	resent			
Custody seals i	intact on sample bottles?		Yes		No \square	Not F	resent	~		
Chain of custoo	dy present?		Yes	✓	No 🗆					
Chain of custoo	dy signed when relinquished and	received?	Yes	✓	No 🗆					
Chain of custoo	dy agrees with sample labels?		Yes	✓	No 🗌					
Samples in pro	per container/bottle?		Yes	✓	No 🗌					
Sample contain	ners intact?		Yes	✓	No 🗆					
Sufficient samp	ole volume for indicated test?		Yes	✓	No 🗌					
All samples rec	eeived within holding time?		Yes	✓	No 🗌					
Container/Tem	p Blank temperature in complian	ce?	Yes	~	No 🗌					
Temperature(s))/Thermometer(s):		1.5C/1	.5 C	u/c		<u>IR 1</u>			
Cooler(s)/Kit(s)	:		<u>3185</u>				<u> </u>			
Date/Time sam	ple(s) sent to storage:		11/23/	13 09:	40					
Water - VOA vi	als have zero headspace?		Yes	✓	No 🗆	No VOA	vials sub	mitted		
Water - pH acc	eptable upon receipt?		Yes	✓	No 🗌	N/A				
pH adjusted? pH adjusted by			Yes		No 🗸	N/A				
Login Notes:	Trip Blank logged in for ana	lysis per historical	l events.							
-										
Client Contacte	, d	Date Contacted:			Doroon	Contacted	4.			
	su.				Feison	Contacted	ı.			
Contacted By:		Regarding:								
Comments:										
CorrectiveActio	n:									
									c	nge 1 of 1

37 of 52

Cincinnati, OH +1 513 733 5336

Fort Collins, CO +1 970 490 1511

Holland, MI +1 616 399 6070

Everett, WA +1 425 356 2600

Chain of Custody Form

Page of

coc ID: 87151

ALS Project Manager:

13111188

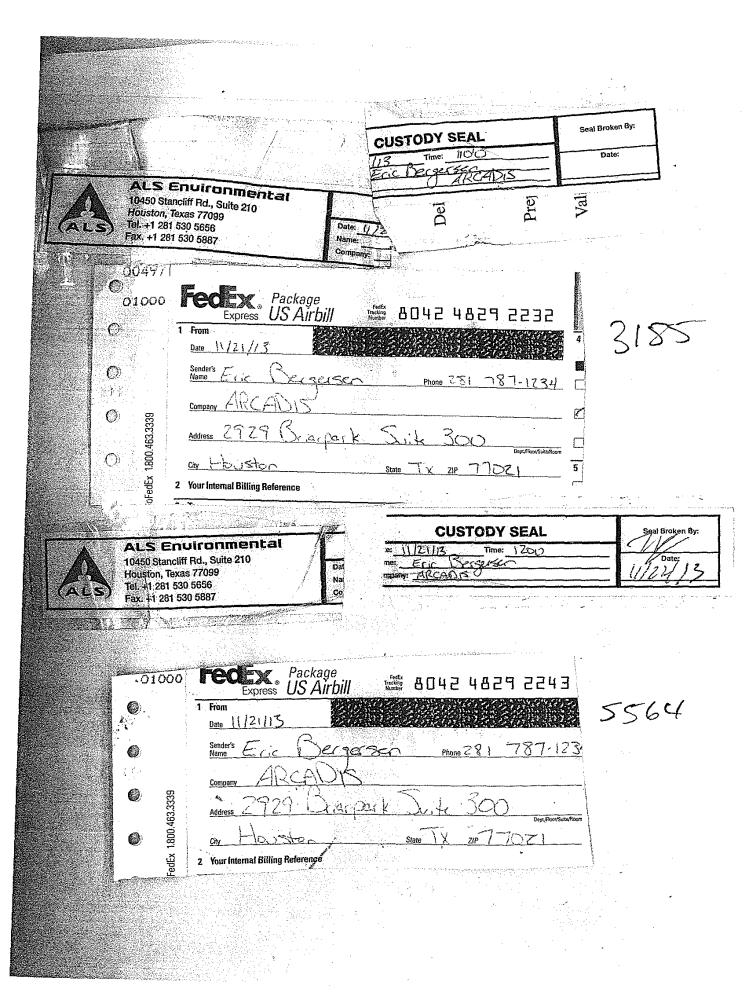
NAVAJO REFINING: Navajo Refining Company

Project: RO Discharge Sampling

Production Pro		၁	Customer Information		Project Information	u	
Money Orders Muse Refinig Company Muse Refinige Company Muse Refinige Company Muse Refinige Company Muse Refinige Company Muse Refinige Company	Purchase	Order		Project Name	RO Discharge/Samp	oling	
Company Name Navajo Refining Company Navajo Refining Refining Company Navajo Refining Refining Company Navajo Refining Refining Company Navajo Refining Refining Company Navajo Refining Refining Company Navajo Refining	Work	Order		Project Number			
Stand Report To Robert Combs R	Company	Name	Navajo Refining Company	Bill To Company	Navajo Refining Con		
Charle C	Send Rep	oor To	Robert Combs	Invoice Attn	Robert Combs		
Christation Christation	To de	9000	501 East Main	Address	501 East Main		
Chy/State/Zip	27.	Per la constitución de la consti	ANATONICA — PROGRAFIA ANTONICA — PRANCIPATAN	2001001		700000000000000000000000000000000000000	
Phone Circle 1973 146-5421 Pear Circle Circle 1975 146-5421 Pear	City/Sta	te/Zip	Artesia, NM 86211	City/State/Zip	Artesia, NM 88211		-estance
Frax (375) 746-5421 Nitrate-Nitrite as N (Preserved)	14	Phone	(575) 746-5382	Phone	(575) 746-5382		***********
No. Factor Peres. Feature Peres. Peres		Fax	(575) 746-5421	Fax	(575) 746-5421		
1	e-Mail Ad	idress		e-Mail Address			
1			Sample Description		0.00		B C D E F G H I J
2	Ses 3	3	7-1-	121/13		<u></u>	ナナノブノナナナナノ
Sign Sign	0.80000	Z S)-IS]	C		ナナナナナナナナナ
Shipment Method Required Turnaround Time: (Check Box) Other	က						
Shipment Method Required Turnaround Time: (Check Box) Other	7		manulus, kada katala mangaputa dang kabadan manulus dangkan katalan sa musu dangkan katalan manulus				
Comparison Com	22	The second secon	THE THE PROPERTY OF THE PROPER		100 mm m m m m m m m m m m m m m m m m m		
Shipment Method Required Turnaround Time: (Check Box) Other	မွ						
Figure F	7	The state of the s	The state of the s				
Shipment Method Required Turnaround Time: (Check Box) Other Results Due Date:	8						
Shipment Method Required Turnaround Time: (Check Box) Other Results Due Date: 2 WK Days 2	6		green van de state de la company de state de state de state de state de state de state de state de state de st	7	1777	THE PARTY OF THE P	The state of the s
Shipment Method Required Turnaround Time: (Check Box) Other Sign State Shipment Method Required Turnaround Time: (Check Box) Other Sign State	10						
Potes 10 Day TAT . CC Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.2 Pam Knueger with Arcadis 1.3 Pam Knueg	Sampler(s)	Please Pri	int & Sign 5 1 . 75	Shipment Me		ed Turnaround Time: (C	Other
1 2-HNO 3-H _S SO 4-NaOH 6-Na ₃ S ₂ O 6-Na ₄ S ₂ O 1-NaOH 6-Na ₃ S ₂ O 1-Na ₃	100 Tel		The think the second	_		333	5 WK Days
Date: Date: Time: Time: Checked by (Laboratory):	reginquished	The second	T 1/21/13	200	ived by:		iotes: 10 Day TAT . CC Pam Krueger with Arcadis
1-HGI 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 6-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035	Relinquished	í by:	Date: 122/13	\r\r.	wed-by(Laboratory):		Cooler Temp. QC Package: (Check One Box Below)
1+HGI 2-HNO ₃ 3-H ₂ SO ₃ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₃ 7-Other 8-4°C 9-5035	Logged by (L	.aboratory):			ked by (Laboratory):	les les	1.5 C Level III Std OCKRaw Data
	Preservativ		2-HNO ₃ 3-H ₂ SO ₄	5-Na ₂ S ₂ O ₃			Other / EDD

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.





December 17, 2013

Ms. Sonia West ALS Environmental 10450 Stancliff Rd, Suite 210 Houston, TX 77099

Re:

ALS Workorder:

13-11-496

Project Name:

None Submitted

Project Number:

13111188

Dear Ms. West:

Two water samples were received from ALS Environmental on November 26, 2013. The samples were scheduled for the following analyses:

Radium-226 Radium-228

The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Jeff Kujawa

Project Manager

JRK/jl

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





1311496

Case Narrative

Radium-228:

The samples were analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

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.

ALS Laborato	ory Certifications
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri	175
Nebraska	NE-OS-24-13
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)	CO01099
Washington	C1280

Sample Number(s) Cross-Reference Table

OrderNum: 1311496

Client Name: ALS Environmental

Client Project Name:

Client Project Number: 13111188
Client PO Number: 10-13111188

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-114	1311496-1		WATER	21-Nov-13	9:30
MW-115	1311496-2		WATER	21-Nov-13	8:30



Subcontractor:
ALS Environmental
225 Commerce Drive

TEL: FAX: Acct#:

Fort Collins, CO 80524

(800) 443-1511 (970) 490-1522

Date: <u>23-Nov-13</u> COC ID: <u>15503</u> Due Date <u>03-Dec-13</u>

CHAIN-OF-CUSTODY RECORD

;		Salesperson	Houston House Acct		
3	Customer Information	rmation	i i	Project Information	Parameter/Method Request for Analysis
Purchase Order	10-13111188	88	Project Name	13111188	A Radium 226 228 Sub to ALS Ft. Collins
Work Order			Project Number		
Company Name	ALS Group USA, Corp.	uSA, Сотр.	Bill To Company	ALS Group USA, Corp.	
Send Report To	Sonia West		Inv Attn	Accounts Payable	
Address	10450 Star	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	
City/State/Zip	Houston, T	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	5
Phone	(281) 530-5656	5656	Phone	(281) 530-5656	
Fax	(281) 530-5887	5887	Fax	(281) 530-5887	
eMail Address	Sonia.Wes	Sonia. West@alsglobal.com	eMail CC	jumoke lawal@alsglobal.com	
Sample ID			Matrix Collection	Collection Date 24hr Bottle	A COMPANY OF THE PROPERTY OF T
13111188-011 (MW-114)	V-114) (<u> </u>	Water 21/Nov/2	21/Nov/2013 9:30 (2) 1LPHNO3	+
13111188-02I (MW-115)	V-115)	C	Water 21/Nov/2	21/Nov/2013 8:30 (2) 1LPHNO3	X

		Report/QC Level	
		Cooler IDs	
		Date/Time	DateTime
r Radium 226/228		Bergined by:	Received by:
WO 13111188 - Please analyze for Radium 226/228	3 May 15	Date/Time	Date/Time
Comments: WO 1311118		Rep quisified by:	Relinquished by:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS)	19/		
Client: ALS TX. Workorder No: 1311	116	1 (-
Project Manager: TRK Initials: TLR	Date: _	11/26/13	<u>.</u>
Does this project require any special handling in addition to standard ALS procedures?		YES_L	(NO)_
2. Are custody seals on shipping containers intact?	NONE	Es.	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?		(ES	NO
5. Are the COC and bottle labels complete and legible?		(Ēs	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YĒS	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	(ES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(ES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		Ƨ	NO
Were all samples placed in the proper containers for the requested analyses?		(ES	NO
12. Are all samples within holding times for the requested analyses?		ES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(E)	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	(i)	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	N/A	YES	(6)
16. Were the samples shipped on ice?	<u> </u>	YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 (#4)	(RAD)	YES)	NO
Cooler #:	ONLY		
Temperature (°C):			
		 	
No. of custody seals on cooler: DOT Survey/ Acceptance External µR/hr reading: O			
Background μR/hr reading: 10			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (ES) NO / NA (If no, see			
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC	CEPT #1 AN	D #16.	
			<u>.</u>
	· · · · · · · · · · · · · · · · · · ·		
If applicable, was the client contacted? YES / NO (N) Contact:	_ Date/Tim	e:	
Project Manager Signature / Date: /// Kyn 11-16.0	_		
	_		
**************************************		_	اہ

Form 201r24.xts (06/04/2012)

Page 1 of

TUE — 26 NOV 10:30A

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ROY FRENCH SAMPLE CONTROL.
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

BILL SENDER

ALS LABORATORY GROUP 10450 STANCLIFF SUITE 210 HOUSTON, TX 77099 UNITED STATES US

51801/05F6/6F03

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111188
 Work Order:
 1311496

 Sample ID:
 MW-114
 Lab ID:
 1311496-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/21/2013 09:30 **Percent Moisture:**

Analyses	Result	Qual	Report Limit Units		Dilution Factor	Date Analyzed		
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 12/3/2013	PrepBy: PJW		
Ra-226	ND (+/- 0.16)	U	0.24	pCi/l	NA	12/12/2013 13:08		
Carr: BARIUM	94.8		40-110	%REC	NA	12/12/2013 13:08		
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 12/2/2013	PrepBy: JTL		
Ra-228	1.07 (+/- 0.37)		0.47	pCi/l	NA	12/6/2013 10:45		
Carr: BARIUM	94.8		40-110	%REC	NA	12/6/2013 10:45		

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111188
 Work Order:
 1311496

 Sample ID:
 MW-115
 Lab ID:
 1311496-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 11/21/2013 08:30 **Percent Moisture:**

Analyses	Result	Report Qual Limit Un		U nits	Dilution Factor	Date Analyzed		
RA-226 BY RADON EMANA	TION - METHOD 903.1		PAI 783		Prep Date: 12/3/2013	PrepBy: PJW		
Ra-226	ND (+/- 0.15)	U	0.28	pCi/l	NA	12/12/2013 13:08		
Carr: BARIUM	93.2		40-110	%REC	NA	12/12/2013 13:08		
RADIUM-228 ANALYSIS BY	GFPC		PAI 724		Prep Date: 12/2/2013	PrepBy: JTL		
Ra-228	1.11 (+/- 0.37)		0.47	pCi/l	NA	12/6/2013 10:45		
Carr: BARIUM	93.2		40-110	%REC	NA	12/6/2013 10:45		

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111188
 Work Order:
 1311496

 Sample ID:
 MW-115
 Lab ID:
 1311496-2

Legal Location: Matrix: WATER

Collection Date: 11/21/2013 08:30 Percent Moisture:

Analyses Result Qual Limit Units Factor Dilution

Output

Dilution

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.

LT - Result is less than requested MDC but greater than achieved MDC.

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
LIMS Version: 6.680

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 16-Dec-13

 Project:
 13111188
 Work Order:
 1311496

 Sample ID:
 MW-115
 Lab ID:
 1311496-2

Legal Location: Matrix: WATER

Collection Date: 11/21/2013 08:30 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units 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

LIMS Version: 6.680

AR Page 4 of 4

Client: ALS Environmental

Work Order: 1311496 **Project:** 13111188

Date: 12/16/2013 12:1

QC BATCH REPORT

Batch ID: RI	E131203-1-1	Ins	strument ID:	: Alpha Scin		Method:	Ra-226 by	Radon E	manation - Me			
LCS	Sample ID:	RE131203-1					Units: pCi/	I	Analysi	is Date:	12/12/2013	13:42
Client ID:			Rı	un ID: RE1312	203-1A				Prep Date: 12/3/	/2013	DF: N A	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		29	9.1 (+/- 7.4)	0.4	30.2		96.4	67-120				Р
Carr: BAR	IUM		31990		33300		96.1	40-110				
LCSD	Sample ID:	RE131203-1					Units: pCi/	I	Analysi	s Date:	12/12/2013	13:42
Client ID:			Rı	un ID: RE1312	203-1A				Prep Date: 12/3/	/2013	DF: N A	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226		29	9.3 (+/- 7.4)	0.3	30.2		97	67-120	29.1	0.0157	7 2.13	Р
Carr: BAR	IUM		31200		33300		93.7	40-110	31990			
МВ	Sample ID:	RE131203-1					Units: pCi/	I	Analysi	is Date:	12/12/2013	13:42
Client ID:			Rı	un ID: RE1312	203-1A				Prep Date: 12/3/	/2013	DF: N A	4
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qual
Ra-226			ND	0.37								U
Carr: BAR	ILIM		31950		33300		95.9	40-110			-	

Client: ALS Environmental

Work Order: 1311496 **Project:** 13111188

n ID: RA1	131202-1-2	I	nstrument ID:	: LB4100-A		Method:	Radium-2	28 Analy	sis by GFPC			
;	Sample ID:	RA131202-1					Units: pCi/	1	Analysi	s Date: 1	2/6/2013 1	0:56
t ID:			Rı	un ID: RA13 1	1202-1A				Prep Date: 12/2/	/2013	DF: N /	A
/te			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
28			8.9 (+/- 2.1)	0.5	9.263		95.8	70-130				Р
r: BARIUI	IM		31990		33300		96.1	40-110				
D ;	Sample ID:	RA131202-1					Units: pCi/	1	Analysi	s Date: 1	2/6/2013 1	0:56
t ID:			Rı	un ID: RA13 1	1202-1A				Prep Date: 12/2/	/2013	DF: N /	A
/te			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
28			9.3 (+/- 2.2)	0.6	9.263		100	70-130	8.9	0.128	2.13	Р
r: BARIUI	IM		31200		33300		93.7	40-110	31990			
(Sample ID:	RA131202-1					Units: pCi/	1	Analysi	s Date: 1	2/6/2013 1	0:56
t ID:			Rı	un ID: RA13 1	1202-1A				Prep Date: 12/2/	/2013	DF: NA	A
/te			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	DER Ref Value	DER	DER Limit	Qua
28			ND	0.57								U
rr: BARIUI	IM		31950		33300		95.9	40-110				
		were analyze		ch:	33300 1311496-1	13.	95.9 11496-2	40-110				