

AP-111

Investigation Report
(SWMU-10 Sludge
Pits)
(1 of 3)

INVESTIGATION REPORT
Solid Waste Management Unit (SWMU)
No. 10 Sludge Pits



Gallup Refinery
Western Refining Southwest, Inc.
Gallup, New Mexico

EPA ID# NMD000333211

DECEMBER 2016

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Table of Contents

List of Acronyms

Executive Summary	E-i
Section 1 Introduction	1-1
Section 2 Background	2-1
2.1 Sludge Pits (SWMU No. 10)	2-1
2.2 Operational History	2-1
2.3 Historical Site Investigations	2-2
Section 3 Scope of Activities	3-1
3.1 Soil Boring, Temporary Monitoring Well Installation and Sample Collection	3-1
3.1.1 Site Investigation	3-1
3.2 Collection and Management of Investigation Derived Waste	3-3
3.3 Surveys	3-4
Section 4 Field Investigation Results	4-1
4.1 Surface Conditions	4-1
4.2 Subsurface Conditions	4-1
4.2.1 Geology	4-2
4.2.2 Hydrogeology	4-3
4.3 Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment	4-4
4.3.1 Soil Investigation	4-5
4.4 Temporary Monitor Well Construction and Groundwater Sampling	4-25
4.4.1 Groundwater Investigation	4-26
Section 5 Regulatory Criteria	5-1
Section 6 Site Impacts	6-1
6.1 Soil Analytical Results	6-1
6.2 Groundwater Analytical Results	6-4
6.3 General Groundwater Chemistry	6-9
Section 7 Conclusions and Recommendations	7-1
7.1 Conclusions	7-1
7.2 Recommendations	7-3
Section 8 References	8-1

Table of Contents (Continued)

List of Tables

Table 1	1990 RCRA Facility Investigation Soil Analytical Data
Table 2	1994 RCRA Facility Investigation Soil Analytical Data
Table 3	SWMU 10 Soil Boring Samples – Vapor Screening Results
Table 4	Groundwater Field Measurements
Table 5	Soil Screening Levels
Table 6	Groundwater Screening Levels
Table 7	SWMU 10 Soil Analytical Results Summary
Table 8	SWMU 10 Groundwater Analytical Results Summary
Table 9	SWMU 10 Soil Cumulative Risk and Hazard Index Evaluation
Table 10	SWMU 10 Groundwater Cumulative Risk and Hazard Index Evaluation

List of Figures

Figure 1	Site Location Map
Figure 2	SWMU No. 10 Location Map
Figure 3	SWMU No. 10 1990 RFI Sample Locations
Figure 4	SWMU No. 10 1994 RFI Sample Locations
Figure 5	Topographic Map
Figure 6	Geologic Map of New Mexico
Figure 7	Cross Section Location Map
Figure 8	Cross Section A-A' West to East
Figure 9	Cross Section B-B' North to South
Figure 10	Sand Isopach Map
Figure 11	Estimated Elevation Top of Bedrock
Figure 12	Potentiometric Surface Map

Table of Contents (Continued)

Figure 13	Arsenic Soils Concentration Map
Figure 14	Cyanide Soils Concentration Map
Figure 15	1,2,4-Trimethylbenzene Soils Concentration Map
Figure 16	1-Methylnaphthalene Soils Concentration Map
Figure 17	2-Methylnaphthalene Soils Concentration Map
Figure 18	Benzene Soils Concentration Map
Figure 19	Ethylbenzene Concentration Map
Figure 20	Naphthalene Soils Concentration Map
Figure 21	Xylenes Soils Concentration Map
Figure 22	Diesel Range Organics Soil Concentration Map
Figure 23	Motor Oil Range Organics Soils Concentration Map
Figure 24	Arsenic Groundwater Concentration Map
Figure 25	Iron and Nickel Groundwater Concentration Map
Figure 26	Manganese Groundwater Concentration Map
Figure 27	Chloride and Sulfate Groundwater Concentration Map
Figure 28	1,2,4-Trimethylbenzene Groundwater Concentration Map
Figure 29	1,3,5-Trimethylbenzene Groundwater Concentration Map
Figure 30	1-Methylnaphthalene Groundwater Concentration Map
Figure 31	2-Methylnaphthalene Groundwater Concentration Map
Figure 32	Benzene Groundwater Concentration Map
Figure 33	MTBE Groundwater Concentration Map
Figure 34	Naphthalene Groundwater Concentration Map
Figure 35	Proposed Soil Boring Map

Table of Contents (Continued)

Appendices

Appendix A Waste Manifests

Appendix B Field Methods

Appendix C Boring Logs

Appendix D Analytical Data Reports

Appendix E Quality Assurance/Quality Control Review

Appendix F Historical Analyses

Appendix G Site-Specific Dilution/Attenuation Factor Calculations

List of Acronyms

API	American Petroleum Institute
AOCs	areas of concern
BTEX	benzene, toluene, ethylbenzene, and xylene
bgl	below ground level (bgl)
btoc	below top of casing
CFR	Code of Federal Regulations
DRO	diesel range organics
DAF	dilution/attenuation factor
EPA	Environmental Protection Agency
gpm	gallons per minute
HI	hazard index
HSA	hollow-stem auger
IDW	investigation derived waste
LPG	liquefied petroleum gas
LTU	Land Treatment Unit
MADEP	Massachusetts Department of Environmental Protection
MCL	maximum contaminant level
msl	mean sea level
MW	monitoring well
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
PID	photoionization detector
PVC	polyvinyl chloride
SPH	separate phase hydrocarbon
SVOC	semi volatile organic compound
SWMUs	Solid Waste Management Units
TPH	total petroleum hydrocarbon
TVOC	total volatile organic content
TCLP	toxicity characteristic leaching procedure
USCS	unified soil classification system

VOC	volatile organic compound
WQCC	Water Quality Control Commission

Executive Summary

The Gallup Refinery, which is located 17 miles east of Gallup, New Mexico, has been in operation since the 1950s. Past inspections by State [New Mexico Environment Department (NMED)] and federal environmental inspectors have identified locations where releases to the environment may have occurred. These locations are generally referred to as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs). Pursuant to the terms and conditions of the facility's Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit and 20.4.1.500 New Mexico Administrative Code (NMAC), this environmental site investigation was completed for SWMU No. 10 (Sludge Pits).

The activities completed include sampling and analysis of soils and groundwater throughout the location of the former Sludge Pits to determine current concentrations of any potential contaminants resulting from historical operations and to delineate any such historical releases. This area was previously investigated in 1990 and 1994 with the collection of numerous soil samples during the RCRA Facility Investigation (RFI). The current investigation began on April 28, 2015 and continued through September 21, 2016. This included the completion of 25 soil borings with 73 soil samples (excluding additional quality assurance samples) collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons, and metals). Temporary well completions were installed in 11 boreholes where saturation was encountered. Eleven groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons (TPH), metals, and inorganic/general water quality parameters).

At the former Sludge Pits, seven organic constituents (1,2,4-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, and xylenes) were detected at concentrations above their soil-to-groundwater [Dilution Attenuation Factor (DAF)= 295] screening levels but no individual organic constituents were reported at concentrations above their respective residential direct contact screening levels. Including diesel range organics (DRO) and motor oil range organics (MRO) with the aforementioned seven individual organic constituents, the exceedances of screening levels occurred in 16 soil samples collected at 12 soil borings (SWMU 10-4, SWMU 10-5, SWMU 10-8, SWMU 10-10, SWMU 10-11, SWMU 10-13, SWMU 10-14, SWMU 10-17, SWMU 10-19, SWMU 10-20, SWMU 10-24, and SWMU 10-25).

Two metals (arsenic and cyanide) were detected in soils at concentrations above the (DAF=295) soil-to-groundwater protection screening levels. Arsenic was also detected at a concentration above the residential soil screening level in one sample [SWMU 10-20 (2-2.5')]. It is possible that some of these detections are reflective of naturally occurring concentrations but a site-specific metals background study will be required to make this determination.

There were numerous inorganic constituents in the totals analyses (arsenic, barium, beryllium, chromium (hexavalent), chromium (total), cobalt, cyanide, iron, lead, manganese, nickel, vanadium, chloride, and sulfate) detected at concentrations above residential/tap water screening levels in groundwater samples collected from the temporary well completions. At least one of these exceedances of screening levels for inorganic constituents occurred in every groundwater sample analyzed. Only arsenic, barium, iron, manganese, and nickel were detected at concentrations above screening levels in the dissolved analyses. Thirteen organic constituents (1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, bromodichloromethane, MTBE, naphthalene, toluene, xylenes, 2,4-dimethylphenol, 3+4-methylphenol, and phenol) were detected at concentrations above screening levels in seven groundwater samples collected from soil borings SWMU 10-5, SWMU 10-11, SWMU 10-12, SWMU 10-15, SWMU 10-20, SWMU 10-21, and SWMU 10-25.

Western is recommending two additional soil borings to complete lateral delineation of impacts to soil and groundwater. In addition, a separate investigation is recommended to evaluate naturally occurring concentrations of inorganic constituents in soil.

Section 1

Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery property covers approximately 810 acres. Figure 1 presents the refinery location and the regional vicinity, which is characterized as high desert plain comprised primarily of public lands used for grazing by cattle and sheep.

The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, isomerization, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The area of investigation that is the subject of this report is shown on Figure 2 for the Sludge Pits (SWMU No. 10). The purpose of the site investigation is to determine and evaluate the presence, nature, and extent of releases of contaminants in accordance with 20.4.1.500 NMAC incorporating 40 Code of Federal Regulations (CFR) Section 264.101. The investigation was completed pursuant to the SWMU No. 10 Investigation Work Plan dated September 2014 (approved with modification March 2, 2015).

Section 2 presents background information for SWMU No. 10, including a review of historical waste management activities to help identify the types of waste handled, sources of releases, and previously known impacts to the environment. Section 3 describes the scope of work completed during the site investigation, including completion of soil borings, installation of temporary monitoring wells, and sample collection. The fourth section of the report explains the results of the field investigation, including the general surface and subsurface conditions and detailed site-specific information acquired during subsurface investigations. Section 5 explains the regulatory standards that are used for comparison to the analytical results and Section 6 presents the analytical results of soil and groundwater samples analyzed for volatile and semi-volatile organic compounds, TPH, metals, and inorganic/general chemistry constituents. The results of these analyses are compared

to applicable State or federal screening levels. Section 7 summarizes and provides an evaluation of the potential impacts and provides recommendations for any future actions.

Section 2 Background

This section presents background information for the Sludge Pits (SWMU No. 10) including a review of historical waste management activities to identify the following:

- Type and characteristics of waste and contaminants handled in the SWMU;
- Known and possible sources of impacts;
- History of releases; and
- Known extent of impacts prior to the current investigation.

2.1 Sludge Pits (SWMU No. 10)

The Sludge Pits were originally included as a SWMU in the 1988 Hazardous and Solid Waste Act (HSWA) permit and subsequently included for investigation in the 1990 RCRA Facility Investigation (RFI) Work Plan.

2.2 Operational History

The Sludge Pits were put into service in 1958 and were removed from service in 1980, when the sludge was removed and the pit area was covered with a layer of soil. The source of the fill soil is unknown, but the refinery has historically sourced fill from on-site borrow areas that were not used for site operations. The exact date in 1980 of the removal activity is unknown but the sludge materials in the pits were removed and placed in the RCRA Permitted Land Treatment Unit after the pits were removed from service (Geoscience Consultants, Ltd., 1985). The volume of materials removed is unknown. There were two pits that covered an area of approximately 130 feet by 80 feet and 70 feet by 50 feet with a depth of 2 feet (Figure 2). The pits were used to contain oily waste removed from the API Separator.

An analysis of metals in the refinery wastewater, which flowed through the API Separator, was conducted in July and August 1980. A copy of the summarized results are included in Appendix F (Geoscience Consultants, Ltd., 1985). The metal with the highest concentration is chromium. The sample with the highest chromium concentration was the cooling water tower blowdown. The results are not speciated between chromium III and chromium VI. The fact that the highest concentration was reported at the cooling tower could indicate that at least one source of the chromium was the

cooling tower. It was a common practice during that time period to use chromium VI as a corrosion inhibitor in cooling tower operations and chromate is reported to have been used at the cooling towers (EPA, 1987). An analysis of the separator sludge was conducted in March 1984 and while it did report total chromium at 0.036 mg/l, it did not detect the presence of chromium VI (Appendix F).

2.3 Historical Site Investigations

In 1990, during the Phase I RFI eight soil borings (RFI1001V through RFI1008V) were completed to depths of 13 feet below ground surface (bgs) (Figure 3) (Giant Refining Company, 1991). Soil samples were collected from depths of 0.0 feet bgs, 3.0 feet bgs, 6.0 feet bgs, 9.0 feet bgs, and 12.5 feet bgs. The soil samples were analyzed for metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, mercury, potassium, selenium, vanadium, and zinc), volatile organic compounds (VOCs), and semi volatile organic compounds (SVOCs) and the results are presented in Table 1. For comparison the NMED soil screening levels (*Risk Assessment Guidance for Site Investigation and Remediation*, dated February 2012) and EPA Regional Screening Levels are also included in Tables 1 and 2. Based on the detection of constituents in the samples collected in 1990, EPA directed that deeper samples be collected from the same area. As shown on Figure 4, eight additional soil borings (RFI1014V through RFI1021V) were drilled to depths of 25 feet bgs using hollow-stem augers with soil samples collected at depths of 19.0 feet bgs and 25.0 feet bgs (Giant Refining Company, 1994). The soil samples were analyzed for VOCs, SVOCs, and metals and the results are summarized in Table 2.

The analytical results for the soil samples collected in 1990 indicated the presence of arsenic, barium, cadmium, chromium (compared to chromium VI screening levels), cobalt, copper, mercury, benzene, ethylbenzene, toluene, xylenes, 2,4-dimethylphenol, 2-methylnaphthalene, o-cresol, m&p-cresol, fluorene, naphthalene, and phenol at concentrations above screening levels. The metals were initially compared to background concentrations in the 1991 RFI report; however, NMED has not approved background concentrations for metals and thus it is not currently known how the reported metals concentrations compare to naturally occurring concentrations. The metals were found at concentrations above screening levels in all samples, in particular for chromium when compared to chromium VI screening levels and cobalt. The soil samples collected in 1990 were not analyzed to determine the valence state of the chromium, but rather it was reported as total chromium. The organic constituents with concentrations above the screening levels were detected in samples collected at boring locations RFI1002 at a depth of 3 feet bgs, RFI1004 from depths of 3 feet bgs to 9 feet bgs, and RFI1005 from depths of 6 feet bgs to 12.5 feet bgs.

The analytical results for the soil samples collected in 1994 indicated the presence of barium and di-n-butyl phthalate at concentrations above their respective screening levels. Barium was detected in all but one soil sample (RFI1015V25.0) above the screening level of 300 mg/kg. Di-n-butyl phthalate was detected at concentrations above the screening level (7.0 mg/kg) in four soil samples (RIF1018V19.0, RFI1019V25.0, RIF1021V19.0, and RFI1021V25.0). Di-n-butyl phthalate is a phthalate ester (plasticizer) and is considered by EPA to be a common laboratory contaminant (EPA, 1989).

Giant proposed to implement the corrective action plan (in-place bioremediation) that had previously been submitted to EPA in February 1993 and approved, with modifications, by EPA on January 7, 1994. There is no record of additional testing of soils to evaluate the effectiveness of in-place bioremediation after EPA's approval of the corrective action plan. During the week of March 23, 1998, an on-site inspection was conducted by Practical Environmental Services, Inc. in support of preparation of a RCRA Post-Closure Care Permit for the Gallup Refinery Land Treatment Unit. The Summary Report is included as Appendix B of the 2014 SWMU 10 Investigation Work Plan (Western Refining Southwest, Inc., 2014). The observations were as follows:

- The sludge pits area was observed to be vacant and inactive. No sign of soil staining or residual waste was evident at or in the vicinity of the site;
- Native shrubs and grasses were observed growing throughout the general vicinity. No signs of distress were evident; and
- Local soil in the vicinity of the sludge pits is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10^{-7} cm/sec.

Section 3

Scope of Activities

3.1 Soil Boring, Temporary Monitoring Well Installation and Sample Collection

Pursuant to the approved Investigation Work Plan, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and temporary monitoring wells were installed at the Sludge Pits (Figure 7).

As outlined in the Investigation Work Plan, there is the potential for constituents to have been released to soils at known locations and therefore a judgmental sampling design was implemented.

3.1.1 Site Investigation

The scope of work for the investigation at the Sludge Pits consisted of the installation of a minimum of ten soil borings throughout the area of the former Sludge Pits. Borings were scheduled to be drilled to a minimum depth of 20 feet or to the top of bedrock. The scope of work required the collection of a groundwater sample if groundwater was encountered. During the investigation 15 additional soil borings (eight were completed as temporary monitoring wells) were added to the scope in an effort to delineate the extent of impacted soils as observed visually, from the results field screening using a photoionization detector (PID), or elevated concentrations in initial laboratory analytical reports. This includes borings SWMU 10-11 through SWMU 10-25, which were completed to the south, west, north, and northeast of the original area of investigation to further define the lateral extent of potential impacts. Seventy three soil samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents including volatile and semi-volatile organics, total petroleum (i.e., gasoline, diesel, and motor oil range) hydrocarbons, Skinner List metals, chromium VI, iron, and manganese.

Soil samples were collected at the 25 locations shown on Figure 7. Twenty soil borings were advanced using hollow stem augers. Eight of these borings were on the original scope of work. Twelve borings completed using hollow stem augers were added during the investigation. Temporary wells were installed in 10 of these boreholes and groundwater was subsequently sampled. The following list provides a summary of the soil borings advanced using hollow stem augers:

-
-
- SWMU 10-1; advanced to 20 feet below ground level (bgl); temporary well installed;
 - SWMU 10-3; advanced to 20 feet bgl; temporary well installed;
 - SWMU 10-4; advanced to 20 feet bgl;
 - SWMU 10-5; advanced to 24 feet bgl; temporary well installed;
 - SWMU 10-7; advanced to 20 feet bgl;
 - SWMU 10-8; advanced to 20 feet bgl;
 - SWMU 10-9; advanced to 20 feet bgl;
 - SWMU 10-10; advanced to 20 feet bgl;
 - SWMU 10-11; additional boring; advanced to 20 feet bgl; temporary well installed;
 - SWMU 10-12; additional boring; advanced to 22 feet bgl; temporary well installed;
 - SWMU 10-13; additional boring; advanced to 20 feet bgl;
 - SWMU 10-14; additional boring; advanced to 23 feet bgl; temporary well installed;
 - SWMU 10-15; additional boring; advanced to 20 feet bgl; temporary well installed
 - SWMU 10-18; additional boring; advanced to 20 feet bgl;
 - SWMU 10-19; additional boring; advanced to 20 feet bgl;
 - SWMU 10-20; additional boring; advanced to 22 feet bgl; temporary well installed;
 - SWMU 10-21; additional boring; advanced to 22 feet bgl; temporary well installed;
 - SWMU 10-23; additional boring; advanced to 17 feet bgl;
 - SWMU 10-24; additional boring; advanced to 17 feet bgl; and
 - SWMU 10-25; additional boring; advanced to 19 feet bgl; temporary well installed.

Five soil borings were advanced using a hand auger. This deviation from the Investigation Work Plan was necessary when the soil boring location was not accessible to the drilling rig (e.g., uneven terrain, overhead electrical lines, and below grade utility lines). Two of these soil borings were on the original scope of work. Three of the soil borings completed with a hand auger were added during the investigation. A temporary well was installed in one of the boreholes and groundwater was subsequently sampled. The following list provides a summary of the soil borings advanced using a hand augers:

- SWMU 10-2; advanced to 4 feet bgl (refusal);
 - SWMU 10-6; advanced to 12 feet bgl (refusal);
 - SWMU 10-16; additional boring; advanced to 9 feet bgl (refusal); temporary well installed;
 - SWMU 10-17; additional boring; advanced to 8 feet bgl (refusal); and
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- SWMU 10-22; additional boring; advanced to 9 feet bgl.

Groundwater samples were collected from 11 temporary well completions. The groundwater samples were analyzed for volatile and semi-volatile organics, total petroleum (i.e., gasoline, diesel, and motor oil range) hydrocarbons, Skinner List metals, chromium VI, iron, manganese, chloride, fluoride, and sulfate. The following list provides a brief summary of the groundwater sample collection.

- SWMU 10-1; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-3; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-5; sampled only due to slow recharge rate; yielded enough water for a full analytical suite;
- SWMU 10-11; developed and sampled; yielded enough water for a full analytical suite; sheen observed on purge water;
- SWMU 10-12; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-14; developed and sampled; yielded enough water for a full analytical suite; sheen observed on purge water;
- SWMU 10-15; developed and sampled; yielded enough water for a full analytical suite; and
- SWMU 10-16; sampled only due to a small water column in the temporary well completion; yielded enough water for only VOCs, SVOCs, and gasoline, diesel, and motor oil range petroleum hydrocarbons analyses;
- SWMU 10-20; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-21; sampled only due to a small water column in the temporary well completion; yielded enough water for only VOCs, SVOCs, and gasoline, diesel, and motor oil range petroleum hydrocarbons analyses; and
- SWMU 10-25; developed and sampled; yielded enough water for a full analytical suite.

3.2 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings were contained and characterized using methods based on the boring locations and type of contaminants suspected or encountered. All drill cuttings generated during the investigation at the Sludge Pits were collected and put into 55-gallon drums. A composite sample of 24 drums generated during the May 2015 sampling event (SWMU 10-1 through SWMU

10-17) was collected using a decontaminated stainless steel spoon and sent to Hall Environmental Laboratory for waste characterization analysis. The sample was analyzed for the following:

- Reactivity – Cyanide (SW846 CH7);
- Reactivity – Sulfide (SW846 CH7);
- Ignitability (Method 1030);
- Corrosivity – pH (Method 9045);
- Anions (Method 300.0);
- RCRA 8 (TCLP) Metals (Method 6010B);
- Additional Metals (Method 6010B) (Calcium, Magnesium, Potassium; and Sodium);
- Diesel Range Organics (Method 8015B);
- Motor Oil Range Organics (Method 8015B);
- Gasoline Range Organics (Method 8015B);
- TCLP Volatiles (Method 1311/8260B); and
- TCLP Semi-volatiles (Method 1311/8270C).

The Hall analytical report (#1505A00) is included in Appendix D. Based on the analysis, 24 non-hazardous/non-DOT regulated drums (4,384 pounds) were shipped off-site to Advanced Chemical Treatment Facility for disposal on June 16, 2015. An additional 15 drums were generated during the May 2016 sampling event (SWMU 10-18 through SWMU 10-22). This generated 11,000 pounds of non-hazardous/non-DOT regulated soil that was shipped off-site to Advanced Chemical Treatment Facility for disposal on August 1, 2016.

Copies of the waste manifests are included in Appendix A. All purge water and decontamination water was disposed in the refinery wastewater system upstream of the API Separator.

3.3 Surveys

A global positioning system receiver was used to record the coordinates of each soil boring. These coordinates were recorded on the field boring logs.

Section 4

Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including the area near the Sludge Pits (SWMU No. 10). A discussion is included on the installation of soil borings, field screening of soils, and collection of soil samples for analysis. This is followed by a description of the installation of temporary well completions and the collection of groundwater samples.

4.1 Surface Conditions

A topographic map of the area near the Sludge Pits is included as Figure 5. Local site topographic features include high ground in the southeast gradually decreasing to lowland fluvial plain in the northwest. Elevations on the refinery property range from 7,040 feet to 6,860 feet. The area of the site near SWMU No. 10 is at an approximate elevation of 6,910 feet to 6,900 feet above mean sea level (msl).

The McKinley County soil survey identifies the soil in the area of SWMU No. 10 as primarily the Simitarq-Celavar sandy loams (USDA, 2005). The Simitarq-Celavar soils are well drained with a conservative permeability of 0.20 in/hr and minimal salinity. Simitarq soils have nearly neutral pH values ranging from 7.2 to 7.4 standard units.

Regional surface water features include the refinery evaporation ponds and aeration lagoons and a number of small ponds. The site is located in the Puerco River valley, north of the Zuni Uplift with overland flows directed northward to the tributaries of the Puerco River. The Puerco River continues to the west to the confluence with the Little Colorado River. The South Fork of the Puerco River is intermittent and retains flow only during and immediately following precipitation events.

4.2 Subsurface Conditions

During the utilities clearance of the Sludge Pit area several underground pipelines were detected. The depth of these pipelines is unknown. It is not known whether these pipelines are active or inactive.

4.2.1 Geology

The shallow subsurface soils consist of fluvial and alluvial deposits comprised of clay and silt with minor inter-bedded sand layers. The diverse properties and complex, irregular stratigraphy of the surface soils across the site cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec for gravely sands immediately overlying the Petrified Forest Formation to 10^{-8} cm/sec in the clay soils located near the surface (Western Refining, 2009). Generally, shallow groundwater at the refinery follows the upper contact of the Chinle Group with prevailing flow from the southeast to the northwest, with some flow potentially to the northeast on the northeastern portion of the refinery property.

The Quaternary alluvium, which occurs at the land surface in the area of the former Sludge Pits, is mapped regionally as a narrow band trending west-northwest and running just north of I-40 (Figure 6). The Quaternary alluvium is thought to be the parent material of the Simitarq-Celavar soils discussed above in Section 4.1. Two cross sections of the shallow subsurface in the immediate vicinity of the Sludge Pits are included as Figures 8 and Figure 9. Figure 7 shows the location of the two cross sections. As shown on the cross sections, the predominant lithology is silty clay with lesser amounts of sand in varying proportions. The predominant occurrence of sand is in the western portion of the area of investigation.

An isopach map of the sand thickness is included as Figure 10. This reflects lesser sand in the eastern portion of the investigation area with a thickness up to 9 feet measured in two borings (SWMU 10-11 and SWMU 10-14) in the western area. A second map (Figure 11) was prepared to show the current elevation on top of the bedrock (Chinle Group). This surface is probably reflective of the land surface present when the Quaternary alluvium was deposited, but may have been altered when the pits were excavated. A comparison between the sand isopach map and the map of the bedrock surface elevation indicates a general lack of sand across most of the area with the highest surface elevations. There is a prominent northwest-southeast trending ridge on the elevation map with sand present only in boring SWMU 10-17 along this feature. The sand interval present in boring SWMU 10-17 is higher relative to the stratigraphically equivalent sand in other borings (e.g., SWMU 10-11 and SWMU 10-12) and is not saturated in boring SWMU 10-17. The surface elevation of the bedrock is not totally controlling of the sand distribution, as sand is also absent in the area of SWMU 10-5 even though there is a significant drop in the surface elevation at this location.

Subcropping beneath the Quaternary alluvium is the Triassic Chinle Group (Figure 6). The stratigraphy of the Chinle Group was described in detail for the nearby Fort Wingate quadrangle by Lucas et al, 1997. The Painted Desert Member of the Petrified Forest Formation is the uppermost member of the Chinle Group present in the area of the refinery. The Painted Desert Member is described as reddish-brown and grayish red mudstone with minor beds of resistant, laminated or crossbedded, litharenite. This is consistent with the bedrock encountered at the refinery, as depicted on cross sections A-A' and B-B' (Figures 8 and 9). Beneath the Painted Desert Member is the Sonsela Member, which is described by Lucas et al (1997) as gray to yellowish-brown, fine-grained to conglomeratic, crossbedded sandstone. The base of the Sonsela Member is recognized as a basin wide unconformity, which was termed the Tr-4 unconformity (Heckert and Lucas, 1996). The Blue Mesa Member, which underlies the Sonsela Member, is the lowest member of the Petrified Forest Formation. The Blue Mesa Member is described as mostly purple and greenish-gray mudstone.

4.2.2 Hydrogeology

Generally, the potentiometric surface of the shallow groundwater at the refinery follows the land surface (Figure 12). The presence of shallow groundwater in the area of SWMU 10 appears to be controlled by the elevation of the bedrock surface and the presence or absence of permeable sediments (sand vs. clay). Of the 25 soil borings completed, all but two (SWMU 10-2 and SWMU 10-17) were of sufficient depth to have identified the presence of saturation; however, only 11 borings did encounter saturation. Three (SWMU10-1, SWMU 10-3, and SWMU 10-5) of these 11 soil borings, which are located in the eastern portion of the investigation area, did not encounter any significant sand intervals but rather encountered saturation within predominantly silty/sandy clay that is not anticipated to have sufficient permeability to produce practically usable quantities of groundwater. In fact, the yield of water was so low at SWMU 10-5, SWMU 10-16, and SWMU 10-21 that it was not practicable to fully develop these wells and at SWMU 10-16 and SWMU 10-21, there was not a sufficient volume of water to support analyses for all analytes. The primary occurrence of shallow groundwater was identified in the western portion of the investigation area in borings SWMU 10-11, SWMU 10-12, and SWMU 10-14 where significant sand was present and the elevation on top of the bedrock was lower.

The diverse properties and complex, irregular stratigraphy of the Quaternary alluvium across the refinery cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec for gravel like sands immediately overlying the Painted Desert Member to 10^{-8} cm/sec in the clay soils located

near the surface (Western Refining, 2009). Permeability tests performed on the Quaternary alluvium beneath the nearby Land Treatment Unit (LTU) indicated an average permeability of $1.9\text{E-}05$ cm/sec (Appendix G). Permeability tests performed on soils in the area of the firewater pond indicated an average permeability of $1.1\text{E-}07$ cm/sec (Appendix G).

As described above, the bedrock (i.e., Petrified Forest Formation) is mainly composed of low permeability materials (e.g., mudstone) with the exception of the Sonsela Member and some thinner sandstones within the overlying Painted Desert Member. Yield tests, including slug tests and pumping tests have been performed at the refinery to estimate the hydraulic conductivity of the Painted Desert Member (Appendix G). A slug test performed on July 3, 1984 in well OW-4 indicated a hydraulic conductivity of $4.0\text{E-}7$ cm/sec. A pump test was performed in well OW-24 on February 20, 1985 and it yielded a hydraulic conductivity of $2.5\text{E-}7$ cm/sec. The Painted Desert Member appears to be a competent aquitard to reduce the potential for downward migration of contaminants from groundwater that may occur within the overlying Quaternary alluvium.

The Sonsela Member is identified as the uppermost aquifer for RCRA monitoring purposes at the LTU because the overlying groundwater bearing units are not capable of supplying sufficient quantities of groundwater to meet the definitions of an aquifer. Wells completed in a thinner permeable sandstone layer within the Painted Desert Member are also monitored near the LTU as a potential early warning network. The Sonsela's highest point occurs southeast of the site and slopes downward to the northwest as it passes under the refinery. The Sonsela Member forms a water-bearing reservoir with artesian conditions throughout the central and western portions of the refinery property (Western, 2009). Aquifer test of the Sonsela Member conducted northeast of Prewitt indicated a transmissivity of greater than $100\text{ ft}^2/\text{day}$ (Stone and others, 1983). Yield tests conducted at the site have shown a much lower hydraulic conductivity of $0.34\text{ ft}/\text{day}$ ($1.2\text{E-}04$ cm/sec) (Appendix G).

4.3 Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment

This subsection provides a description of surface and subsurface investigations to locate potential impacts to soils and also the potential for soil impacts to have migrated vertically to the underlying groundwater. This includes soil field screening results, soil sampling intervals and methods for detection of surface and subsurface impacts in soils.

Discrete soil samples for laboratory analyses were scheduled for collection at the following intervals:

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- 0.0-0.5 feet (at soil borings with evidence of impacts near the land surface);
 - 2.0-2.5 feet or the top of native soil if identifiable (at all soil borings);
 - >2.0 feet (from the interval in each soil boring with the greatest apparent degree of contamination, based on field observations and field screening);
 - From the bottom of each borehole (all soil borings);
 - From the 0.5 foot interval at the top of saturation (applicable only to borings that reached saturation); and
 - additional intervals as determined based on field screening results.

A description of the field screening and soil sampling procedures are presented in Appendix B – Field Methods. Copies of the boring logs are provided in Appendix D. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 3. The locations of the soil borings appear on Figure 7.

4.3.1 Soil Investigation

Twenty soil borings were advanced using the hollow-stem auger (HSA) method and all of these soil borings were drilled to the bedrock (claystone/mudstone). Five soil borings were advanced using a hand auger due to accessibility limitations for the drilling rig and four of these borings did not reach bedrock. Boring SWMU10-22, which was completed using a hand auger, was drilled to the top of bedrock. The drilling equipment and hand auger equipment was decontaminated between each borehole, as described in Appendix B. Detailed soil boring logs are included in Appendix C. The soil boring logs describe the subsurface lithology, the presence of saturation, the field screening results, and any temporary well construction details. The installation of soil borings and collection of soil samples are discussed below in numerical order.

SWMU 10-1

On April 28, 2015 the drilling rig was set up on location SWMU 10-1. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – Photoionization Detector (PID) reading - 25.7 ppm;
 - 4 feet bgl - 6 feet bgl – Highest PID reading - 30.9 ppm; and
 - 18 feet bgl - 20 feet bgl – Bottom of borehole, PID reading - 3.6 ppm.
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No petroleum hydrocarbon odor or particularly elevated PID readings were detected. There was no apparent discoloration (i.e., black staining) of the soils.

The lithology encountered consisted of a surficial silty clay from 0 feet bgl - 4 feet bgl with the PID readings ranging from 14.8 ppm to 25.7 ppm. A soft, low plastic sandy clay was encountered from 4 feet bgl - 8 feet bgl. The sandy clay was damp to very moist and appeared to be saturated at 6 feet bgl. The PID readings range from 30.9 ppm to 26.6 ppm. A firm, high plastic clay was encountered from 8 feet bgl - 14 feet bgl with PID readings ranging from 20.7 ppm to 9.2 ppm. A claystone/mudstone (Chinle Group- Painted Desert Member) was encountered from 14 feet bgl - 20 feet bgl. The claystone/mudstone was observed to be low plasticity, very stiff/hard, light reddish brown, and dry. No petroleum odors were detected in this interval. The PID readings ranging from 11.3 ppm to 3.6 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet to 14 feet. On April 29, 2015 the well was gauged, developed and sampled. On May 1, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-2

On May 4, 2015 sample collection at SWMU 10-2 was accomplished using a hand auger. Overhead utility lines and uneven terrain prevented mobilization of the HSA drilling rig to this location. Two soil samples were collected from 0 feet bgl - 2 feet bgl and 2 feet bgl - 4 feet bgl. No petroleum odors were detected. The PID readings were 10.5 ppm (0 feet bgl - 2 feet bgl) and 8.0 ppm (2 feet bgl - 4 feet bgl).

The lithology encountered consisted of surficial silty clay from 0 feet bgl - 2 feet bgl. This clay was low to moderately plastic, stiff, damp, brown, and gravelly. A moderate to high plastic clay was observed from 2 feet bgl - 4 feet bgl. The clay was very stiff, damp, and reddish brown.

Sampling was terminated at 4 feet bgl due to auger refusal. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice. The borehole was grouted on May 14, 2015.

SWMU 10-3

On April 28, 2015 the drilling rig was set up on location SWMU 10-3. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – PID reading - 24.2 ppm;
- 6 feet bgl - 8 feet bgl – Highest PID reading below 2 feet bgl – 4 feet bgl - 18.9 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of borehole, PID reading – 2.5 ppm.

No petroleum hydrocarbon odor or elevated PID readings were observed. There was no apparent discoloration of the soils.

The lithology encountered consisted of a silty clay from 0 - 8 feet bgl with the PID readings ranging from 12.9 ppm to 24.2 ppm. A soft, low plastic sandy clay was encountered from 8 feet bgl - 12 feet bgl. The sandy clay was damp to very moist and appeared to be saturated at 8 feet bgl. The PID readings range from 17.6 ppm to 13.7 ppm. A firm, moderately plastic, damp, brown clay was encountered from 12 feet bgl - 13 feet bgl. The PID reading from this interval was 11.2 ppm. A high plastic, firm, damp, brown/reddish brown clay was encountered from 13 feet bgl – 14 feet bgl. A claystone/mudstone was encountered from 14 feet bgl – 20 feet bgl. The claystone/mudstone was observed to be low plasticity, very stiff/hard, light reddish brown, and dry. No petroleum odors were detected in this interval. The PID readings range from 7.6 ppm to 2.5 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet to 14 feet. On April 29, 2015 the well was gauged, developed and sampled. On May 1, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-4

On April 29, 2015 the drilling rig was set up on location SWMU 10-4. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Four soil samples were collected from the following intervals:

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- 0 feet bgl – 2 feet bgl – PID reading – 40.5 ppm, duplicate collected at this interval;
 - 2 feet bgl - 4 feet bgl – PID reading – 335 ppm, petroleum odor, black staining;
 - 6 feet bgl - 8 feet bgl – Highest PID reading below 2 feet bgl – 4 feet bgl – 42.7 ppm; and
 - 18 feet bgl - 20 feet bgl – Bottom of the borehole, PID reading - 3.8 ppm.

A petroleum hydrocarbon odor was observed from 2 feet bgl – 10 feet bgl. Black staining was observed in the sample interval 2 feet bgl – 4 feet bgl.

The lithology encountered consisted of a silty clay from 0 feet bgl - 4 feet bgl with the PID readings ranging from 40.5 ppm to 335 ppm. A silty sandy clay with a faint odor was encountered from 4 feet bgl - 8 feet bgl. The clay had low plasticity and was observed to be firm to soft, damp, and reddish brown. The PID readings range from 36.8 ppm to 42.7 ppm. A stiff, highly plastic, damp, reddish brown clay was encountered from 8 feet bgl - 10 feet bgl. The clay had a faint odor with a PID reading of 37.8 ppm.

A low plastic, soft, damp, reddish brown sandy clay was encountered from 10 feet bgl – 12 feet bgl. The PID reading was 25.6 ppm. A low plastic, firm, damp to dry, silty clay was encountered from 12 feet bgl – 16 feet bgl. The PID readings range from 31.1 ppm to 32.9 ppm. The clay was reddish brown (with a trace of gray), crumbly, and dense at the base. A claystone was encountered from 16 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, light reddish brown, and dry. No odors were detected in this interval. The PID readings ranging from 14.1 ppm to 3.8 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 1, 2015 the borehole was grouted.

SWMU 10-5

On April 29, 2015 the drilling rig was set up on location SWMU 10-5. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Five soil samples were collected from the following intervals:

- 0 feet bgl - 2 feet bgl – Interval exhibited petroleum odor, PID reading of 108 ppm and black staining;
 - 2 feet bgl – 4 feet bgl – Interval exhibited petroleum odor, PID reading of 61 ppm;
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- 4 feet bgl – 6 feet bgl – Interval exhibited petroleum odor, highest PID reading below 2 feet bgl – 4 feet bgl - 445 ppm;
 - 14 feet bgl - 16 feet bgl – Interval exhibited petroleum odor, elevated PID reading of 75.2 ppm occurring between two intervals with relatively low PID readings of 3.5 ppm (12 feet bgl – 14 feet bgl) and 9.4 ppm (16 feet bgl – 18 feet bgl) ; and
 - 22 feet bgl - 24 feet bgl – Bottom of the borehole, no odor, PID reading of 10.7 ppm.

The lithology encountered consisted of a surficial silty clay from 0 feet bgl - 2 feet bgl with the PID reading of 108 ppm. A very soft, sticky clay was encountered from 2 feet bgl - 22 feet bgl. The clay varied in color from green to brownish green to grayish green. The clay exhibited a hydrocarbon odor. The PID readings range from 445 ppm to 3.5 ppm. A claystone was encountered from 22 feet bgl – 24 feet bgl. The claystone was observed to be very stiff, light reddish brown with gray seams. No odors were detected in this interval. The PID reading was 10.7 ppm.

The sampling terminated at 24 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 12 feet to 22 feet. On May 4, 2015 the well was gauged and sampled. On May 4, 2015 the well casing and screen were removed. Phase-separated hydrocarbon (3 feet bgl to 6 feet bgl) was observed on the outside of the PVC casing when it was removed from the borehole. The borehole was grouted.

SWMU 10-6

On May 4, 2015 sample collection at SWMU 10-6 was accomplished using a hand auger. Overhead utility lines and uneven terrain prevented the mobilization of the HSA drilling rig to this location. Two soil samples were collected from 2 feet bgl - 4 feet bgl and 10 feet bgl – 12 feet bgl. A duplicate soil sample was collected from the 10 feet bgl – 12 feet bgl interval. No petroleum odors were detected and no discoloration of the soil was observed. The PID readings range from 2.7 ppm (0 feet bgl – 2 feet bgl) to 4.7 ppm (4 feet bgl - 6 feet bgl).

The lithology encountered consisted of surficial silty clay from 0 feet bgl - 8 feet bgl. This low to moderately plastic clay was firm, damp, and reddish brown. A high plastic clay was observed from 8 feet bgl – 10 feet bgl. The clay was very stiff, damp, and reddish brown. A low plastic clay was encountered from 10 feet bgl – 12 feet bgl. The clay was stiff, dry, and light reddish brown.

The sampling was terminated at 12 feet bgl due to refusal. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice. The borehole was grouted on May 14, 2015.

SWMU 10-7

On May 1, 2015 the drilling rig was set up on location SWMU 10-7. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – PID reading – 9.5 ppm, black staining was observed at the base of this interval;
- 4 feet bgl - 6 feet bgl – Highest PID reading below 2 – 4 feet bgl – 10.6 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of borehole, PID reading – 2.7 ppm.

No petroleum hydrocarbon odor or elevated PID readings were observed.

The lithology encountered consisted of a silty clay from 0 feet bgl - 4 feet bgl with the PID readings ranging from 6.2 ppm to 9.5 ppm. A stiff to firm, high plastic clay was encountered from 4 feet bgl – 8 feet bgl. The clay was damp and reddish brown. The PID readings range from 10.6 ppm to 9.7 ppm. A claystone was encountered from 8 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, light reddish brown, and dry. No odors were observed in this interval with the PID readings ranging from 9.1 ppm to 2.7 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 1, 2015 the borehole was grouted.

SWMU 10-8

On April 30, 2015 the drilling rig was set up on location SWMU 10-8. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – Interval exhibited petroleum odor, PID reading of 1489 ppm and black staining at base;

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- 4 feet bgl – 6 feet bgl – Interval exhibited petroleum odor, highest PID reading below 2 feet bgl – 4 feet bgl - 400 ppm; and
 - 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 5.7 ppm.

The lithology encountered consisted of a silty clay from 0 feet bgl - 2 feet bgl with the PID reading of 12.9 ppm. Silty sandy clay was encountered from 2 feet bgl – 6 feet bgl. Hydrocarbon odor and staining was observed in this interval. There was no recovery of soil from the 6 feet bgl – 8 feet bgl interval. A claystone/mudstone was encountered from 8 feet bgl – 20 feet bgl. The claystone/mudstone was observed to be very stiff, dry, light reddish brown and gray. No odors were detected in this interval. The PID readings range from 24.6 ppm to 5.7 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 1, 2015 the borehole was grouted.

SWMU 10-9

On April 30, 2015 the drilling rig was set up on location SWMU 10-9. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – PID reading of 19.1, no odor;
- 4 feet bgl – 6 feet bgl – Interval exhibited petroleum odor, highest PID reading below 2 feet bgl – 4 feet bgl - 380 ppm; black staining was observed; a duplicate soil sample was collected from this interval; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 6.2 ppm.

The lithology encountered consisted of a silty clay from 0 feet bgl - 4 feet bgl with the PID readings of 18 ppm and 19.1 ppm. Sandy clay was encountered from 4 feet bgl – 6 feet bgl. Hydrocarbon odor and staining was observed in this interval. A claystone was encountered from 6 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, damp to dry, light reddish brown and gray. The interval from 6 feet bgl – 8 feet bgl exhibited a hydrocarbon odor. The PID readings range from 28.9 ppm to 4 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 1, 2015 the borehole was grouted.

SWMU 10-10

On April 30, 2015 the drilling rig was set up on location SWMU 10-10. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – PID reading of 18.4 ppm, no odor;
- 4 feet bgl – 6 feet bgl – Interval exhibited petroleum odor, black staining, highest PID reading below 2 feet bgl – 4 feet bgl - 1685 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 8.5 ppm.

The lithology encountered consisted of clayey sand from 0 feet bgl - 6 feet bgl with the PID readings of 11.9, 18.4, and 1685 ppm. The clayey sand exhibited a petroleum odor and black staining was observed. The clayey sand was compact to loose and dry to damp. A low plastic, soft, damp, sandy clay was encountered from 6 feet bgl – 10 feet bgl. Hydrocarbon odor and staining was observed in this interval. The PID readings were 1514 ppm (6 feet bgl – 8 feet bgl) and 686 ppm (8 feet bgl – 10 feet bgl). A silty clay was encountered from 10 feet bgl - 12 feet bgl. This clay also exhibited a hydrocarbon odor and hydrocarbon staining. The PID reading was 655 ppm. A claystone was encountered from 12 feet bgl – 20 feet bgl. The claystone was observed to be very stiff/dense, dry, light reddish brown and gray. The interval from 12 feet bgl - 14 feet bgl exhibited a faint hydrocarbon odor. The PID readings range from 75 ppm (12 feet bgl – 14 feet bgl) to 8.5 ppm (18 feet bgl – 20 feet bgl).

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 1, 2015 the borehole was grouted.

SWMU 10-11

On May 12, 2015 the drilling rig was set up on location SWMU 10-11. Sample collection was accomplished using the HSA drilling method and split spoon samplers. A sample was not collected from the 2 feet bgl – 4 feet bgl interval due to poor recovery during the sampling process. Three soil samples were collected from the following intervals:

- 4 feet bgl - 6 feet bgl – Interval exhibited petroleum odor, black staining, PID reading of 524 ppm;
- 8 feet bgl – 10 feet bgl – Interval exhibited petroleum odor, black sludge/staining, PID reading of 570 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 13.4 ppm.

The lithology encountered consisted of silty clay from 0 feet bgl - 4 feet bgl with the PID readings of 13.1 ppm and 4.0 ppm. This low plastic clay was firm, damp, brown, and did not exhibit an odor or staining.

Clayey sand was encountered from 4 feet bgl - 12 feet bgl. The sand was fine grain, compact, and moist to saturated. The sand was stained and exhibited a hydrocarbon odor. The PID readings range from 570 ppm to 8.5 ppm. In the 12 feet bgl – 14 feet bgl interval the clayey sand transitioned to a sandy clay that was damp to very moist and exhibited a petroleum odor. The PID reading was 69.2 ppm. Sandy clay extended to a depth of 17 feet bgl. A noticeable hydrocarbon odor extended to 16 feet bgl. The PID reading decreased from 20.6 ppm (14 feet bgl – 16 feet bgl) to 7.2 ppm (16 feet bgl - 18 feet bgl).

A claystone was encountered from 17 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, damp to dry, and reddish purple. This bottom interval did not exhibit an odor. The PID reading from 18 feet bgl – 20 feet bgl was 13.4 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 3 feet to 13 feet. On May 14, 2015 the well was gauged, developed and sampled. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-12

On May 12, 2015 the drilling rig was set up on location SWMU 10-12. Sample collection was accomplished using the HSA drilling method and split spoon samplers. A sample was not collected from the 2 feet bgl – 4 feet bgl interval due to poor recovery during the sampling process. Two soil samples were collected from the following intervals:

- 6 feet bgl - 8 feet bgl – Interval exhibited black staining and asphalt type rock, PID reading of 4.5 ppm; and
- 20 feet bgl – 22 feet bgl – Bottom of the borehole, no odor, PID reading of 1.5 ppm.

The lithology encountered consisted of a silty clay from 0 feet bgl – 11 feet bgl with the PID readings ranging from 3.0 ppm to 6.9 ppm. This low plastic clay was firm, damp, and brown. Black staining and asphalt type rock was observed in the 6 feet bgl – 8 feet bgl interval. A clayey sand was encountered from 11 feet bgl – 12 feet bgl. The sand was fine grained, compact, saturated, and brown. No odors were detected in this interval. The PID reading was 6.1 ppm.

A fine grained, loose, saturated, brown silty sand was encountered from 12 feet bgl – 16 feet bgl. The PID readings were 4.9 ppm (12 feet bgl – 14 feet bgl) and 2.9 ppm (14 feet bgl – 16 feet bgl). A low plastic, firm, damp, brown, sandy clay was encountered from 16 feet bgl - 18 feet bgl. The PID reading was 1.8 ppm and no odors were detected. A gravelly clay was encountered from 18 feet bgl – 20 feet bgl. No odors were exhibited from this interval. The PID reading was 1.2 ppm.

A claystone was encountered from 20 feet bgl to 22 feet bgl. The claystone was observed to be very stiff, damp to dry, reddish purple, gray and dark reddish brown. This bottom interval did not exhibit an odor. The PID reading from 20 feet bgl - 22 feet bgl was 1.5 ppm.

The sampling terminated at 22 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet to 14 feet. On May 14, 2015 the well was gauged, developed and sampled. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-13

On May 13, 2015 the drilling rig was set up on location SWMU 10-13. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl- 4 feet bgl – PID reading of 5.6, no odor;
- 6 feet bgl - 8 feet bgl – Interval exhibited odor and black staining, highest PID reading below 2 feet bgl – 4 feet bgl - 1055 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 14.1 ppm.

The lithology encountered consisted of a silty clay from 0 - 6 feet bgl with the PID readings ranging from 4.4 ppm (0 feet bgl – 2 feet bgl) to 775 ppm (4 feet bgl – 6 feet bgl). This silty clay was observed to be low plastic, very stiff to firm, damp to dry, and calcareous. A high plastic clay was encountered from 6 feet bgl – 8 feet bgl. The clay was observed to be firm, damp, dark brown with black hydrocarbon staining. Petroleum odors were exhibited from the interval. This interval also had a PID reading of 1055 ppm. A gravelly clay similar to the clay encountered from 6 feet bgl – 8 feet bgl was encountered from 8 feet bgl – 9 feet bgl. This clay had a petroleum odor and PID reading of 721 ppm.

A claystone was encountered from 9 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, dry, and reddish purple. The interval from 9 feet bgl - 10 feet bgl exhibited a faint hydrocarbon odor. The PID readings range from 11 to 14.1 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 14, 2015 the borehole was grouted.

SWMU 10-14

On May 12, 2015 the drilling rig was set up on location SWMU 10-14. Sample collection was accomplished using the HSA drilling method and split spoon samplers. A sample was not collected from the 2 feet bgl – 4 feet bgl interval due to no soil recovery during the sampling process. Two soil samples were collected from the following intervals:

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- 6 feet bgl - 8 feet bgl – Interval exhibited petroleum odor and was dark brown, highest PID reading below 2 feet bgl – 4 feet bgl - 900 ppm; and
 - 21 feet bgl - 23 feet bgl – Bottom of the borehole, no odor, PID reading of 1.8 ppm.

The lithology encountered consisted of a silty clay from 0 feet bgl - 2 feet bgl with a PID reading of 3.2 ppm. This silty clay was observed to be low plastic, firm, dry to damp, and calcareous. No odor was exhibited from this interval. There was no recovery from the 2 feet bgl – 4 feet bgl interval. A loose, light tan, saturated clayey gravel was encountered from 4 feet bgl – 6 feet bgl. The PID reading was 10.1 ppm. A faint petroleum odor was detected. A high plastic clay was encountered from 6 feet bgl – 6.75 feet bgl. The clay was observed to be stiff, damp, dark brown with a petroleum odor. This interval had a PID reading of 900 ppm.

A saturated clayey sand was encountered from 6.75 feet bgl – 8 feet bgl. The sand was fine grain, compact, and dark brown. The sand had a petroleum odor. A sandy clay was encountered below the clayey sand and was found to have low plasticity, very soft, damp to moist, and brown. This interval had a petroleum odor. The PID reading was 23.7 ppm.

A clayey gravelly sand was encountered from 10 feet bgl – 16 feet bgl. The sand was fine to coarse, brown, and saturated. No odor was detected and the PID readings range from 15.9 feet bgl to 22.4 feet bgl. A low plastic gravelly clay was below the clayey gravelly sand. The clay was very stiff, damp, reddish brown and gray. No odors were detected. The PID readings were 7.9 ppm (16 feet bgl – 18 feet bgl) and 5.2 ppm (18 feet bgl – 19 feet bgl).

A claystone was encountered from 19 feet bgl – 23 feet bgl. The claystone was observed to be very stiff, dry, reddish brown and gray. No odors were detected. The PID readings range from 6.1 ppm to 1.8 ppm.

The sampling terminated at 23 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was installed with the screened interval ranging from 2 feet to 12 feet. On May 14, 2015 the well was gauged, developed and sampled. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-15

On May 13, 2015 the drilling rig was set up on location SWMU 10-15. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl - 4 feet bgl – PID reading of 11.1 ppm, faint petroleum odor, black staining at 3.5 feet bgl;
- 4 feet bgl - 6 feet bgl – Interval exhibited faint petroleum odor and black staining, highest PID reading below 2 feet bgl – 4 feet bgl – 13.9 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 7.1 ppm.

The lithology encountered consisted of the following alternating clays and sands:

- Silty clay 0 feet bgl – 0.5 feet bgl (low plastic, firm, and dry to damp);
- Clay 0.5 feet bgl – 2 feet bgl (high plastic, soft, damp);
- Sandy Clay 2 feet bgl – 4.5 feet bgl (low to moderate plasticity, soft, damp with black staining at 3.5 feet bgl, faint petroleum odor);
- Clay 4.5 feet bgl – 5.5 feet bgl (high plastic, soft, damp, faint petroleum odor);
- Sandy Clay 5.5 feet bgl – 8 feet bgl (low plasticity, soft, damp with saturated sand seam at 7 feet bgl);
- Clayey Sand 8 feet bgl – 9.5 feet bgl (loose, fine grained to small gravel, saturated);
- Clay 9.5 feet bgl – 10 feet bgl (high plastic, stiff, damp);
- Silty Clay 10 feet bgl – 11.5 feet bgl (moderate plasticity, firm, damp);
- Sandy Clay 11.5 feet bgl – 12.5 feet bgl (fine grained, moist to saturated);
- Silty Clay 12.5 feet bgl – 13 feet bgl (low plastic, firm, and damp);
- Clayey Sand 13 feet bgl – 14 feet bgl (fine grained, loose, saturated);
- Sandy Clay 14 feet bgl – 16 feet bgl (low plastic, firm, and damp);
- Clay 16 feet bgl – 17.5 feet bgl (low plastic, stiff, and damp)
- Claystone 17.5 feet bgl – 20 feet bgl (very stiff, dry)

The PID readings range from 7.1 ppm (18 feet bgl – 20 feet bgl) to 13.9 ppm (4 feet bgl – 6 feet bgl). Saturation was encountered at the following depths:

- 7 feet bgl – Sand seam approximately 3 inches thick;

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- 8 feet bgl - 9.5 feet bgl – Clayey sand;
 - 11.5 feet bgl - 12.50 feet bgl – Sandy clay; and
 - 13 feet bgl – 14 feet bgl – Clayey sand.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was installed with the screened interval ranging from 6 feet to 16 feet. On May 14, 2015 the well was gauged, developed and sampled. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-16

On May 13, 2015 sample collection at SWMU 10-16 was accomplished using the hand auger. Overhead utility lines prevented the mobilization of the HSA drilling rig to this location. Three soil samples were collected from the following depths:

- 2 feet bgl - 4 feet bgl – PID reading of 4.9 ppm;
- 4 feet bgl – 5.5 feet bgl – PID reading of 4.4 ppm, immediately above saturation; and
- 8 feet bgl – 9 feet bgl – PID reading of 6.8 ppm, bottom-most sample.

The lithology encountered consisted of silty clay from 0 feet bgl - 5 feet bgl. This low plastic clay was firm, damp, and brown. A low plastic sandy clay was observed from 5 feet bgl – 5.5 feet bgl. The clay was firm to soft, damp to moist, and brown. A saturated clayey sand was encountered from 5.5 feet bgl to 8 feet bgl. The sand was fine grained, loose, and brown. The sampling was terminated at 9 feet in a high plastic, stiff, damp, brown clay. No odors, elevated PID readings or soil staining were observed in the soils from this boring.

Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice. A temporary well was installed with the screened interval ranging from 0 feet to 8.5 feet. On May 14, 2015 the well was gauged and sampled. The well was not purged due to the small fluid column in the well (2.78 feet). On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-17

On May 13, 2015 sample collection at SWMU 10-17 was accomplished using the hand auger. The lithology encountered consisted of silty clay from 0 feet bgl - 4 feet bgl. This low plastic, stiff clay was damp and brown. A clayey sand was encountered from 4 to 8 feet bgl. The sand was fine grained, compact, and damp to moist. The sand exhibited a petroleum odor and a PID reading of 1667 ppm. A soil sample and a duplicate soil sample were collected from the 6 feet bgl – 8 feet bgl interval. The sampling was terminated at 8 feet bgl. The soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice. A temporary well was not installed at this location. On May 14, 2015 the borehole was grouted.

SWMU 10-18

On May 16, 2016 the drilling rig was set up on location SWMU 10-18. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 6.2 ppm, no odor;
- 8 feet bgl - 10 feet bgl – Interval immediately above the claystone, no odor and PID reading of 20.6 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, no odor, PID reading of 8.7 ppm.

The lithology encountered consisted of a silty clay from 0 - 10 feet bgl with the PID readings ranging from 6.2 ppm (2 feet bgl – 4 feet bgl) to 20.6 ppm (8 feet bgl – 10 feet bgl). This silty clay was observed to be low plastic, firm, dry to damp, and brown.

A claystone was encountered from 10 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, dry, and reddish purple. The PID readings range from 14.1 ppm to 8.7 ppm.

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 16, 2016 the borehole was grouted.

SWMU 10-19

On May 17, 2016 the drilling rig was set up on location SWMU 10-19. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 1.5 ppm, no odor;
- 12 feet bgl - 14 feet bgl – Top of claystone, chemical odor and PID reading of 900 ppm; and
- 18 feet bgl - 20 feet bgl – Bottom of the borehole, odor, PID reading of 30.1 ppm.

The lithology encountered consisted of a silty clay from 0 - 6 feet bgl with the PID readings ranging from 1.5 ppm (2 feet bgl – 2.5 feet bgl) to 3.5 ppm (0 – 2 feet bgl). This silty clay was observed to be low plastic, firm, dry to damp, and brown. A high plasticity clay was encountered from 6 feet bgl to 10 feet bgl. The clay was firm, damp, brown and did not exhibit an odor. The PID readings were 8.2 ppm (6 feet bgl to 8 feet bgl) and 12.6 ppm (8 feet bgl to 10 feet bgl). A low plasticity clay was encountered from 10 feet bgl to 12 feet bgl. The clay was firm, damp, reddish brown and did not exhibit an odor. At the base of this interval the clay was found to be moist, dense and gray.

A claystone was encountered from 12 feet bgl – 20 feet bgl. The claystone was observed to be very stiff, dry, and reddish brown and gray. The claystone exhibited a chemical odor. The PID readings range from 900 ppm (12 feet bgl to 14 feet bgl) to 30.1 ppm (18 feet bgl to 20 feet bgl).

The sampling terminated at 20 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On May 17, 2016 the borehole was grouted.

SWMU 10-20

On May 17, 2016 the drilling rig was set up on location SWMU 10-20. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Five soil samples were collected from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 0.7 ppm;
- 8 feet bgl - 10 feet bgl – Interval exhibited chemical odor and black staining, PID reading was 1603 ppm;

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- 10 feet bgl – 12 feet bgl – Interval immediately above saturation, exhibited a chemical odor, PID reading was 1715 ppm;
 - 16 feet bgl – 18 feet bgl – Interval exhibited chemical odor and black staining, PID reading was 1022 ppm; and
 - 20 feet bgl - 22 feet bgl – Bottom of the borehole, no odor, PID reading of 10.2 ppm.

The lithology encountered consisted of the following alternating clays:

- Silty Clay: 0 – 8 feet bgl (low plastic, firm, damp, brown, odor from 6 feet bgl to 8 feet bgl);
- Clay: 8 feet bgl – 10 feet bgl (high plasticity, firm, damp, brown, chemical odor and black staining at base);
- Silty Sandy Clay: 10 feet bgl – 18 feet bgl (moderate plasticity, firm, damp to moist to saturated with black staining at 16 feet bgl to 18 feet bgl, chemical odor);
- Silty Clay: 18 feet bgl – 20 feet bgl (low, soft, damp to moist, brown, chemical odor); and
- Claystone: 20 feet bgl – 22 feet bgl (very stiff, dry, reddish purple and gray, no odor).

The PID readings ranged from 0.7 ppm (2 feet bgl – 4 feet bgl) to 1715 ppm (10 feet bgl – 12 feet bgl). Saturation was encountered in silty sandy clay at the following depths:

- 12 feet bgl to 14 feet bgl – Moist to saturated;
- 14 feet bgl to 16 feet bgl – Moist to saturated in sand seam at 15.5 feet bgl; and
- 16 feet bgl - 18 feet bgl – Moist to saturated.

The sampling terminated at 22 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was installed with the screened interval ranging from 5 feet to 20 feet. On May 19, 2016 the well was gauged and developed. The well bailed dry after approximately 7 gallons of groundwater were removed from the well. The groundwater was sampled on May 20, 2016. On May 23, 2016 the well casing and screen were removed and the borehole was grouted.

SWMU 10-21

On May 18, 2016 the drilling rig was set up on location SWMU 10-21. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected from the following intervals:

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- 2 feet bgl – 2.5 feet bgl – PID reading of 17 ppm, no odor;
 - 12 feet bgl - 14 feet bgl – Interval immediately above saturation, PID reading of 12.1 ppm; and
 - 20 feet bgl - 22 feet bgl – Bottom of the borehole, no odor, PID reading of 2.7 ppm.

The lithology encountered consisted of the following predominantly clays:

- Silt/gravel: 0 – 2 feet bgl (compact, damp, no odor);
- Silty Clay: 2 feet bgl – 6 feet bgl (low plasticity, firm, damp, brown, no odor);
- Sandy Silty Clay: 6 feet bgl – 10 feet bgl (low plasticity, soft, damp, brown, no odor);
- Clay: 10 feet bgl – 14 feet bgl (high plasticity, soft, damp brown, no odor);
- Sandy Silty Clay: 14 feet bgl – 20 feet bgl (low, soft, moist to saturated in sand seams, no odor); and
- Claystone: 20 feet bgl – 22 feet bgl (very stiff, dry, reddish purple and gray, no odor).

The sampling terminated at 22 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was installed with the screened interval ranging from 10 feet to 20 feet. On May 19, 2016 the well was gauged. The depth to groundwater was 19.80 feet below top of casing (btoc) and the total depth was 20.23 feet btoc. The well was not developed due to the small volume of groundwater in the well. The groundwater was sampled on May 20, 2016. On May 23, 2016 the well casing and screen were removed and the borehole was grouted.

SWMU 10-22

On May 18, 2016 sample collection at SWMU 10-22 was accomplished using the hand auger. The lithology encountered consisted of clay from 0 to 7 feet bgl. This moderately plastic, firm clay was damp and brown and did not exhibit an odor.

Claystone was encountered from 7 feet bgl to 9 feet bgl. A soil sample and a duplicate soil sample were collected from the 2 feet bgl – 2.5 feet bgl interval. A soil sample was collected from the bottom of the borehole (8 feet bgl – 9 feet bgl). The sampling was terminated at 9 feet bgl. The soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not installed at this location. On May 18, 2016 the borehole was grouted.

SWMU 10-23

On September 19, 2016 the drilling rig was set up on location SWMU 10-23. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Two soil samples were collected for chemical analyses from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 0.2 ppm, no odor; and
- 15 feet bgl - 16 feet bgl – Top of claystone, dry, no odor and PID reading of 1.4 ppm.

The lithology encountered consisted of a silt from 0 - 6 feet bgl with the PID readings ranging from 0.0 ppm (0 feet bgl – 2.0 feet bgl) to 0.2 ppm (2 – 6 feet bgl). This silt was observed to be low plastic, soft, damp, and brown with no odor. A low plasticity silty clay was encountered from 6 feet bgl to 15 feet bgl. The clay was firm, damp, and brown with a trace of sand and did not exhibit an odor. The PID readings ranged from 2.0 ppm to 3.7 ppm.

A claystone was encountered from 15 feet bgl – 17 feet bgl. The claystone was observed to be very stiff, dry, and pink. The claystone did not exhibited an odor. The PID reading was 1.4 ppm.

The sampling terminated at 17 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On September 19 the borehole was grouted.

SWMU 10-24

On September 19, 2016 the drilling rig was set up on location SWMU 10-24. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Four soil samples were collected for chemical analyses from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 2.5 ppm, no odor;
- 6 feet bgl – 8 feet bgl – PID reading of 3,000 ppm, hydrocarbon odor;
- 8 feet bgl – 10 feet bgl – PID reading of 2,021 ppm, hydrocarbon odor; and
- 15 feet bgl - 16 feet bgl – Top of claystone, dry, faint hydrocarbon odor, and PID reading of 56 ppm.

The lithology encountered consisted of a silt from 0 - 6 feet bgl with the PID readings ranging from 1.1 ppm (4 feet bgl – 6 feet bgl) to 2.5 ppm (2 – 4 feet bgl). This silt was observed to be low plastic, soft, damp, and brown with no odor. A low plasticity silty clay was encountered from 6 feet bgl to 15 feet bgl. The clay was soft to firm, damp, dark brown with a trace of sand and exhibited a hydrocarbon odor throughout. Phase-separated hydrocarbon was observed in the interval from 8 feet bgl to 10 feet bgl along with a slight increase in moisture and sand content near the base of the two-foot interval. The PID readings ranged from 123 ppm in the 14 feet bgl to 15 feet bgl interval just above the top of the bedrock to 3,000 ppm at the top of the silty clay at a depth of 6 feet bgl to 8 feet bgl.

A claystone was encountered from 15 feet bgl – 17 feet bgl. The claystone was observed to be very stiff, slightly sandy, dry, and pink. The claystone had a faint hydrocarbon odor. The PID readings ranged from 56 ppm to 80 ppm.

The sampling terminated at 17 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was not set at this location since saturation was not encountered during the soil sampling. On September 19, 2016 the borehole was grouted.

SWMU 10-25

On September 19, 2016 the drilling rig was set up on location SWMU 10-25. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Three soil samples were collected for chemical analyses from the following intervals:

- 2 feet bgl – 2.5 feet bgl – PID reading of 1,319 ppm, hydrocarbon odor;
- 10 feet bgl – 12 feet bgl – PID reading of 367 ppm, hydrocarbon odor; and
- 16.5 feet bgl - 18 feet bgl – Top of claystone, dry, no odor, and PID reading of 5 ppm.

The lithology encountered consisted of a silt from 0 - 2 feet bgl with a PID reading of 1.9 ppm. This silt was observed to be low plastic, soft, damp, and brown with no odor. A low plasticity silty clay was encountered from 2 feet bgl to 9 feet bgl. The clay was soft, damp, dark brown and exhibited a hydrocarbon odor throughout. The PID readings ranged from a low of 108 ppm in the 6 feet bgl to 8 feet bgl interval to a high of 1,319 ppm at the top of the silty clay at a depth of 2 feet bgl to 4 feet bgl. From 9 feet bgl to the top of the claystone bedrock at 16.5 feet bgl, the clay alternated from

sand clay (9 feet bgl – 11 feet bgl, 12 feet bgl - 13 feet bgl, and 14 feet bgl - 16.5 feet bgl) to silty clay (11 feet bgl – 12 feet bgl and 13 feet – 14 feet bgl). Both the sandy clay and silty clay intervals were low plasticity, brown, and had a hydrocarbon odor. While the silty clay was firm, the sandy clay intervals were soft. The sandy clay interval from 12 feet bgl to 13 feet bgl was saturated, while other intervals were damp. The PID readings increased with depth from 201 ppm in the 8 feet bgl to 10 feet bgl interval to a maximum of 338 ppm in the 12 feet bgl to 13 feet bgl interval. The PID reading then decreased with depth to 10.6 ppm in the 14 feet bgl to 16 feet bgl interval.

A claystone was encountered from 16.5 feet bgl – 19 feet bgl. The claystone was observed to be very stiff, dry, brown and gray. The claystone did not have an odor. The PID readings were 5 ppm.

The sampling terminated at 19 feet bgl. Soil samples were collected in the appropriate sample containers, sealed in sealable bags, and immediately placed in an ice chest containing ice.

A temporary well was set at this location since saturation was encountered during the soil sampling with the screen placed from 8 feet bgl to 18 feet bgl. On September 19, 2016 the temporary well was gauged. No phase-separated hydrocarbon was detected in the well. The depth to water was 18.95 feet btoc. The groundwater level was approximately 16.95 feet bgl. The depth to the bottom of the well was 20.50 feet bgl.

On September 21, 2016 the well was gauged with the water level measured at 10.74 feet btoc (8.74 feet bgl). Water samples were collected and immediately after the groundwater sample collection the well casing and screen were removed and the borehole was grouted.

4.4 Temporary Monitor Well Construction and Groundwater Sampling

This subsection provides a description of groundwater investigations to locate potential impacts to the groundwater in the area of the Sludge Pits. This includes the installation of temporary monitor wells, measurement of fluid levels, well development/purging, collection of groundwater field data, and the collection of groundwater samples.

A description of the well installations and groundwater sampling procedures are presented in Appendix B – Field Methods. Copies of the boring logs that include the well settings are provided in Appendix C. Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature.

These measurements are presented in Table 4 . The locations of the soil borings with temporary well completions appear on Figure 7.

4.4.1 Groundwater Investigation

Groundwater samples were collected from eleven temporary well completions. The following list provides a brief summary of the well development and groundwater sample collection activities:

- SWMU 10-1; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-3; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-5; sampled only due to slow recharge rate; yielded enough water for a full analytical suite;
- SWMU 10-11; developed and sampled; yielded enough water for a full analytical suite; sheen observed on purge water;
- SWMU 10-12; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-14; developed and sampled; yielded enough water for a full analytical suite; sheen observed on purge water;
- SWMU 10-15; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 10-16; sampled only due to a small water column in the temporary well completion; yielded enough water for VOCs, SVOCs, and gasoline, diesel, and motor oil range petroleum hydrocarbons analyses;
- SWMU 10-20; developed and sampled; yielded enough water for the full analytical suite;
- SWMU 10-21; developed and sampled; yielded enough water for VOCs, SVOCs, and gasoline, range petroleum hydrocarbons analyses; and
- SWMU 10-25; sampled only due to a small water column in the temporary well completion; yielded enough water for the full analytical suite.

The drilling equipment and hand auger equipment was decontaminated between each borehole, as described in Appendix B. The well development and purging is also discussed in Appendix B. The installation of the temporary wells and collection of groundwater samples are discussed below in numerical order for the samples collected near the former Sludge Pits.

SWMU 10-1

On April 28, 2015 the drilling rig was set up on location SWMU 10-1. The boring was installed using the HSA drilling method. Groundwater was encountered at approximately 6 feet bgl in a sandy clay.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet bgl to 14 feet bgl to include the sandy clay interval at a depth of 6 feet bgl to 8 feet bgl that indicated the presence of saturation. The screen extends downward to the top of the bedrock to also potentially encounter any groundwater on top of the bedrock surface. A sand filter pack was installed to approximately 2 feet bgl. A bentonite seal was installed to approximately 1 foot bgl. The top of casing was approximately 3.25 feet above ground level.

On April 29, 2015 the well was gauged. The depth to water was 10.63 feet below the top of casing (btoc). The groundwater level was approximately 7.38 feet bgl. Approximately 5 gallons of groundwater were developed/purged from the well by 9:20 am on April 29, 2015. The purge water was brown and turbid. The well was sampled on April 29, 2015 at 5:10 pm. There was a sufficient volume of groundwater to collect samples for a full analytical suite as specified in the Investigation Work Plan and discussed further in Section 6.2. All purge/development water was disposed at the bundle cleaning pad on April 29, 2015. On May 1, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-3

On April 28, 2015 the drilling rig was set up on location SWMU 10-3. The boring was installed using the HSA drilling method. Groundwater was encountered in sand seams that were identified in a sandy clay interval, which extended from 8 feet bgl to 12 feet bgl. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet bgl to 14 feet bgl to cover the length of the silty clay from 8 feet bgl to 12 feet bgl, which was very moist and indicated the greatest potential to yield groundwater. The screen also extended to the top of bedrock to encounter any groundwater accumulating on this surface. A filter pack was installed to approximately 2 feet bgl. A bentonite seal was installed to approximately 1 foot bgl. The top of casing was approximately 3.13 feet above ground level.

On April 29, 2015 the well was gauged. The depth to water was 14.18 feet btoc. The groundwater level was approximately 11.05 feet bgl. Approximately two gallons of groundwater were developed/purged from the well on April 29, 2015. The purge water was brown, cloudy and did not exhibit an odor. There was enough groundwater to collect samples for a full analytical suite on April 29, 2015. All purge/development water was disposed at the bundle cleaning pad. On May 1, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-5

On April 29, 2015 the drilling rig was set up on location SWMU 10-5. The boring was installed using the HSA drilling method. Groundwater saturation was not readily apparent during the collection of soil samples, which consisted clay from the land surface to the top of bedrock at 22 feet bgl. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 12 feet bgl to 22 feet bgl to include the top of bedrock. A filter pack was installed to approximately 10 feet bgl. A bentonite seal was installed to approximately 9 feet bgl. The top of casing was approximately 3.00 feet above ground level. The well was gauged immediately after the installation of the well materials. No groundwater was detected in the well. The total depth of the well was 24.48 feet btoc (21.48 feet bgl).

On May 1, 2015 the well was gauged and the depth to groundwater was 19.48 feet btoc. The groundwater level was approximately 16.48 feet bgl. The fluid column in the well was 5 feet in thickness. On May 4, 2015 the well was gauged. The depth to water was 14.91 feet btoc. The groundwater level was approximately 11.91 feet bgl. The fluid column in the well was 9.57 feet.

Due to the very slow groundwater recharge rate in this well, the well was not developed/purged. There was enough groundwater to collect samples on May 4, 2015 for a full analytical suite. The water was slightly turbid and did not exhibit an odor.

On May 4, 2015 the well casing and screen were removed from the borehole. Separate phase hydrocarbon (SPH) was observed on the outside of the well casing at approximately three to six feet below ground level. This is above the level to which groundwater recovered and there was no indication of SPH in the soil samples, thus the source of the SPH is not readily apparent. The borehole was grouted.

SWMU 10-11

On May 12, 2015 the drilling rig was set up on location SWMU 10-11. The boring was installed using the HSA drilling method. Groundwater saturation was encountered at four feet bgl in a clayey sand that was black and exhibited a petroleum odor.

A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 3 feet bgl to 13 feet bgl to include all of the saturated clayey sand interval that extended from 4 feet to 12 feet, where it transitioned to a damp

sandy clay. A filter pack was installed to approximately 1 feet bgl. A bentonite seal was installed to ground level. The top of casing was approximately 3.08 feet above ground level.

On May 14, 2015 the well was gauged. The depth to water was 6.43 feet btoc. The groundwater level was approximately 3.35 feet bgl. The depth to the bottom of the well was 16.65 feet btoc. Approximately 5.25 gallons of groundwater were developed/purged from the well on May 14, 2015 prior to collection of the groundwater samples.

The purge water was turbid and a sheen was observed on the purge water. The water did not exhibit an odor. There was enough groundwater to collect samples for a full analytical suite. All purge water was disposed at the bundle cleaning pad on May 14, 2015. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-12

On May 12, 2015 the drilling rig was set up on location SWMU 10-12. The boring was installed using the HSA drilling method. Groundwater saturation was first encountered at 4 feet bgl in a very moist silty clay. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 4 feet to 14 feet. The screen placement included the uppermost interval indicating the potential to produce water in the silty clay that extended from 4 feet bgl to 11 feet bgl and the underlying clayey/silty sand that was saturated. A filter pack was installed to approximately 2 feet bgl. A bentonite seal was installed to ground level. The top of casing was approximately 2.92 feet above ground level.

On May 14, 2015 the well was gauged. The depth to water was 6.30 feet btoc. The groundwater level was approximately 3.38 feet bgl. The depth to the bottom of the well was 17.48 feet btoc. Approximately 5.75 gallons of groundwater were developed/purged from the well by on May 14, 2015 prior to sample collection.

The purge water was turbid and did not exhibit an odor. There was enough groundwater to collect samples for a full analytical suite. All purge water was disposed at the bundle cleaning pad on May 14, 2015. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-14

On May 12, 2015 the drilling rig was set up on location SWMU 10-14. The boring was installed using the HSA drilling method. Groundwater saturation was encountered at two feet bgl. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 2 feet to 12 feet. The top of the well screened corresponded with the anticipated depth of groundwater and extended deeper to include the upper 10 feet of saturated soils. The screened soils included loose, light tan, saturated clayey gravel from 4 feet bgl to 6 feet bgl, a high plastic clay from 6 feet bgl to 6.75 feet bgl, saturated clayey sand from 6.75 feet bgl to 8 feet bgl, sandy clay from 8 feet bgl to 10 feet bgl, and clayey gravelly sand was encountered from 10 feet bgl to 16 feet bgl.

A filter pack was installed to approximately 1 feet bgl. A bentonite seal was installed to ground level. The top of casing was approximately 2.00 feet above ground level.

On May 14, 2015 the well was gauged. The depth to water was 6.00 feet btoc. The groundwater level was approximately 4.00 feet bgl. The depth to the bottom of the well was 14.50 feet btoc. Approximately 5 gallons of groundwater were purged from the well by on May 14, 2015 before collecting the groundwater samples.

The purge water was turbid, reddish brown and a sheen was observed on the purge water. The water did not exhibit an odor. There was enough groundwater to collect samples for a full analytical suite. All purge water was disposed at the bundle cleaning pad on May 14, 2015. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-15

On May 13, 2015 the drilling rig was set up on location SWMU 10-15. The boring was installed using the HSA drilling method. Groundwater saturation was first encountered at 7 feet bgl in a sand seam within a sandy clay. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet to 16 feet. The screened interval included the uppermost indication of saturation and included the 10-foot interval below. The screened soils included sandy clay from 6 to 8 feet bgl with saturated sand seams at 7 feet, saturated clayey sand from 8 feet bgl to 9.5 feet bgl, clay from 9.5 feet bgl to 10 feet bgl, silty clay from 10 feet bgl to 11.5 feet bgl, very moist to saturated sandy clay from 11.5 feet bgl to 12.5 feet

bgl, silty clay from 12.5 feet bgl to 13 feet bgl, saturated clayey sand from 13 feet bgl to 14 feet bgl, and sandy clay from 14 feet bgl to 16 feet bgl.

A filter pack was installed to approximately 4 feet bgl. A bentonite seal was installed to ground level. The top of casing was approximately 3.33 feet above ground level.

On May 14, 2015 the well was gauged. The depth to water was 7.64 feet btoc. The groundwater level was approximately 4.31 feet bgl. The depth to the bottom of the well was 20.10 feet btoc. Approximately 6.5 gallons of groundwater were purged from the well by on May 14, 2015 and groundwater samples were collected.

The purge water was turbid and did not exhibit a petroleum odor. There was enough groundwater to collect samples for a full analytical suite. A duplicate groundwater sample was also collected from this location. All purge water was disposed at the bundle cleaning pad on May 14, 2015. On May 14, 2015 the well casing and screen were removed and the borehole was grouted.

SWMU 10-16

On May 13, 2015 sample collection at SWMU 10-16 was accomplished using the hand auger. Overhead utility lines prevented the mobilization of the HSA drilling rig to this location. Groundwater saturation was encountered at 5.5 feet bgl in a clayey sand. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. Due to the shallow depth of the boring, it was possible to install the screen from ground level to bottom of the boring at 9 feet bgl. The soils indicating saturation consisted of clayey sand and extended from 5.5 feet bgl to 8 feet bgl. A filter pack and bentonite seal were not installed. The top of screen extended to approximately 1.5 feet above ground level.

On May 14, 2015 the well was gauged. The depth to water was 7.70 feet btoc. The groundwater level was approximately 6.20 feet bgl. The depth to the bottom of the well was 10.48 feet btoc. Due to the small fluid column (2.78 feet - 0.47 gallons) in this well, the well was not developed/purged. There was enough groundwater to collect samples for only VOCs, TPH, and SVOC analyses. The water was turbid and did not exhibit an odor.

SWMU 10-20

On May 17, 2016 the drilling rig was set up on location SWMU 10-20. The boring was installed using the HSA drilling method. Groundwater saturation was first encountered at 12 feet bgl in a silty sandy

clay. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 5 feet to 20 feet. The screened interval included the uppermost indication of saturation and included the 10-foot interval below. The screened soils included the following:

- Silty Sandy Clay - 12 feet bgl to 14 feet bgl – moist to saturated;
- Silty Sandy Clay – 14 feet bgl to 16 feet bgl – moist to saturated in sand seam at 15.5 feet bgl; and
- Silty Sandy Clay - 16 feet bgl - 18 feet bgl – moist to saturated.

A filter pack was installed to approximately 3 feet bgl. A bentonite seal was installed to 2 feet bgl. The top of casing was approximately 1.71 feet above ground level.

On May 19, 2016 the well was gauged. The depth to water was 12.60 feet btoc. The groundwater level was approximately 10.89 feet bgl. The depth to the bottom of the well was 19.29 feet bgl. The well was bailed dry after removing approximately 7 gallons of groundwater during development. Groundwater samples were collected on May 20, 2016.

The purge water was clear and exhibited a faint hydrocarbon odor. There was enough groundwater to collect samples for a full analytical suite. All purge water was disposed at the bundle cleaning pad on May 19, 2016. On May 23, 2016 the well casing and screen were removed and the borehole was grouted.

SWMU 10-21

On May 18, 2016 the drilling rig was set up on location SWMU 10-21. The boring was installed using the HSA drilling method. Groundwater saturation was encountered from 14 feet to 18 feet within sand seams in a sandy silty clay. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. A filter pack was installed to approximately 8 feet bgl. A bentonite seal was installed to approximately 6 feet bgl. The top of casing was approximately 0.46 feet above ground level.

On May 19, 2016 the well was gauged and the depth to groundwater was 19.80 feet btoc/19.34 feet bgl. The fluid column in the well was 0.43 feet in thickness. Due to the very slow groundwater recharge rate in this well, the well was not developed/purged. The depth to groundwater was gauged on May 19, 2016 and determined to be 19.60 feet btoc/19.14 feet bgl. There was enough

groundwater to collect samples on May 19, 2016 for a volatile organics, semivolatile organics and gasoline range petroleum hydrocarbons analyses.

The water was clear to turbid and did not exhibit an odor. On May 23, 2016 the well casing and screen were removed and the borehole was grouted.

SWMU 10-25

On September 19, 2016 the drilling rig was set up on location SWMU 10-25. The boring was installed using the HSA drilling method. Groundwater saturation was first encountered at 12 feet bgl in a sandy clay. A temporary well was constructed of 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 8 feet to 18 feet. The screened interval included the uppermost indication of saturation and extended to the top of bedrock. The screened soils included the following:

- Silty Clay - 8 feet bgl to 9 feet bgl – damp;
- Sandy Clay - 9 feet bgl to 11 feet bgl – damp, brown to black discoloration;
- Silty Clay - 11 feet bgl to 12 feet bgl – damp;
- Sandy Clay - 12 feet bgl to 13 feet bgl – saturated;
- Silty Clay – 13 feet bgl to 14 feet bgl – damp;
- Sandy Clay - 14 feet bgl to 16.5 feet bgl – damp to moist; and
- Claystone – 16.5 feet bgl to 18 feet bgl - dry.

A filter pack was installed to approximately 6 feet bgl. A bentonite seal was installed to the land surface. The top of casing was approximately 2.0 feet above ground level.

On September 19, 2016 the temporary well was gauged. No phase-separated hydrocarbon was detected in the well. The depth to water was 18.95 feet btoc. The groundwater level was approximately 16.95 feet bgl. The depth to the bottom of the well was 20.50 feet bgl. The fluid column in the well was 1.55 feet in thickness.

On September 20, 2016 at approximately 08:56 a.m. the well was gauged with the water level measured at 10.58 feet btoc (8.58 feet bgl). The well was bailed dry after removing approximately 6 gallons of groundwater during development. The purge water was clear to amber and exhibited a hydrocarbon odor. All purge water was disposed at the bundle cleaning pad.

On September 21, 2016 the well was gauged with the water level measured at 10.74 feet btoc (8.74 feet bgl). The well was sampled at 08:50 a.m. There was enough groundwater to collect samples for a full analytical suite. Immediately after the groundwater sample collection the well casing and screen were removed and the borehole was grouted.

Section 5

Regulatory Criteria

The applicable screening and potential cleanup levels are specified in NMED's *Risk Assessment Guidance for Site Investigations and Remediation* dated July 2015 and in the Environmental Protection Agency's (EPA) Regional Screening Levels dated November 2015.

For non-residential properties (e.g., the Gallup Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper ten feet based on NMED criteria. NMED residential soil screening levels are applied to the upper ten feet and soil screening levels for protection of groundwater apply throughout the vadose zone. EPA soil screening levels for direct contact exposure apply to the upper two feet of the vadose zone. To achieve closure as "corrective action complete without controls", the affected media must meet residential screening levels, which are presented in Table 5. Table 5 also provides a list of the available NMED and EPA soil screening levels for non-residential properties. While Table 5 indicates the various depths to which the individual soil screening levels are applicable, Table 7 discussed below does not include this level of detail.

The groundwater cleanup levels are based on New Mexico Water Quality Control Commission (WQCC) standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WQCC standard nor an MCL is available, then the cleanup level is based on a NMED Tap Water Screening Level. If a NMED Tap Water Screening Level is not available for a constituent, then an EPA Regional Screening Level is used. If an EPA Regional Screening Level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. Table 6 presents the groundwater cleanup levels, with the applicable cleanup level bolded.

The aforementioned Table 5 has soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 1.0, which is NMED's most conservative screening level for this pathway. A review of site conditions (i.e., predominance of very fine-grained soils and limited occurrence of groundwater with low yields) indicates that a DAF of 1.0 is overly conservative,

thus a site-specific DAF value was calculated. The documentation of the calculation of the site-specific DAF value is provided in Appendix G.

The screening levels that are compared to individual soil sample results from SWMU No. 10 (Sludge Pits) are presented in Table 7. The screening levels included in Table 7 are based on residential and non-residential land use and include a site-specific screening level to evaluate the potential for constituents to migrate to groundwater using a DAF value of 295. For the non-residential screening levels, the lower of the construction worker scenario and commercial/industrial scenario screening levels for each constituent is included in the data tables if NMED screening levels are available. If NMED soil screening levels are not available for a particular constituent, then EPA soils screening levels are used. If an EPA soil screening level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. The screening levels in Table 7 have not been segregated based on depth of the soil sample as discussed above for Table 5. The screening levels that are compared to individual groundwater sample results from SWMU No. 10 are presented in Table 8.

A review of the NMED guidelines for TPH indicates that the TPH screening levels were developed based on screening levels and compositional assumptions developed by the Massachusetts Department of Environmental Protection (MADEP). The analytical results, as presented in Table 7, are reported for gasoline range organics (C6-C10), diesel range organics (>C10-C28), and motor oil range organics (>C28-C35). The applicable TPH screening levels for comparison to the individual soil samples are selected from Table 6-2 of the NMED guidance (NMED, 2015).

There are no soil screening levels for gasoline range organics and the individual compounds listed for groundwater (gasoline range criteria) are included in the list of analytes used for site samples. As there could have been a variety of petroleum types (e.g., crude oil or various refined products) going to the former Sludge Pits, the screening level for “unknown oil” was selected for comparison to the diesel range and motor oil range soil analytical results.

The motor oil range analytical results are compared to the “unknown oil” screening level as directed by NMED. However, it is noted that the laboratory analyses for motor oil range organics only reports results for the >C28 to C35 hydrocarbon range, while the “unknown oil” screening level is based on a hydrocarbon mixture assumed to include only C11-C22 aromatics.

Some of the individual constituents reported by the laboratory do not have screening levels but were all non-detect with respect to soil, except 4-isopropyltoluene and 3+4-methylphenol. With respect to groundwater, there were also detections of constituents that do not have screening levels. The constituents detected in groundwater that do not have screening levels include, 2-hexanone, 4-isopropyltoluene, 4-methyl-2-pentanone, n-butylbenzene, n-propylbenzene, sec-butylbenzene, and carbazole. None of these constituents are classified as a known carcinogen.

Section 6

Site Impacts

This section discusses the chemical analyses performed and presents the analytical results that were obtained through the analysis of soil and groundwater samples, which were collected at the former Sludge Pits. The results for soils and groundwater analyses are presented and compared to applicable screening levels, as described in Section 5.0.

6.1 Soil Analytical Results

Soil samples were analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico using the following methods for organic constituents:

- SW-846 Method 8260/5035 volatile organic compounds;
- SW-846 Method 8270C semi-volatile organic compounds; and
- SW-846 Method 8015D gasoline, diesel, and motor oil range petroleum hydrocarbons.

Soil samples were analyzed for the following metals using the indicated analytical methods, respectively.

Analyte	Analytical Method
Antimony	SW-846 Method 6010B
Arsenic	SW-846 Method 6010B
Barium	SW-846 Method 6010B
Beryllium	SW-846 Method 6010B
Cadmium	SW-846 Method 6010B
Chromium	SW-846 Method 6010B
Cobalt	SW-846 Method 6010B
Cyanide	SW-846 Method 9012B
Hexavalent Chromium	SW-846 Method 3060A/7196A
Iron	SW-846 Method 6010B
Lead	SW-846 Method 6010B
Mercury	SW-846 Method 7471

Analyte	Analytical Method
Manganese	SW-846 Method 6010B
Nickel	SW-846 Method 6010B
Selenium	SW-846 Method 6010B
Silver	SW-846 Method 6010B
Vanadium	SW-846 Method 6010B
Zinc	SW-846 Method 6010B

The analytical results for soil samples collected at the former Sludge Pits are summarized in Table 7. The individual results that exceed the applicable cleanup levels are highlighted, as noted in the table footnotes. Maps showing the distribution of constituents detected in soils above the lowest applicable screening levels are included as Figures 13 through 23. The concentrations shown on figures that exceed the screening levels in Table 7 are underlined on the figures. The laboratory analytical reports are included in Appendix D and the data validation of the results, which includes the analytical results for the associated QA/QC samples, is included in Appendix E. The constituents that have concentrations in soils above screening levels as measured in samples collected from the Sludge Pits are discussed below.

Arsenic was detected at a concentration above the residential screening level of 4.25 mg/kg in one soil sample [SWMU 10-20 (2-2.5')] at a concentration of 5.4 mg/kg. The concentrations are shown on Figure 13. The detected concentrations range from 0.84 mg/kg to 5.4 mg/kg. The concentration of 5.4 mg/kg also exceeded the DAF screening level of 4.41 mg/kg.

Cyanide was detected at concentrations above the DAF screening level of 0.077 mg/kg in 15 soil samples [SWMU 10-18 (2-2.5'), SWMU 10-18 (8-10'), SWMU 10-20 (2-2.5'), SWMU 10-20 (8-10'), SWMU 10-20 (10-12'), SWMU 10-21 (2-2.5'), SWMU 10-23 (2-2.5'), SWMU 10-23 (15-16'), SWMU 10-24 (2-2.5'), SWMU 10-24 (6-8'), SWMU 10-24 (8-10'), SWMU 10-24 (15-16'), SWMU 10-25 (2-2.5'), SWMU 10-25 (10-12'), and SWMU 10-25 (16.5-18')]. The detected concentrations range from 0.04 mg/kg to 3.9 mg/kg, with 11 of the 15 detections being "J" flagged or estimated concentrations. The results are presented on Figure 14.

There were six soil samples with concentrations of 1,2,4-trimethylbenzene above the DAF screening level of 6.2 mg/kg [SWMU 10-5 (4-6'), SWMU 10-8 (2-4'), SWMU 10-10 (4-6'), SWMU 10-17 (6-8'), SWMU 10-20 (8-10'), and SWMU 10-20 (10-12')] as indicated with highlighting in Table 7. The

detected concentrations range from 0.0003 to 27 mg/kg. The concentrations are plotted on Figure 15. All sample results are less than the residential soil screening level of 58 mg/kg.

1-Methylnaphthalene was detected at concentrations above the DAF screening level of 1.71 mg/kg in 14 soil samples [SWMU 10-4 (2-4'), SWMU 10-5 (4-6'), SWMU 10-8 (2-4'), SWMU 10-10 (4-6'), SWMU 10-11 (4-6'), SWMU 10-11 (8-10'), SWMU 10-13 (6-8'), SWMU 10-17 (6-8'), SWMU 10-19 (12-14'), SWMU 10-20 (8-10'), SWMU 10-20 (10-12'), SWMU 10-20 (16-18'), SWMU 10-24 (6-8'), and SWMU 10-25 (2-2.5').] as indicated with highlighting in Table 7. The detected concentrations range from 0.0002 mg/kg to 76 mg/kg and all detected concentrations are less than the residential screening level of 180 mg/kg. The concentrations are plotted on Figure 16.

2-Methylnaphthalene was detected at concentrations above the DAF screening level of 56.1 mg/kg in four soil samples [SWMU 10-5 (4-6'), SWMU 10-8 (2-4'), SWMU 10-17 (6-8'), and SWMU 10-20 (8-10')] as indicated with highlighting in Table 7. The detected concentrations range from 0.0006 to 130 mg/kg and all detected concentrations are less than the residential screening level of 240 mg/kg. The concentrations are plotted on Figure 17.

Benzene was detected at concentrations above the DAF screening level of 0.56 mg/kg in four soil samples [SWMU 10-5 (4-6'), SWMU 10-17 (6-8'), SWMU 10-20 (8-10'), and SWMU 10-20 (10-12')] as indicated with highlighting in Table 7. The detected concentrations range from 0.000788 to 8 mg/kg. The concentrations are plotted on Figure 18. All sample results are less than the residential soil screening level of 17.8 mg/kg.

There are four soil samples [SWMU 10-5 (4-6'), SWMU 10-17 (6-8'), SWMU 10-20 (8-10'), and SWMU 10-20 (10-12')] with a concentration of ethylbenzene detected above the DAF screening level of 3.87 mg/kg as indicated with highlighting in Table 7. The detected concentrations range from 0.0003 mg/kg to 14 mg/kg. The concentrations are plotted on Figure 19. All sample results are less than the residential soil screening level of 75.1 mg/kg.

Naphthalene was detected at concentrations above the DAF screening level of 1.21 mg/kg in 12 soil samples [SWMU 10-5 (4-6'), SWMU 10-8 (2-4'), SWMU 10-10 (4-6'), SWMU 10-11 (4-6'), SWMU 10-13 (6-8'), SWMU 10-17 (6-8'), SWMU 10-19 (12-14'), SWMU 10-20 (8-10'), SWMU 10-20 (10-12'), SWMU 10-20 (16-18'), SWMU 10-24 (6-8'), and SWMU 10-25 (2-2.5')] as indicated with highlighting in Table 7. The detected concentrations range from 0.0007 mg/kg to 26 mg/kg. The

concentrations are plotted on Figure 20. All sample results are less than the residential soil screening level of 49.7 mg/kg.

There are three soil samples [SWMU 10-5 (4-6'), SWMU 10-17 (6-8'), and SWMU 10-20 (8-10')] with a concentration of xylenes detected above the DAF screening level of 43.9 mg/kg as indicated with highlighting in Table 7. The detected concentrations range from 0.0009 mg/kg to 86 mg/kg. The concentrations are plotted on Figure 21. All sample results are less than the residential soil screening level of 871 mg/kg.

Diesel Range Organics were detected at concentrations above the residential soil screening level of 1,000 mg/kg in 12 soil samples [SWMU 10-4 (2-4'), SWMU 10-5 (0-2'), SWMU 10-5 (4-6'), SWMU 10-8 (2-4'), SWMU 10-10 (4-6'), SWMU 10-11 (4-6'), SWMU 10-13 (6-8'), SWMU 10-14 (6-8') SWMU 10-17 (6-8'), SWMU 10-20 (2-2.5'), SWMU 10-20 (8-10'), and SWMU 10-20 (10-12')] as indicated with highlighting in Table 7. The detected concentrations range from 2.9 to 9,700 mg/kg. The concentrations are plotted on Figure 22.

Motor Oil Range Organics were detected at concentrations above the residential soil screening level of 1,000 mg/kg in four soil samples [SWMU 10-5 (0-2'), SWMU 10-8 (2-4'), SWMU 10-10 (4-6'), and SWMU 10-20 (2-2.5')] as indicated with highlighting in Table 7. The detected concentrations range from 53 mg/kg to 6,700 mg/kg. The concentrations are plotted on Figure 23.

6.2 Groundwater Analytical Results

The groundwater samples were analyzed for organic constituents by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Groundwater samples were analyzed for the following total and dissolved metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 Method 200.8
Arsenic	SW-846 Method 200.8

Analyte	Analytical Method
Barium	SW-846 Method 200.7
Beryllium	SW-846 Method 200.7
Cadmium	SW-846 Method 200.7
Chromium	SW-846 Method 200.7
Cobalt	SW-846 Method 200.7
Iron	SW-846 Method 200.7
Lead	SW-846 Method 200.8
Manganese	SW-846 Method 200.7
Nickel	SW-846 Method 200.7
Selenium	SW-846 Method 200.8
Silver	SW-846 Method 200.7
Vanadium	SW-846 Method 200.7
Zinc	SW-846 Method 200.7

Groundwater samples were also analyzed for the following total metals using the indicated analytical methods.

Analyte	Analytical Method
Cyanide	SW-846 Method 9012B
Hexavalent Chromium	SW-846 Method 7199
Mercury	SW-846 Method 245.1

In addition, groundwater samples were analyzed for chloride, fluoride, and sulfate using EPA method 300.

The analytical results and the applicable cleanup levels are presented in Table 8. The individual results that exceed the applicable cleanup levels are highlighted. Maps depicting the distribution of the various constituents detected in groundwater samples above the screening levels are provided in Figures 24 through 34, with the concentrations that exceed the screening levels underlined. The results for the associated QA/QC samples and the data validation are provided in Appendix E. The laboratory analytical reports are included in Appendix D.

All of the groundwater samples collected at the former Sludge Pits were collected from temporary well completions and there are numerous metals detected in the total analyses at concentrations above their respective screening levels. The samples collected at temporary wells SWMU 10-16 and SWMU 10-21 were not analyzed for metals because the wells did not produce a sufficient volume of water to run all analyses. The constituents with reported concentrations that exceed screening levels are discussed below.

Arsenic was detected above the screening level of 0.01 mg/l in eight of the nine samples collected when reviewing both the total and dissolved analyses. This includes samples collected at SWMU 10-3, SWMU 10-5, SWMU 10-11, SWMU 10-12, SWMU 10-14, SWMU 10-15, SWMU 10-20, and SWMU 10-25. The higher of the two results (total and dissolved analyses) are shown on Figure 24. The detected arsenic results range from 0.0025 to 0.029 mg/l.

For the total analyses, barium was detected above the screening level of 2.0 mg/l in three of the nine samples collected, including SWMU 10-11, SWMU 10-12, and SWMU 10-14 with concentrations ranging from 5.3 mg/l to 7.3 mg/l. However, only one of the samples (SWMU 10-25) from the dissolved analyses exceeds the screening level of 1.0 mg/l. The dissolved analyses range from 0.085 mg/l to 1.4 mg/l.

Similar to barium, beryllium was detected above the screening level of 0.004 mg/l in three of the nine samples collected, including SWMU 10-11, SWMU 10-12, and SWMU 10-14 with total concentrations ranging from 0.00043 mg/l to 0.037 mg/l. However, none of the samples from the dissolved analyses exceed the screening level. The detected dissolved analyses range from 0.0004 mg/l to 0.0009 mg/l.

Chromium and vanadium were both detected above their respective screening levels in the total analyses of groundwater samples collected from the same three temporary wells (SWMU 10-11, SWMU 10-12, and SWMU 10-14), while none of the dissolved analyses exceed screening levels. Chromium total analyses for detected results range from 0.0051 mg/l to 0.17 mg/l vs. the screening level of 0.05 mg/l. Dissolved analyses (detected results) for chromium range from 0.0039 mg/l to 0.0094 mg/l. All results for chromium VI were non-detect except for SWMU 10-20, which had a reported concentration of 0.0005 mg/l vs. the screening level of 0.000252 mg/l. The detected results for total vanadium range from 0.0068 mg/l to 0.17 mg/l in comparison to a screening level of 0.0631 mg/l. The detected results for dissolved vanadium range from 0.002 mg/l to 0.016 mg/l.

Cobalt (total analyses) was detected at concentrations above the screening in six (SWMU 10-1, SWMU 10-11, SWMU 10-12, SWMU 10-14, SWMU 10-15, and SWMU 10-20) of the nine groundwater samples collected, but none of the dissolved analyses exceed the screening level. The total cobalt analyses range from 0.0033 mg/l to 0.14 mg/l vs. the screening level of 0.006 mg/l. The dissolved analyses for cobalt range from 0.0035 mg/l to 0.023 mg/l in comparison to the screening level of 0.05 mg/l.

Iron was detected above the screening level in samples analyzed for total (four exceedances at SWMU 10-1, SWMU 10-11, SWMU 10-12 and SWMU 10-14) and dissolved analyses (two exceedances at SWMU 10-12 and SWMU 10-14). The total analyses range from 1.9 mg/l to 140 mg/l in comparison to a screening level of 13.8 mg/l. The dissolved analyses range from 0.011 mg/l to 3.9 mg/l vs. a screening level of 1.0 mg/l. The dissolved analyses results are shown on Figure 25.

Lead (total analyses) was detected at concentrations above the screening in four (SWMU 10-1, SWMU 10-11, SWMU 10-12, and SWMU 10-14) of the nine groundwater samples collected, but none of the dissolved analyses exceed the screening level. The total lead analyses range from 0.0021 mg/l to 0.28 mg/l vs. the screening level of 0.015 mg/l. The dissolved analyses for lead range from 0.00074 mg/l to 0.0068 mg/l in comparison to the screening level of 0.015 mg/l.

Manganese was detected above the screening levels in both total and dissolved analyses. The total concentration screening level of 2.0 mg/l was exceeded in five of the groundwater samples collected at temporary wells SWMU 10-11, SWMU 10-12, SWMU 10-14, SWMU 10-15, and SWMU 10-25. The total analyses results range from 0.52 mg/l to 22 mg/l. All nine of the analyses of groundwater detected concentrations of dissolved manganese above the screening level of 0.2 mg/l, with concentrations ranging from 0.27 mg/l to 3.9 mg/l. The dissolved analyses results are shown on Figure 26.

One groundwater sample, which was collected at temporary well SWMU 10-15, has concentrations of nickel that exceed the screening level of 0.372 mg/l in both total and dissolved analyses. The detected results for the total analyses range from 0.0044 mg/l to 0.64 mg/l, while the detected results for dissolved analyses range from 0.0028 mg/l to 0.65 mg/l. The dissolved analyses are shown on Figure 25.

Chloride was detected above the screening level in all nine groundwater samples with concentrations ranging from 330 mg/l to 7,100 mg/l vs. the screening level of 250 mg/l. Sulfate was detected above the screening level of 600 mg/l in one groundwater sample collected at temporary well SWMU 10-3. The sulfate concentrations range from 110 mg/l to 1,100 mg/l. The chloride and sulfate concentrations are shown on Figure 27.

1,2,4-Trimethylbenzene was detected above the screening level of 15 micrograms per liter (ug/l) in the groundwater samples collected at SWMU 10-11, SWMU 10-20, and SWMU 10-25 at concentrations of 64 ug/l, 220 ug/l, and 170 ug/l, respectively. The detected concentrations range from 0.18 ug/l to 210 ug/l and are shown on Figure 28.

The screening level for 1,3,5-Trimethylbenzene was exceeded in the groundwater samples collected at SWMU 10-11, SWMU 10-20, and SWMU 10-25 with detected results of 22 ug/l, 64 ug/l, and 46 ug/l, respectively, vs. the screening level of 12 ug/l. The detected concentrations range from 3.9 ug/l to 64 ug/l and are shown on Figure 29.

1-Methylnaphthalene was detected above the screening level of 11 ug/l in the groundwater samples collected at SWMU 10-11, SWMU 10-20, and SWMU 10-25 at concentrations of 70 ug/l, 170 ug/l, and 120 ug/l, respectively. The detected concentrations range from 3.1 ug/l to 170 ug/l and are shown on Figure 30.

2-Methylnaphthalene was detected above the screening level of 36 ug/l in the groundwater samples collected at SWMU 10-11, SWMU 10-20, and SWMU 10-25 at concentrations of 98 ug/l, 240 ug/l, and 180 ug/l, respectively. The detected concentrations range from 1.5 ug/l to 240 ug/l and are shown on Figure 31.

The screening level for benzene was exceeded in the groundwater samples collected at three locations (SWMU 10-5, SWMU 10-20, and SWMU 10-25) with results of 27 ug/l, 1,600 ug/l, and 320 ug/l, respectively, vs. the screening level of 5 ug/l. The detected concentrations range from 0.15 ug/l to 1,600 ug/l and are shown on Figure 32.

Methyl tert-butyl ether (MTBE) was detected slightly above the screening level of 143 ug/l in one groundwater sample, which was collected at SWMU 10-15, at a concentration of 150 ug/l. The detected concentrations range from 0.8 ug/l to 150 ug/l and are shown on Figure 33. In addition to the SWMU 10 groundwater results, the MTBE concentration detected at boring location SWMU 1-37,

which was installed during investigation of nearby SWMU 1, is also shown as it defines the eastern extent of MTBE concentrations above the screening level (Western Refining Southwest, Inc., 2015).

Naphthalene was detected above the screening level of 1.65 ug/l in three groundwater samples collected at SWMU 10-11, SWMU 10-20, and SWMU 10-25 at concentrations of 45 ug/l, 310 ug/l, and 200 ug/l, respectively. The detected concentrations range from 0.52 ug/l to 310 ug/l and are shown on Figure 34.

6.3 General Groundwater Chemistry

The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The results of the measurements are included in Table 4 and fluid levels measured prior to purging are also presented in Table 4.

Section 7

Conclusions and Recommendations

This section summarizes and provides an evaluation of the potential impacts as shown in field screening data and analytical data. This is followed by recommendations for any future actions.

7.1 Conclusions

A cumulative risk evaluation for soils is presented in Table 9. The evaluation was conducted by taking the maximum reported soil concentration of each detected constituent and dividing by the residential screening level and non-residential screening levels as shown in the equations below. These calculations are separated for carcinogenic and non-carcinogenic constituents. The cumulative carcinogenic risk is 2.86×10^{-5} assuming residential land use and 6.5×10^{-6} for non-residential land use. The hazard index for residential land use is 5.56 and for non-residential land use is 2.78.

$$\text{Site Risk} = \left(\frac{\text{conc}_x}{\text{SSL}_x} + \frac{\text{conc}_y}{\text{SSL}_y} + \frac{\text{conc}_z}{\text{SSL}_z} + \dots + \frac{\text{conc}_i}{\text{SSL}_i} \right) \times 10^{-5}$$

$$\text{Site Hazard Index (HI)} = \left(\frac{\text{conc}_x}{\text{SSL}_x} + \frac{\text{conc}_y}{\text{SSL}_y} + \frac{\text{conc}_z}{\text{SSL}_z} + \dots + \frac{\text{conc}_i}{\text{SSL}_i} \right) \times 1$$

A cumulative risk evaluation for groundwater is presented in Table 10. The evaluation was conducted by taking the maximum reported concentration of each constituent detected in groundwater and dividing by the residential screening levels, as shown in the equation above in the discussion for soil. The dissolved analyses are used for metals where available. The cumulative carcinogenic risk level is calculated to be 5.33×10^{-3} and the hazard index is 457.

Soils

There are no reported concentrations in soil for individual constituents that exceed the residential soil screening levels, with the exception of one sample [SWMU 10-20 (2-2.5')], which exceeded for arsenic. Otherwise, only the results for DRO and MRO exceed the residential screening levels.

Two metals (arsenic and cyanide) were detected at concentrations above the DAF 295 soil-to-groundwater protection screening levels. It is possible that some of these detections are reflective of

naturally occurring concentrations but a site-specific background study will be required to make this determination. Seven organic constituents (1,2,4-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, and xylenes) were detected at concentrations above their soil-to-groundwater (DAF 295) screening levels. The soil borings with the greatest number of individual constituents exceeding the soil-to-groundwater (DAF 295) screening levels are generally located within the central portion of the area investigated, at borings SWMU 10-5, SWMU 10-8, SWMU 10-9, SWMU 10-10, SWMU 10-17, and SWMU 10-20.

DRO and/or MRO were detected at concentrations above the screening levels in the same soil samples that had detections of individual organics constituents above screening levels with the single exception of SWMU 10-14 (6-8'). The detection of DRO at a concentration of 1,200 mg/kg in comparison to the screening level 1,000 mg/kg in sample SWMU 10-14 (6-8') was defined to the southwest at boring SWMU 10-16.

The lateral extent of impacts to soil were defined to the east and southeast in borings SWMU 10-1, SWMU 10-2, and SWMU 10-7. The lateral extent was defined to the west at borings SWMU 10-12 and SWMU 10-16. The lateral extent was defined on the northeast at borings SWMU 10-15 and SWMU 10-21. The impacted area is not fully defined to the north based on exceedances of cyanide, 1-methylnaphthalene, and naphthalene at borings SWMU 10-24 and SWMU 10-25. The vertical extent of impacts at concentrations above the soil-to-groundwater soil screening levels was defined at every boring location with the single exception of SWMU 10-17. Boring SWMU 10-17 was completed with a hand auger due to access limitations to a depth of 8 feet within an impacted interval. This same impacted interval (e.g., 6 feet– 8 feet) was also identified in nearby boring SWMU 10-13. Soil boring SWMU 10-13 was accessible to the drilling rig and this boring was extended to bedrock and the vertical extent of impacts was defined for this area.

Groundwater

Of the 25 borings completed, 11 encountered saturation. Three of the borings that did not encounter saturation were completed with a hand auger and possibly saturation may be present at a deeper interval. The four temporary wells to the east (SWMU 10-1, SWMU 10-3, SWMU 10-5, and SWMU 21) had particularly low yields while the temporary wells to the west (SWMU 10-11, SWMU 10-12 and SWMU 10-14), where a thicker sand interval was present, indicated higher yields.

There are a seemingly large number of metals detected at concentrations above residential/tap water screening levels in groundwater samples collected from the soil borings. The metals analytical

results may have been affected as the result of collecting groundwater samples at low producing temporary wells completions, which tend to produce more turbid water samples than permanent well completions in more productive aquifers. The metal screening levels were exceeded in every soil boring from which a groundwater sample was collected for metals analyses.

Thirteen organic constituents (1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, bromodichloromethane, MTBE, naphthalene, toluene, xylenes, 2,4-dimethylphenol, 3+4-methylphenol, and phenol) were detected in groundwater samples collected from soil borings at concentrations above screening levels. Many of the reported concentrations are only slightly above the screening levels (i.e., generally less than one order of magnitude above the screening level). Most of the detections above screening levels occur at borings SWMU 10-11, SWMU 10-20, and SWMU 10-25. MTBE was detected above the screening level at a single location (SWMU 10-15) at a concentration of 150 ug/l vs. the screening level of 143 ug/l. Boring SWMU 10-15 is located cross- to up-gradient of most of the area of SWMU 10 (Figure 12). Based on the distribution of the MTBE concentrations and the hydraulic gradient, it appears that the elevated concentration of MTBE in boring SWMU 10-15 is more likely associated with the Aeration Basin than the former Sludge Pits.

Groundwater impacts for organic constituents were defined to the east in borings SWMU 10-1 and SWMU 10-21, to the southeast at boring SWMU 10-7 (dry), to the south/southwest at borings SWMU 10-14 and 10-16, and to the west at boring SWMU 10-12. The groundwater impacts from the former Sludge Pits are defined to the northeast at boring SWMU 10-4, which was drilled to a depth of 20 feet but did not encounter saturation. An additional boring (SWMU 10-15) was drilled further to the northeast based on impacted soil at SWMU 10-4 at a depth of 2 feet - 4 feet. The soil impact was not present at SWMU 10-15 and as discussed above, the groundwater impact (MTBE detection) at SWMU 10-15 does not appear to be associated with the former Sludge Pits. The impacts to groundwater are not defined to the north, as eight organic constituents were found to be present above screening levels in boring SWMU 10-25.

7.2 Recommendations

Two additional soil borings/temporary wells are recommended to complete the lateral delineation of impacts to soil and groundwater to the north of borings SWMU 10-24 and SWMU 10-25 (Figure 35). These additional borings will be installed and sample collection and analysis will be completed

pursuant to the previously approved Investigation Work Plan for SWMU No. 10 (Western Refining Southwest, Inc. 2014).

To determine if site concentrations of inorganic constituents in soil are reflective of naturally occurring concentrations unaffected by site activities, Western proposes to conduct a background study. Western will prepare a Background Concentrations Investigation Work Plan and submit it for review by NMED.

Section 8

References

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Tables

Table 1	1990 RCRA Facility Investigation Soil Analytical Data
Table 2	1994 RCRA Facility Investigation Soil Analytical Data
Table 3	SWMU 10 Soil Boring Samples – Vapor Screening Results
Table 4	Groundwater Field Measurements
Table 5	Soil Screening Levels
Table 6	Groundwater Screening Levels
Table 7	SWMU 10 Soil Analytical Results Summary
Table 8	SWMU 10 Groundwater Analytical Results Summary
Table 9	SWMU 10 Soil Cumulative Risk and Hazard Index Evaluation
Table 10	SWMU 10 Groundwater Cumulative Risk and Hazard Index Evaluation

TABLE 1
1990 RCRA Facility Investigation Soil Analytical Data
Western Refining Southwest, Inc. - Gallup Refinery

[illegible]

TABLE 1
1990 RCRA Facility Investigation Soil Analytical Data
Western Refining Southwest, Inc. - Gallup Refinery

Analyte	Sample ID	R101												R102												R103												R104												R105												R106												R107												R108												R109												R110												R111												R112												R113												R114												R115												R116												R117												R118												R119												R120												R121												R122												R123												R124												R125												R126												R127												R128												R129												R130												R131												R132												R133												R134												R135												R136												R137												R138												R139												R140												R141												R142												R143												R144												R145												R146												R147												R148												R149												R150												R151												R152												R153												R154												R155												R156												R157												R158												R159												R160												R161												R162												R163												R164												R165												R166												R167												R168												R169												R170												R171												R172												R173												R174												R175												R176												R177												R178												R179												R180												R181												R182												R183												R184												R185												R186												R187												R188												R189												R190												R191												R192												R193												R194												R195												R196												R197												R198												R199												R200												R201												R202												R203												R204												R205												R206												R207												R208												R209												R210												R211												R212												R213												R214												R215												R216												R217												R218												R219												R220												R221												R222												R223												R224												R225												R226												R227												R228												R229												R230												R231												R232												R233												R234												R235												R236												R237												R238												R239												R240												R241												R242												R243												R244												R245												R246												R247												R248												R249												R250												R251												R252												R253												R254												R255												R256												R257												R258												R259												R260												R261												R262												R263												R264												R265												R266												R267												R268												R269												R270												R271												R272												R273												R274												R275												R276												R277												R278												R279												R280												R281												R282												R283												R284												R285												R286												R287												R288												R289												R290												R291												R292												R293												R294												R295												R296												R297												R298												R299												R300												R301												R302												R303												R304												R305												R306												R307												R308												R309												R310												R311												R312												R313												R314												R315												R316												R317												R318												R319												R320												R321												R322												R323												R324												R325												R326												R327												R328												R329												R330												R331												R332												R333												R334												R335												R336												R337												R338												R339												R340												R341												R342												R343												R344												R345												R346												R347												R348												R349												R350												R351												R352												R353												R354												R355												R356												R357												R358												R359												R360												R361												R362												R363												R364												R365												R366												R367												R368												R369												R370												R371												R372												R373												R374												R375												R376												R377												R378												R379												R380												R381												R382												R383												R384												R385												R386												R387												R388												R389												R390												R391												R392												R393												R394												R395												R396												R397												R398												R399												R400												R401												R402												R403												R404												R405												R406												R407												R408												R409												R410												R411												R412												R413	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TABLE 1
1990 RCRA Facility Investigation Soil Analytical Data
Western Refining Southwest, Inc. - Gallup Refinery

[illegible]

Bolded Value - concentration exceeds screening level
 NA - Screening level not available or not analyzed
 DAF - Dilution attenuation factor
 NMED Screening levels (June 2012)
 EPA Regional Screening Levels (Nov. 2012)

TABLE 2
1994 RCRA Facility Investigation Soil Analytical Data
Western Refining Southwest, Inc. - Gallup Refinery

Bolded Value = concentration exceeds screening level
 NA = Screening level not available or not analyzed
 DAF = Dilution attenuation factor
 MDEQ Screening levels (June 2012)
 EPA Regional Screening Levels (Nov. 2012)

TABLE 3
SWMU 10 SOIL BORING SAMPLES - VAPOR SCREENING RESULTS
WESTERN REFINING COMPANY SOUTHWEST INC. - GALLUP REFINERY
GALLUP, NEW MEXICO

Sample Interval Depth (ftbgl)	SWMU 10-1	SWMU 10-2	SWMU 10-3	SWMU 10-4	SWMU 10-5	SWMU 10-6	SWMU 10-7	SWMU 10-8	SWMU 10-9
0 - 2	14.8	10.5	12.9	40.5	108	2.7	6.2	12.9	18
2 - 4	25.7	8.0	24.2	335	61	4.3	9.5	1489	19.1
4 - 6	30.9		16.7	36.8	445	4.7	10.6	400	380
6 - 8	26.6		18.9	42.7	330	2.9	9.7	22.9	27
8 - 10	20.7		17.6	37.8	30.6	3.2	9.1	22.8	28.9
10 - 12	17.4		13.7	25.6	26.3	4.1	4.2	24.6	10.7
12 - 14	9.2		11.2	31.1	3.5		8.1	12.1	4
14 - 16	11.3		7.6	32.9	75.2		8.9	10.2	8.9
16 - 18	5.3		7.2	14.1	9.4		8.2	5.7	6.4
18 - 20	3.6		2.5	3.8	26.8		2.7		6.2
20 - 22					16.5				
22 - 24					10.7				

Sample Interval Depth (ftbgl)	SWMU 10-10	SWMU 10-11	SWMU 10-12	SWMU 10-13	SWMU 10-14	SWMU 10-15	SWMU 10-16	SWMU 10-17	SWMU 10-18
0 - 2	11.9	13.1	3.0	4.4	3.2	11.4	10.4	3.8	6.6
2 - 4	18.4	4.0	5.4	5.6	No recovery	11.1	4.9	4.1	6.2
4 - 6	1685	524	6.0	775	10.1	13.9	4.4	292	8.9
6 - 8	1514	133	4.5	1055	900	12.4	8.4	1667	18.4
8 - 10	686	570	6.1	721	23.7	12.3	0.5		20.6
10 - 12	655	8.5	6.9/6.1	11	15.9	10.7	6.8		14.1
12 - 14	75	69.2	4.9	10.3	22.4	8.9			12.9
14 - 16	18	20.6	2.9	10.4	16.9	8.4			9.3
16 - 18	16.8	7.2	1.8	12.4	7.9	8.3			10.1
18 - 20	8.5	13.4	1.2	14.1	5.2	7.1			8.7
20 - 22			1.5		6.1 (1)				
22 - 24					1.8 (2)				
Sample Interval Depth (ftbgl)	SWMU 10-19	SWMU 10-20	SWMU 10-21	SWMU 10-22	SWMU 10-23	SWMU 10-24	SWMU 10-25		
0 - 2	3.5	1.3	1.5	5.6	0	2.4	1.9		
2 - 4	1.5	0.7	17.0	2	0.2	2.5	1319		
4 - 6	2.4	1	16.7	4.1	0.2	1.1	187		
6 - 8	8.2	1436	7.2	6.9	2	3000	108		
8 - 10	12.6	1603	9.6	7.2	3.3	2021	201		
10 - 12	12.8	1715	5.3		3.7	307	367		
12 - 14	900	376	12.1		3.5	443	350		
14 - 16	291	77	Sat		2.5	123			
16 - 18	233	1022	Sat		1.4	80			
18 - 20	30.1	72	6.1						
20 - 22			2.7						
22 - 24									

(1) 20 - 21 feet

(2) 21 - 23 feet

ftbgl - feet below ground level

TABLE 4
Groundwater Field Measurements
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

WELL	DATE	DEPTH TO GROUNDWATER (ft) ²	TEMPERATURE °C	SPECIFIC CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN (mg/L)	pH	OXYGEN REDUCTION POTENTIAL
SWMU 10-1	04/29/15	7.12	14.4	12186	6.74	7.1	333.8
SWMU 10-3	04/29/15	11.05	13.7	NM ¹	7.9	7.15	358
SWMU 10-5	05/04/15	11.91	12.4	10462	5.88	7.01	434
SWMU 10-11	05/14/15	3.35	12.1	7288	7.21	6.95	251.6
SWMU 10-12	05/14/15	3.38	12.2	2950	3.48	7.23	288.1
SWMU 10-14	05/14/15	12.50	11.2	2994	8.27	7.14	358.9
SWMU 10-15	05/14/15	4.31	12.7	8119	8.85	6.86	352.3
SWMU 10-16	05/14/15	6.20	NM ³	NM ³	NM ³	NM ³	NM ³
SWMU 10-20	05/19/16	10.90	13	4985	7.58	7.46	148.6
SWMU 10-21	05/19/16	19.35	NM ³	NM ³	NM ³	NM ³	NM ³
SWMU 10-25	09/21/16	8.74	15.9	6665	5.32	7.04	127.2

(1) Recorded data was 78.6 and is considered to be an error.

(2) Depth to groundwater estimated from land surface

(3) Not Measured - very low yielding well, used all available water for sample collection

TABLE 5
Soil Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0- 2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil _Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_Endpoi nt	EPA Industrial Soil (0-2')	EPA IndSoil_keX	NMED DAF1 SoilGW	EPA GW_Risk- based SSL SoilGW	EPA GW_MCL- based SSL_SoilGW
Metals (mg/kg)													
Antimony	3.13E+01	n	3.10E+01	n	5.19E+02	n	1.42E+02	n	4.70E+02	n	3.28E-01	3.50E-01	2.70E-01
Arsenic	4.25E+00	c	6.80E-01	c*	2.15E+01	c	5.74E+01	n	3.00E+00	c	1.50E-02	1.50E-03	2.90E-01
Barium	1.56E+04	n	1.50E+04	n	2.55E+05	nl	4.35E+03	n	2.20E+05	nm	1.35E+02	1.60E+02	8.20E+01
Beryllium	1.56E+02	n	1.60E+02	n	2.58E+03	n	1.48E+02	n	2.30E+03	n	9.79E+00	1.90E+01	3.20E+00
Cadmium	7.05E+01	n	7.10E+01	n	1.11E+03	n	7.21E+01	n	9.80E+02	n	4.69E-01	6.90E-01	3.80E-01
Chromium	9.66E+01	c	-	-	5.05E+02	c	1.34E+02	n	-	-	1.01E+04	-	1.80E+05
Hexavalent Chromium	3.05E+00	c	3.00E-01	n	7.21E+01	n	6.69E+01	c	6.30E+00	nm	4.84E-03	6.70E-04	-
Cobalt	-	-	2.30E+01	n	-	-	-	-	3.50E+02	n	-	2.70E-01	-
Cyanide	1.12E+01	n	2.70E+00	n	6.33E+01	n	1.21E+01	n	1.20E+01	n	2.61E-04	1.50E-02	2.00E+00
Iron	-	-	5.50E+04	n	-	-	-	-	8.20E+05	n	-	3.50E+02	-
Lead	4.00E+02	IEUBK	4.00E+02	nL	8.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	nL	-	-	1.40E+01
Manganese	-	-	1.80E+03	n	-	-	-	-	2.60E+04	n	-	2.80E+01	-
Mercury	2.38E+01	ns	9.40E+00	ns	1.12E+02	ns	2.07E+01	ns	4.00E+01	ns	3.27E-02	3.30E-02	1.00E-01
Nickel	1.56E+03	n	8.40E+02	c	2.57E+04	n	6.19E+03	n	1.20E+04	c	2.42E+01	-	-
Selenium	3.91E+02	n	3.90E+02	n	6.49E+03	n	1.75E+03	n	5.80E+03	n	5.11E-01	5.20E-01	2.60E-01
Silver	3.91E+02	n	3.90E+02	n	6.49E+03	n	1.77E+03	n	5.80E+03	n	6.88E-01	8.00E-01	-
Vanadium	3.94E+02	n	3.90E+02	n	6.53E+03	n	6.14E+02	n	5.80E+03	n	6.31E+01	8.60E+01	-
Zinc	2.35E+04	n	2.30E+04	n	3.89E+05	nl	1.06E+05	n	3.50E+05	nm	3.71E+02	3.70E+02	-
Volatiles (mg/kg)													
1,1,1,2-Tetrachloroethane	2.81E+01	c	2.00E+00	c	1.37E+02	c	7.79E+02	cs	8.80E+00	cs	1.80E-03	2.20E-04	-
1,1,1-Trichloroethane	1.44E+04	ns	8.10E+03	ns	7.25E+04	ns	1.36E+04	ns	3.60E+04	ns	2.55E+00	2.80E+00	7.00E-02
1,1,2,2-Tetrachloroethane	7.98E+00	c	6.00E-01	c	3.94E+01	c	1.97E+02	c	2.70E+00	c	2.40E-04	2.80E-05	-
1,1,2-Trichloroethane	2.61E+00	n	1.10E+00	c	1.24E+01	c	2.30E+00	ns	5.00E+00	c	1.11E-04	8.90E-05	1.60E-03
1,1-Dichloroethane	7.86E+01	c	3.60E+00	c	3.83E+02	c	1.82E+03	cs	1.60E+01	c	6.79E-03	7.80E-04	-
1,1-Dichloroethene	4.40E+02	n	2.30E+02	n	2.26E+03	ns	4.24E+02	ns	1.00E+03	n	9.74E-02	1.00E-01	2.50E-03
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	6.30E+01	n	-	-	-	-	9.30E+02	n	-	2.10E-02	-
1,2,3-Trichloropropane	5.10E-02	c	5.10E-03	c	1.21E+00	c	6.31E+00	c	1.10E-01	c	2.60E-06	3.20E-07	-
1,2,4-Trichlorobenzene	8.29E+01	n	2.40E+01	n	4.23E+02	ns	7.91E+01	ns	1.10E+02	ns	8.82E-03	3.30E-03	2.00E-01
1,2,4-Trimethylbenzene	-	-	5.80E+01	n	-	-	-	-	2.40E+02	ns	-	2.10E-02	-
1,2-Dibromo-3-chloropropane	8.58E-02	c	5.30E-03	c	1.18E+00	c	5.53E+00	c	6.40E-02	c	1.17E-06	1.44E-07	8.60E-05
1,2-Dibromoethane (EDB)	6.72E-01	c	3.60E-02	c	3.31E+00	c	1.63E+01	c	1.60E-01	c	1.76E-05	2.10E-06	1.40E-05
1,2-Dichlorobenzene	2.15E+03	ns	1.80E+03	ns	1.30E+04	ns	2.50E+03	ns	9.30E+03	ns	2.29E-01	3.00E-01	5.80E-01
1,2-Dichloroethane (EDC)	8.32E+00	c	4.60E-01	c	4.07E+01	c	5.38E+01	n	2.00E+00	c	4.07E-04	4.80E-05	1.40E-03
1,2-Dichloropropane	1.78E+01	c	1.00E+00	c*	8.68E+01	c	2.54E+01	n	4.70E+00	c*	1.21E-03	1.50E-04	1.70E-03
1,3,5-Trimethylbenzene	-	-	7.80E+02	n	-	-	-	-	1.20E+04	n	-	1.70E-01	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 5
Soil Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0- 2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil _Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_Endpoi nt	EPA Industrial Soil (0-2')	EPA IndSoil_keX	NMED DAF1 SoilGW	EPA GW_Risk- based SSL SoilGW	EPA GW_MCL- based SSL_SoilGW
1,3-Dichloropropane	-	-	1.60E+03	n	-	-	-	-	2.30E+04	ns	-	1.30E-01	-
1,4-Dichlorobenzene	3.28E+01	c	2.60E+00	c	1.59E+02	c	7.46E+02	cs	1.10E+01	c	3.60E-03	4.60E-04	7.20E-02
1-Methylnaphthalene	-	-	1.80E+01	c	-	-	-	-	7.30E+01	c	-	5.80E-03	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	3.74E+04	n	2.70E+04	ns	4.11E+05	nls	9.17E+04	nls	1.90E+05	nms	1.00E+00	1.20E+00	-
2-Chlorotoluene	1.56E+03	ns	1.60E+03	ns	2.60E+04	ns	7.08E+03	ns	2.30E+04	ns	1.78E-01	2.30E-01	-
2-Hexanone	-	-	2.00E+02	-	-	-	-	-	1.30E+03	-	-	8.80E-03	-
2-Methylnaphthalene	-	-	2.40E+02	n	-	-	-	-	3.00E+03	ns	-	1.90E-01	-
4-Chlorotoluene	-	-	1.60E+03	ns	-	-	-	-	2.30E+04	ns	-	2.40E-01	-
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	5.81E+03	ns	-	-	8.16E+04	ns	2.02E+04	ns	-	-	2.40E-01	-	-
Acetone	6.63E+04	n	6.10E+04	n	9.60E+05	nls	2.42E+05	nls	6.70E+05	nms	2.49E+00	2.90E+00	-
Benzene	1.78E+01	c	1.20E+00	c*	8.72E+01	c	1.42E+02	n	5.10E+00	c*	1.90E-03	2.30E-04	2.60E-03
Bromobenzene	-	-	2.90E+02	n	-	-	-	-	1.80E+03	n	-	4.20E-02	-
Bromodichloromethane	6.19E+00	c	2.90E-01	c	3.02E+01	c	1.43E+02	c	1.30E+00	c	3.10E-04	3.60E-05	-
Bromoform	6.74E+02	c	1.90E+01	c*	3.25E+03	c	5.38E+03	n	8.60E+01	c*	2.05E-02	8.70E-04	-
Bromomethane	1.77E+01	n	6.80E+00	n	9.45E+01	n	1.79E+01	n	3.00E+01	n	1.71E-03	1.90E-03	-
Carbon disulfide	1.55E+03	ns	7.70E+02	ns	8.54E+03	ns	1.62E+03	ns	3.50E+03	ns	2.21E-01	2.40E-01	-
Carbon tetrachloride	1.07E+01	c	6.50E-01	c	5.25E+01	c	2.02E+02	ns	2.90E+00	c	1.66E-03	1.80E-04	1.90E-03
Chlorobenzene	3.78E+02	ns	2.80E+02	n	2.16E+03	ns	4.12E+02	ns	1.30E+03	ns	4.18E-02	5.30E-02	6.80E-02
Chloroethane	1.90E+04	ns	1.40E+04	ns	8.95E+04	nls	1.66E+04	nls	5.70E+04	ns	5.37E+00	5.90E+00	-
Chloroform	5.90E+00	c	3.20E-01	c	2.87E+01	c	1.34E+02	c	1.40E+00	c	5.46E-04	6.10E-05	-
Chloromethane	4.11E+01	n	1.10E+02	n	2.01E+02	cs	2.35E+02	n	4.60E+02	n	4.76E-03	4.90E-02	-
cis-1,2-DCE	1.56E+02	n	1.60E+02	n	2.60E+03	ns	7.08E+02	c	2.30E+03	ns	9.18E-03	1.10E-02	2.10E-02
cis-1,3-Dichloropropene	2.93E+01	c	1.80E+00	c*	1.46E+02	c	1.30E+02	ns	8.20E+00	c*	1.40E-03	1.70E-04	-
Dibromochloromethane	1.39E+01	c	7.50E-01	c	6.74E+01	c	3.40E+02	cs	3.30E+00	c	3.77E-04	4.50E-05	2.10E-02
Dibromomethane	-	-	2.30E+01	n	-	-	-	-	9.80E+01	ns	-	2.00E-03	-
Dichlorodifluoromethane	1.82E+02	n	8.70E+01	n	8.65E+02	ns	1.61E+02	ns	3.70E+02	n	3.61E-01	3.00E-01	-
Ethylbenzene	7.51E+01	c	5.80E+00	c	3.68E+02	cs	1.77E+03	cs	2.50E+01	c	1.31E-02	1.70E-03	7.80E-01
Hexachlorobutadiene	6.16E+01	n	1.20E+00	c**	3.29E+02	c	2.69E+02	n	5.30E+00	c*	4.39E-03	2.60E-04	-
Isopropylbenzene	2.36E+03	ns	1.90E+03	ns	1.42E+04	ns	2.74E+03	ns	9.90E+03	ns	5.69E-01	7.40E-01	-
Methyl tert-butyl ether (MTBE)	9.75E+02	c	4.70E+01	c	4.82E+03	c	2.42E+04	cs	2.10E+02	c	2.77E-02	3.20E-03	-
Methylene chloride	4.09E+02	n	5.70E+01	c	5.13E+03	c	1.21E+03	ns	1.00E+03	c	2.35E-02	2.91E-03	1.30E-03
Naphthalene	4.97E+01	c	3.80E+00	c*	2.41E+02	c	1.59E+02	n	1.70E+01	c*	4.11E-03	5.40E-04	-
n-Butylbenzene	-	-	3.90E+03	ns	-	-	-	-	5.80E+04	ns	-	3.20E+00	-
n-Propylbenzene	-	-	3.80E+03	ns	-	-	-	-	2.40E+04	ns	-	1.20E+00	-
sec-Butylbenzene	-	-	7.80E+03	ns	-	-	-	-	1.20E+05	nms	-	5.90E+00	-
Styrene	7.26E+03	ns	6.00E+03	ns	5.13E+04	ns	1.02E+04	ns	3.50E+04	ns	1.03E+00	1.30E+00	1.10E-01

TABLE 5
Soil Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0- 2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil _Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_Endpoi nt	EPA Industrial Soil (0-2')	EPA IndSoil_keX	NMED DAF1 SoilGW	EPA GW_Risk- based SSL SoilGW	EPA GW_MCL- based SSL_SoilGW
tert-Butylbenzene	-	-	7.80E+03	ns	-	-	-	-	1.20E+05	nms	-	1.60E+00	-
Tetrachloroethene (PCE)	1.11E+02	c	2.40E+01	c**	6.29E+02	c	1.20E+02	cs	1.00E+02	c**	1.60E-02	5.10E-03	2.30E-03
Toluene	5.23E+03	ns	4.90E+03	ns	6.13E+04	ns	1.40E+04	ns	4.70E+04	ns	6.07E-01	7.60E-01	6.90E-01
trans-1,2-DCE	2.95E+02	n	1.60E+03	n	1.61E+03	ns	3.05E+02	ns	2.30E+04	ns	2.35E-02	1.10E-01	3.10E-02
trans-1,3-Dichloropropene	2.93E+01	c	1.80E+00	c*	1.46E+02	c	1.30E+02	ns	8.20E+00	c*	1.40E-03	1.70E-04	-
Trichloroethene (TCE)	6.77E+00	n	9.40E-01	c**	3.65E+01	c	6.90E+00	cs	6.00E+00	c**	8.75E-04	1.80E-04	1.80E-03
Trichlorofluoromethane	1.23E+03	ns	7.30E+02	n	6.03E+03	ns	1.13E+03	ns	3.10E+03	ns	7.84E-01	7.30E-01	-
Vinyl chloride	7.42E-01	c	5.90E-02	c	2.84E+01	c	1.61E+02	c	1.70E+00	c	6.75E-05	6.50E-06	6.90E-04
Xylenes, Total	8.71E+02	ns	5.50E+02	ns	4.28E+03	ns	7.98E+02	ns	2.40E+03	ns	1.49E-01	1.90E-01	-
Semi-volatiles (mg/kg)													
1,2,4-Trichlorobenzene	8.29E+01	n	2.40E+01	c**	4.23E+02	ns	7.91E+01	ns	1.10E+02	c**	8.82E-03	3.30E-03	2.00E-01
1,2-Dichlorobenzene	2.15E+03	ns	1.80E+03	ns	1.30E+04	ns	2.50E+03	ns	9.30E+03	ns	2.29E-01	3.00E-01	5.80E-01
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	3.28E+01	c	2.60E+00	c	1.59E+02	c	7.46E+02	cs	1.10E+01	c	3.60E-03	4.60E-04	7.20E-02
1-Methylnaphthalene	-	-	1.80E+01	c	-	-	-	-	7.30E+01	c	-	5.80E-03	-
2,4,5-Trichlorophenol	6.16E+03	n	6.30E+03	n	9.16E+04	n	2.69E+04	n	8.20E+04	n	3.31E+00	4.40E+00	-
2,4,6-Trichlorophenol	6.16E+01	n	4.90E+01	c**	9.16E+02	n	2.69E+02	n	2.10E+02	c**	3.37E-02	1.50E-02	-
2,4-Dichlorophenol	1.85E+02	n	1.90E+02	n	2.75E+03	n	8.07E+02	n	2.50E+03	n	4.13E-02	5.40E-02	-
2,4-Dimethylphenol	1.23E+03	n	1.30E+03	n	1.83E+04	n	5.38E+03	n	1.60E+04	n	3.22E-01	4.20E-01	-
2,4-Dinitrophenol	1.23E+02	n	1.30E+02	n	1.83E+03	n	5.38E+02	n	1.60E+03	n	3.35E-02	4.40E-02	-
2,4-Dinitrotoluene	1.71E+01	c	1.70E+00	c*	8.23E+01	c	5.36E+02	n	7.40E+00	c	2.46E-03	3.20E-04	-
2,6-Dinitrotoluene	3.56E+00	n	3.60E-01	c*	1.72E+01	n	8.09E+01	n	1.50E+00	c	5.10E-04	6.70E-05	-
2-Chloronaphthalene	6.26E+03	ns	4.80E+03	n	1.04E+05	ns	2.83E+04	ns	6.00E+04	n	2.85E+00	3.80E+00	-
2-Chlorophenol	3.91E+02	n	3.90E+02	n	6.49E+03	n	1.77E+03	n	5.80E+03	n	5.76E-02	7.40E-02	-
2-Methylnaphthalene	-	-	2.40E+02	n	-	-	-	-	3.00E+03	n	-	1.90E-01	-
2-Methylphenol (cresol,o-)	-	-	3.20E+03	n	-	-	-	-	4.10E+04	n	-	7.50E-01	-
2-Nitroaniline	-	-	6.30E+02	n	-	-	-	-	8.00E+03	n	-	8.00E-02	-
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	1.18E+01	c	1.20E+00	c	5.70E+01	c	4.10E+02	c	5.10E+00	c	6.14E-03	8.10E-04	-
3+4-Methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Nitroaniline	-	-	-	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	4.93E+00	n	-	-	7.33E+01	n	2.15E+01	n	-	-	1.97E-03	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloroaniline	-	-	2.70E+00	c*	-	-	-	-	1.10E+01	c	-	1.60E-04	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Nitroaniline	-	-	2.70E+01	c**	-	-	-	-	1.10E+02	c*	-	1.60E-03	-
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 5
Soil Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0- 2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil _Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_Endpoi nt	EPA Industrial Soil (0-2')	EPA IndSoil_keX	NMED DAF1 SoilGW	EPA GW_Risk- based SSL_ SoilGW	EPA GW_MCL- based SSL_SoilGW
Acenaphthene	3.48E+03	n	3.60E+03	n	5.05E+04	n	1.51E+04	n	4.50E+04	n	4.12E+00	5.50E+00	-
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-
Aniline	-	-	9.50E+01	c**	-	-	-	-	4.00E+02	c*	-	4.60E-03	-
Anthracene	1.74E+04	n	1.80E+04	n	2.53E+05	nl	7.53E+04	n	2.30E+05	nm	4.25E+01	5.80E+01	-
Azobenzene	-	-	5.60E+00	c	-	-	-	-	2.60E+01	c	-	9.20E+04	-
Benz(a)anthracene	1.53E+00	c	1.60E-01	c	3.23E+01	c	2.40E+02	c	2.90E+00	c	9.11E-02	4.30E-03	-
Benzo(a)pyrene	1.53E-01	c	1.60E-02	c	3.23E+00	c	2.40E+01	c	2.90E-01	c	3.02E-02	4.00E-03	2.40E-01
Benzo(b)fluoranthene	1.53E+00	c	1.60E-01	c	3.23E+01	c	2.40E+02	c	2.90E+00	c	3.09E-01	4.10E-02	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	1.53E+01	c	1.60E+00	c	3.23E+02	c	2.31E+03	c	2.90E+01	c	3.02E+00	4.00E-01	-
Benzoic acid	-	-	2.50E+05	nm	-	-	-	-	3.30E+06	nm	-	1.80E+01	-
Benzyl alcohol	-	-	6.30E+03	n	-	-	-	-	8.20E+04	nm	-	4.80E-01	-
Bis(2-chloroethoxy)methane	-	-	1.90E+02	n	-	-	-	-	2.50E+03	n	-	1.30E-02	-
Bis(2-chloroethyl)ether	3.11E+00	c	2.30E-01	c	1.57E+01	c	1.95E+00	c	1.00E+00	c	3.03E-05	3.60E-06	-
Bis(2-chloroisopropyl)ether	9.93E+01	c	-	-	5.19E+02	cs	3.54E+03	cs	-	-	2.37E-03	-	-
Bis(2-ethylhexyl)phthalate	3.80E+02	cs	3.90E+01	c*	1.83E+03	cs	5.38E+03	n	1.60E+02	c	9.99E+00	1.30E+00	1.40E+00
Butyl benzyl phthalate	-	-	2.90E+02	c*	-	-	-	-	1.20E+03	c	-	2.30E-01	-
Carbazole	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	1.53E+02	c	1.60E+01	c	3.23E+03	c	2.31E+04	c	2.90E+02	c	9.30E+00	1.20E+00	-
Dibenz(a,h)anthracene	1.53E-01	c	1.60E-02	c	3.23E+00	c	2.40E+01	c	2.90E-01	c	3.05E-01	1.30E-02	-
Dibenzofuran	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethyl phthalate	4.93E+04	n	5.10E+04	n	7.33E+05	nl	2.15E+05	nl	6.60E+05	nm	4.89E+00	6.10E+00	-
Dimethyl phthalate	6.11E+05	nl	-	-	6.84E+06	nl	2.38E+06	nl	-	-	8.06E+01	-	-
Di-n-butyl phthalate	6.16E+03	n	-	-	9.16E+04	n	2.69E+04	n	-	-	1.69E+00	-	-
Di-n-octyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	2.32E+03	n	2.40E+03	n	3.37E+04	n	1.00E+04	n	3.00E+04	n	6.69E+01	8.90E+01	-
Fluorene	2.32E+03	n	2.40E+03	n	3.37E+04	ns	1.00E+04	ns	3.00E+04	n	4.00E+00	5.40E+00	-
Hexachlorobenzene	3.33E+00	c	2.10E-01	c	1.60E+01	c	1.17E+02	c	9.60E-01	c	4.61E-03	1.20E-04	1.30E-02
Hexachlorobutadiene	6.16E+01	n	1.20E+00	c*	3.29E+02	c	2.69E+02	n	5.30E+00	c	4.39E-03	2.60E-04	-
Hexachlorocyclopentadiene	3.70E+02	n	1.80E+00	n	5.49E+03	n	8.67E+02	n	7.50E+00	n	6.68E-02	1.30E-03	1.60E-01
Hexachloroethane	4.31E+01	n	1.80E+00	c*	6.41E+02	n	1.88E+02	n	8.00E+00	c*	3.31E-03	2.00E-04	-
Indeno(1,2,3-cd)pyrene	1.53E+00	c	1.60E-01	c	3.23E+01	c	2.40E+02	c	2.90E+00	c	1.00E+00	1.30E-01	-
Isophorone	5.61E+03	c	5.70E+02	c*	2.70E+04	cs	5.37E+04	n	2.40E+03	c*	2.11E-01	2.60E-02	-
Naphthalene	4.97E+01	c	3.80E+00	c*	2.41E+02	c	1.59E+02	n	1.70E+01	c*	4.11E-03	5.40E-04	-
Nitrobenzene	6.04E+01	c	5.10E+00	c*	2.93E+02	c	3.53E+02	n	2.20E+01	c*	7.20E-04	9.20E-05	-
N-Nitrosodi-n-propylamine	-	-	7.80E-02	c	-	-	-	-	3.30E-01	c	-	8.10E-06	-
N-Nitrosodiphenylamine	7.94E-03	c	1.10E+02	c	1.71E-01	c	1.25E+00	c	4.70E+02	c	4.92E-07	6.60E-02	-
Pentachlorophenol	9.85E+00	c	1.00E+00	c	4.45E+01	c	3.46E+02	c	4.00E+00	c	3.04E-03	4.00E-04	1.00E-02

TABLE 5
Soil Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0- 2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil _Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_Endpoi nt	EPA Industrial Soil (0-2')	EPA IndSoil_keX	NMED DAF1 SoilGW	EPA GW_Risk- based SSL_ SoilGW	EPA GW_MCL- based SSL_SoilGW
Phenanthrene	1.74E+03	ns	-	-	2.53E+04	n	7.53E+03	n	-	-	4.30E+00	-	-
Phenol	1.83E+04	n	1.90E+04	n	2.75E+05	nl	7.74E+04	n	2.50E+05	nm	2.62E+00	3.30E+00	-
Pyrene	1.74E+03	n	1.80E+03	n	2.53E+04	n	7.53E+03	n	2.30E+04	n	9.59E+00	1.30E+01	-
Pyridine	-	-	7.80E+01	n	-	-	-	-	1.20E+03	n	-	6.80E-03	-
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)	-	-	-	-	-	-	-	-	-	-	-	-	-
Diesel Range Organics (DRO)	1.00E+03	-	-	-	3.80E+03	-	-	-	-	-	-	-	-
Motor Oil Range Organics (MRO)	1.00E+03	-	-	-	3.80E+03	-	-	-	-	-	-	-	-

- No screening level or analytical result available
 NMED - New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
 EPA - Environmental Protection Agency Regional Screening Levels (Nov 2015)
 NMED TPH Soil Screening Levels "unknown oil"
 c - carcinogen
 cs - carcinogenic, SSL may exceed saturation
 c* - where: n SL < 100X c SL
 c** - where n SL < 10X c SL
 n - noncarcinogenic
 ns - noncarcinogenic, SSL may exceed saturation
 nl - noncarcinogenic, SSL may exceed ceiling limit
 nm - concentration may exceed ceiling limit

TABLE 6
Groundwater Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL
Metals (ug/l) TOTAL						
Antimony	-	7.26	n	7.80	n	6.00
Arsenic	100	0.51	c	0.05	c	10
Barium	-	3277	n	3800	n	2000
Beryllium	-	12.39	n	25	n	4
Cadmium	-	6.24	n	9.20	n	5
Chromium	50	5.59	c	22000	n	100
Hexavalent Chromium	-	0.25	c	0.04	c	
Cobalt	-	-	-	6	n	-
Cyanide	200	1.46	n	1.50	n	200
Iron		13822	n	14000	n	-
Lead	50	-	-	15	L	15
Manganese		2017.40	n	430	n	-
Mercury	2	0.63	n	0.63	n	2
Nickel	-	371.96	n	200	n	-
Selenium	50	98.73	n	100	n	50
Silver	50	81.19	n	94	n	-
Vanadium	-	63.07	n	86	n	-
Zinc	10000	5960.45	n	6000	n	-
Chloride	250000	-	-	-	-	-
Fluoride	1600	1184.73	n	800	n	-
Sulfate	600000	-	-	-	-	-
Metals (ug/l) DISSOLVED						
Antimony (D)	-	7.26	n	7.80	n	6
Arsenic (D)	100	0.51	c	0.05	c	10
Barium (D)	1000	3277.35	n	3800	n	2000
Beryllium (D)	-	12.39	n	25	n	4
Cadmium (D)	10	6.24	n	9.20	n	5
Chromium (D)	50	5.59	c	22000	n	100
Cobalt (D)	50	-	-	6	n	-
Iron (D)	1000	13821.88	n	14000	n	-
Lead (D)	50	-	-	15	L	15
Manganese (D)	200	2017.40	n	430	n	-
Nickel (D)	-	371.96	n	200	n	-
Selenium (D)	50	98.73	n	100	n	50
Silver (D)	50	81.19	n	94	n	-
Vanadium (D)	-	63.07	n	86	n	-
Zinc (D)	10000	5960.45	n	6000	n	-
Volatiles (ug/l)						

TABLE 6
Groundwater Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL
1,1,1,2-Tetrachloroethane	-	5.72	c	0.57	c	-
1,1,1-Trichloroethane	60	8002.78	n	8000	n	200
1,1,2,2-Tetrachloroethane	10	0.76	c	0.08	c	-
1,1,2-Trichloroethane	10	0.41	c	0.28	c**	5
1,1-Dichloroethane	25	24.18	c	2.80	c	-
1,1-Dichloroethene	5	339.53	n	280	n	7
1,1-Dichloropropene	-	-	-	0.47	c*	-
1,2,3-Trichlorobenzene	-	-	-	7	n	-
1,2,3-Trichloropropane	-	0.01	c	0.0008	c	-
1,2,4-Trichlorobenzene (V)	-	4.12	n	1.20	c**	70
1,2,4-Trimethylbenzene	-	-	-	15	n	-
1,2-Dibromo-3-chloropropane	-	0.0032	c	0.0003	c	0.20
1,2-Dibromoethane (EDB)	0.1	0.07	c	0.01	c	0.05
1,2-Dichlorobenzene (V)	-	370.14	n	300	n	600
1,2-Dichloroethane (EDC)	10	1.49	c	0.17	c*	5
1,2-Dichloropropane	-	3.86	c	0.44	c*	5
1,3,5-Trimethylbenzene	-	-	-	12	n	-
1,3-Dichlorobenzene (V)	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	370	n	-
1,4-Dichlorobenzene (V)	-	4.27	c	0.48	c	75
1-Methylnaphthalene (V)	-	-	-	1.10	c	-
2,2-Dichloropropane	-	-	-	-	-	-
2-Butanone	-	5564.70	n	5600	n	-
2-Chlorotoluene	-	-	-	240	n	-
2-Hexanone	-	-	-	-	-	-
2-Methylnaphthalene (V)	-	-	-	36	n	-
4-Chlorotoluene	-	-	-	250	n	-
4-Isopropyltoluene	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-
Acetone	-	14063.57	n	14000	n	-
Benzene	10	4.13	c	0.46	c*	5
Bromobenzene	-	-	-	62	n	-
Bromodichloromethane	-	1.34	c	0.13	c	-
Bromoform	-	-	-	3.30	c*	-
Bromomethane	-	7.54	n	7.50	n	-
Carbon disulfide	-	809.54	n	810	n	-
Carbon Tetrachloride	10	4.40	c	0.46	c	5
Chlorobenzene	-	91.25	n	78.00	n	100
Chloroethane	-	20857.14	-	-	-	-

TABLE 6
Groundwater Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL
Chloroform	100	1.93	c	0.22	c	-
Chloromethane	-	20.31	c	190.00	n	-
cis-1,2-DCE	-	73	n	36	n	70
cis-1,3-Dichloropropene	-	4.70	c	-	-	-
Dibromochloromethane	-	1.68	c	0.87	c	-
Dibromomethane	-	-	-	8.30	n	-
Dichlorodifluoromethane	-	197.20	n	200	n	-
Ethylbenzene	750	14.76	c	1.50	c	700
Hexachlorobutadiene (V)	-	2.95	c	0.14	c*	-
Isopropylbenzene	-	446.85	n	450	n	-
Methyl tert-butyl ether (MTBE)	-	142.99	c	14	c	-
Methylene Chloride	100	186.38	c	11	c**	5
Naphthalene (V)	-	1.65	c	0.17	c*	-
n-Butylbenzene	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-
Styrene	-	1622.22	n	1200	n	100
tert-Butylbenzene	-	-	-	-	-	-
Tetrachloroethene (PCE)	20	1.08	c	11	c**	5
Toluene	750	2281.25	n	1100	n	1000
trans-1,2-DCE	-	106.83	n	360	n	100
trans-1,3-Dichloropropene	-	4.70	c	0.47	c*	-
Trichloroethene (TCE)	100	3.40	n	0.49	c**	5
Trichlorofluoromethane	-	1136.82	n	5200	n	-
Vinyl chloride	1	0.16	c	0.02	c	2
Xylenes, Total	620	202.78	n	190	n	10000
<i>Semivolatiles (ug/l)</i>						
1,2,4-Trichlorobenzene	-	4.12	n	45	n	70
1,2-Dichlorobenzene	-	370.14	n	300	n	600
1,3-Dichlorobenzene	-	-	-	-	-	-
1,4-Dichlorobenzene	-	4.27	c	0.48	c	75
1-Methylnaphthalene	-	-	-	1.10	c	-
2,4,5-Trichlorophenol	-	1165.98	n	1200	n	-
2,4,6-Trichlorophenol	-	11.88	n	4.10	c**	-
2,4-Dichlorophenol	-	45.30	n	46	n	-
2,4-Dimethylphenol	-	353.88	n	360	n	-
2,4-Dinitrophenol	-	38.79	n	39	n	-
2,4-Dinitrotoluene	-	2.37	c	0.24	c	-
2,6-Dinitrotoluene	-	0.48	n	0.05	c	-

TABLE 6
Groundwater Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL
2-Chloronaphthalene	-	732.56	n	750	n	-
2-Chlorophenol	-	91	n	91	n	-
2-Methylnaphthalene	-	-	-	36	n	-
2-Methylphenol	-	-	-	930	n	-
2-Nitroaniline	-	-	-	190	n	-
2-Nitrophenol	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	1.24	c	0.13	c	-
3+4-Methylphenol	-	-	-	930	n	-
3-Nitroaniline	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	1.51	n	-	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-
4-Chloroaniline	-	-	-	0.37	c	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-
4-Nitroaniline	-	-	-	3.80	c*	-
4-Nitrophenol	-	-	-	-	-	-
Acenaphthene	-	534.60	n	530	n	-
Acenaphthylene	-	-	-	-	-	-
Aniline	-	-	-	13	c*	-
Anthracene	-	1721.28	n		n	-
Azobenzene	-	-	-	0.12	c	-
Benz(a)anthracene	-	0.34	c	0.01	c	-
Benzo(a)pyrene	0.7	0.03	c	0.00	c	0.20
Benzo(b)fluoranthene	-	0.34	c	0.03	c	-
Benzo(g,h,i)perylene	-	-	-	-	-	-
Benzo(k)fluoranthene	-	3.43	c	0.34	c	-
Benzoic acid	-	-	-	75000	n	-
Benzyl alcohol	-	-	-	2000	n	-
Bis(2-chloroethoxy)methane	-	-	-	59	n	-
Bis(2-chloroethyl)ether	-	9.76	c	0.01	c	-
Bis(2-chloroisopropyl)ether	-	9.76	c	-	-	-
Bis(2-ethylhexyl)phthalate	-	48	c	5.60	c*	6
Butyl benzyl phthalate	-	-	-	16	c	-
Carbazole	-	-	-	-	-	-
Chrysene	-	34.32	c	3.40	c	-
Dibenz(a,h)anthracene	-	0.11	c	0.0034	c	-
Dibenzofuran	-	-	-	-	-	-
Diethyl phthalate	-	14800.52	n	15000	n	-
Dimethyl phthalate	-	-	-	-	-	-

TABLE 6
Groundwater Screening Levels
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL
Di-n-butyl phthalate	-	884.80	n	-	-	-
Di-n-octyl phthalate	-	-	-	-	-	-
Fluoranthene	-	802.20	n	800	n	-
Fluorene	-	287.64	n	290	n	-
Hexachlorobenzene	-	0.42	c		c	1
Hexachlorobutadiene	-	2.95	c		c*	-
Hexachlorocyclopentadiene	-	219	n		n	50
Hexachloroethane	-	6.80	c		c**	-
Indeno(1,2,3-cd)pyrene	-	0.34	c		c	-
Isophorone	-	779.04	c		c	-
Naphthalene	-	1.65	c		c*	-
Nitrobenzene	-	1.40	n		c	-
N-Nitrosodimethylamine	-	0.0017	c		c	-
N-Nitrosodi-n-propylamine	-	-	-	0.01	c	-
N-Nitrosodiphenylamine	-	0.0049	c		c	-
Phenanthrene	-	170.41	n	-	-	-
Pentachlorophenol	-	1.68	c		c	1
Phenol	-	5761.05	n		n	-
Pyrene	-	117.42	n		n	-
Pyridine	-	-	-	20	n	-
TPH (mg/l)						
Gasoline Range Organics (GRO)	-	-	-	-	-	-
Diesel Range Organics (DRO)	-	-	-	-	-	-
Motor Oil Range Organics (MRO)	-	-	-	-	-	-

- No screening level available

Bolded value represents applicable screening level for comparison to site concentrations

EPA - Regional Screening Levels (Nov. 2015) -Tap Water

EPA - Regional Screening Levels (Nov. 2015) - MCL

NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

Metals (mg/kg)	Residual Soil Screening Level	Source	Non-Residual Soil Screening Level	Source	Leachate D50 (296) (mg/kg SoGW)	Source	SWMU ID: 10-12-41										SWMU ID: 10-12-42										SWMU ID: 10-12-43										SWMU ID: 10-12-44										SWMU ID: 10-12-45										SWMU ID: 10-12-46										SWMU ID: 10-12-47										SWMU ID: 10-12-48										SWMU ID: 10-12-49										SWMU ID: 10-12-50										SWMU ID: 10-12-51										SWMU ID: 10-12-52										SWMU ID: 10-12-53										SWMU ID: 10-12-54										SWMU ID: 10-12-55										SWMU ID: 10-12-56										SWMU ID: 10-12-57										SWMU ID: 10-12-58										SWMU ID: 10-12-59										SWMU ID: 10-12-60										SWMU ID: 10-12-61										SWMU ID: 10-12-62										SWMU ID: 10-12-63										SWMU ID: 10-12-64										SWMU ID: 10-12-65										SWMU ID: 10-12-66										SWMU ID: 10-12-67										SWMU ID: 10-12-68										SWMU ID: 10-12-69										SWMU ID: 10-12-70										SWMU ID: 10-12-71										SWMU ID: 10-12-72										SWMU ID: 10-12-73										SWMU ID: 10-12-74										SWMU ID: 10-12-75										SWMU ID: 10-12-76										SWMU ID: 10-12-77										SWMU ID: 10-12-78										SWMU ID: 10-12-79										SWMU ID: 10-12-80										SWMU ID: 10-12-81										SWMU ID: 10-12-82										SWMU ID: 10-12-83										SWMU ID: 10-12-84										SWMU ID: 10-12-85										SWMU ID: 10-12-86										SWMU ID: 10-12-87										SWMU ID: 10-12-88										SWMU ID: 10-12-89										SWMU ID: 10-12-90										SWMU ID: 10-12-91										SWMU ID: 10-12-92										SWMU ID: 10-12-93										SWMU ID: 10-12-94										SWMU ID: 10-12-95										SWMU ID: 10-12-96										SWMU ID: 10-12-97										SWMU ID: 10-12-98										SWMU ID: 10-12-99										SWMU ID: 10-12-100										SWMU ID: 10-12-101										SWMU ID: 10-12-102										SWMU ID: 10-12-103										SWMU ID: 10-12-104										SWMU ID: 10-12-105										SWMU ID: 10-12-106										SWMU ID: 10-12-107										SWMU ID: 10-12-108										SWMU ID: 10-12-109										SWMU ID: 10-12-110										SWMU ID: 10-12-111										SWMU ID: 10-12-112										SWMU ID: 10-12-113										SWMU ID: 10-12-114										SWMU ID: 10-12-115										SWMU ID: 10-12-116										SWMU ID: 10-12-117										SWMU ID: 10-12-118										SWMU ID: 10-12-119										SWMU ID: 10-12-120										SWMU ID: 10-12-121										SWMU ID: 10-12-122										SWMU ID: 10-12-123										SWMU ID: 10-12-124										SWMU ID: 10-12-125										SWMU ID: 10-12-126										SWMU ID: 10-12-127										SWMU ID: 10-12-128										SWMU ID: 10-12-129										SWMU ID: 10-12-130										SWMU ID: 10-12-131										SWMU ID: 10-12-132										SWMU ID: 10-12-133										SWMU ID: 10-12-134										SWMU ID: 10-12-135										SWMU ID: 10-12-136										SWMU ID: 10-12-137										SWMU ID: 10-12-138										SWMU ID: 10-12-139										SWMU ID: 10-12-140										SWMU ID: 10-12-141										SWMU ID: 10-12-142										SWMU ID: 10-12-143										SWMU ID: 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10-12-494										SWMU ID: 10-12-495										SWMU ID: 10-12-496										SWMU ID: 10-12-497										SWMU ID: 10-12-498										SWMU ID: 10-12-499										SWMU ID: 10-12-500										SWMU ID: 10-12-501										SWMU ID: 10-12-502										SWMU ID: 10-12-503										SWMU ID: 10-12-504										SWMU ID: 10-12-505										SWMU ID: 10-12-506										SWMU ID: 10-12-507										SWMU ID: 10-12-508										SWMU ID: 10-12-509										SWMU ID: 10-12-510										SWMU ID: 10-12-511										SWMU ID: 10-12-512										SWMU ID: 10-12-513										SWMU ID: 10-12-514										SWMU ID: 10-12-515										SWMU ID: 10-12-516										SWMU ID: 10-12-517										SWMU ID: 10-12-518										SWMU ID: 10-12-519										SWMU ID: 10-12-520										SWMU ID: 10-12-521										SWMU ID: 10-12-522										SWMU ID: 10-12-523										SWMU ID: 10-12-524										SWMU ID: 10-12-525										SWMU ID: 10-12-526										SWMU ID: 10-12-527										SWMU ID: 10-12-528										SWMU ID: 10-12-529										SWMU ID: 10-12-530										SWMU ID: 10-12-531										SWMU ID: 10-12-532										SWMU ID: 10-12-533										SWMU ID: 10-12-534										SWMU ID: 10-12-535										SWMU ID: 10-12-536										SWMU ID: 10-12-537										SWMU ID: 10-12-538										SWMU ID: 10-12-539										SWMU ID: 10-12-540										SWMU ID: 10-12-541										SWMU ID: 10-12-542										SWMU ID: 10-12-543										SWMU ID: 10-12-544										SWMU ID: 10-12-545										SWMU ID: 10-12-546										SWMU ID: 10-12-547										SWMU ID: 10-12-548										SWMU ID: 10-12-549										SWMU ID: 10-12-550										SWMU ID: 10-12-551										SWMU ID: 10-12-552										SWMU ID: 10-12-553										SWMU ID: 10-12-554										SWMU ID:									

Table 7
SWMU 10 Soil Analysis Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate D9 (206) (mg/kg) Soil/GW	Source	SWMU 10-1 (2-4')	SWMU 10-1 (1-6-8')	SWMU 10-1 (1-8-20')	SWMU 10-2 (2-4')	SWMU 10-2 (1-6-8')	SWMU 10-2 (1-8-20')	SWMU 10-3 (1-6-8')	SWMU 10-3 (1-8-20')	SWMU 10-4 (2-4')	SWMU 10-4 (1-6-8')	SWMU 10-4 (1-8-20')	SWMU 10-5 (2-4')	SWMU 10-5 (1-6-8')	SWMU 10-5 (1-8-20')	SWMU 10-6 (2-4')	SWMU 10-6 (1-6-8')	SWMU 10-6 (1-8-20')	SWMU 10-7 (2-4')	SWMU 10-7 (1-6-8')	SWMU 10-7 (1-8-20')
							1504C87-001	1504C87-002	1504C87-003	1505213-003*	1505213-004	1504C87-004	1504C87-005	1505004-001	1505004-002	1505004-003	1505004-004	1505004-005	1505003-001	1505003-002	1505003-003	1505003-004	1505003-005	1505213-001	1505213-002	1505009-001
							4/28/2015	4/28/2015	4/28/2015	5/4/2015	5/4/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	4/28/2015	5/4/2015	5/4/2015	5/4/2015
Ethylbenzene	7.51E+01	(1)	3.88E+02	(4)	3.87E+00	(8)	< 0.0032 u	0.0318 u	0.00192 J	0.000618 J	0.000468 J	0.00031 J	0.0008 J	0.00031 u	0.0007 J	0.00041 J	0.00042 J	0.00291 u	0.016 J	0.03 J	14 u	0.026 u	0.00258 u	0.00077 J	0.0035 u	0.0005 J
Heuchlorobutadiene	6.16E+01	(1)	2.89E+02	(5)	1.39E+00	(8)	< 0.00479 u	< 0.00034 u	< 0.0004 u	< 0.0004 u	< 0.00034 u	< 0.0003 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	< 0.00034 u	
Isopropylbenzene	2.96E+03	(1)	2.74E+03	(5)	1.68E+02	(8)	< 0.0029 u	< 0.0004 u	< 0.0005 u	< 0.0005 u	< 0.0004 u	< 0.0003 u	< 0.0004 u	< 0.0005 u	< 0.0004 u	< 0.0028 u	< 0.0004 u	0.000482 J	0.0026 u	0.0046 J	2.6 u	< 0.013 J	< 0.0004 u	< 0.0005 u	< 0.0006 u	< 0.0004 u
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	8.16E+00	(8)	< 0.0049 u	0.00669 u	< 0.0008 u	< 0.0008 u	0.00283 u	< 0.0006 u	< 0.0007 u	< 0.0009 u	< 0.0008 u	< 0.0046 u	0.00139 J	< 0.0008 u	< 0.0004 u	< 0.00057 u	< 0.0123 u	< 0.01 u	< 0.0008 u	< 0.0009 u	< 0.001 u	0.0014 J
Naphthalene	4.98E+02	(1)	1.21E+03	(5)	6.94E+00	(8)	< 0.0138 u	0.00062 J	0.000566 J	0.000748 J	0.000566 J	0.00077 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	0.00061 J	
Neutrene	4.97E+01	(1)	1.59E+02	(5)	1.21E+00	(8)	< 0.00913 u	0.00088 u	< 0.00044 u	< 0.00055 u	< 0.00054 u	< 0.00055 u	< 0.0007 u	< 0.00062 u	0.000778 u	< 0.0005 u	0.000742 J	0.12 u	0.16 u	26 u	0.11 u	0.00079 J	0.00061 J	0.00103 J	0.00063 u	
n-Butylbenzene	3.95E+03	(2)	5.85E+04	(8)	3.44E+02	(8)	< 0.0031 u	< 0.0007 u	< 0.0008 u	< 0.0008 u	< 0.0007 u	< 0.0007 u	< 0.0009 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	< 0.0008 u	
n-Propylbenzene	3.95E+03	(2)	2.40E+04	(8)	3.44E+02	(8)	< 0.0026 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
sec-Butylbenzene	7.80E+03	(2)	1.20E+05	(8)	1.74E+02	(8)	< 0.0049 u	0.00059 J	0.000715 J	0.000658 J	< 0.0004 u	< 0.0004 u	0.00056 J	0.00078 J	0.00065 J	< 0.00047 u	0.000667 J	0.000714 J	< 0.0004 u	< 0.00057 u	1.2 u	< 0.00101 u	0.00077 J	0.0007 J	0.000925 J	< 0.0005 u
Styrene	7.26E+02	(1)	1.02E+04	(5)	3.94E+02	(8)	< 0.0063 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
tert-Butylbenzene	7.80E+03	(2)	1.20E+05	(8)	4.75E+02	(8)	< 0.004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
Trichloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	4.75E+00	(8)	< 0.003 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
Toluene	5.22E+03	(1)	1.40E+04	(5)	1.79E+02	(8)	< 0.0041 u	0.00253 J	0.00886 J	0.00191 J	0.00155 J	0.00116 J	0.00031 J	0.01 u	0.00263 u	< 0.0039 u	0.00162 u	0.0127 u	0.01 J	0.024 J	7.1 u	0.013 J	0.0112 J	0.00275 u	0.0146 u	0.00181 J
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	6.99E+00	(8)	< 0.0022 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
trans-1,3-Dichloropropene	2.95E+02	(1)	1.20E+02	(5)	4.15E+01	(8)	< 0.0062 u	< 0.0002 u	< 0.0003 u	< 0.0003 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	2.58E+01	(8)	< 0.0034 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	
Trichlorofluoromethane	1.23E+02	(1)	1.13E+03	(5)	2.31E+02	(8)	< 0.0104 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0003 u	< 0.0003 u	< 0.0003 u	< 0.0004 u	< 0.0004 u	< 0.0009 u	< 0.0003 u	< 0.0004 u	< 0.0009 u	< 0.0121 u	< 0.0231 u	< 0.0004 u	< 0.0005 u	< 0.0005 u	< 0.0004 u	
vinyl chloride	7.42E+01	(1)	2.85E+02	(5)	1.99E+02	(8)	< 0.0138 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	< 0.0002 u	
Xylenes, Total	6.71E+02	(1)	7.98E+02	(5)	4.39E+01	(8)	< 0.0096 u	0.197 u	0.00647 J	0.00206 u	0.00141 J	0.00108 J	0.00181 J	0.00077 J	0.00182 J	0.00091 J	0.00118 J	0.000975 u	0.14 u	0.15 u	54 u	0.11 J	0.00849 J	0.0022 u	0.0116 u	0.00146 J
Semi-volatiles (mg/kg)																										
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	2.60E+00	(8)	< 0.1209 u	< 0.1289 u	< 0.1198 u	< 0.1209 u	< 0.1175 u	< 0.2426 u	< 0.1259 u	< 0.1232 u	< 0.1146 u	< 0.1201 u	< 0.1177 u	< 0.1164 u	< 1.219 u	< 0.7198 u	< 0.2944 u	< 0.2032 u	< 0.1151 u	< 0.1126 u	< 0.1209 u	< 0.2417 u
1,2-Dichlorobenzene	2.18E+02	(1)	2.50E+02	(5)	8.70E+01	(8)	< 0.1175 u	< 0.1204 u	< 0.1119 u	< 0.1113 u	< 0.1098 u	< 0.2266 u	< 0.1176 u	< 0.1151 u	< 0.1071 u	< 0.1121 u	< 0.11 u	< 0.1088 u	< 1.1511 u	< 0.7091 u	< 0.191 u	< 0.1898 u	< 0.1072 u	< 0.1129 u	< 0.2259 u	
1,3-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	1.06E+00	(8)	< 0.1286 u	< 0.1317 u	< 0.1224 u	< 0.1236 u	< 0.1201 u	< 0.2478 u	< 0.1287 u	< 0.1258 u	< 0.1171 u	< 0.1227 u	< 0.1203 u	< 0.119 u	< 1.2587 u	< 0.7754 u	< 0.2089 u	< 0.2076 u	< 0.1176 u	< 0.1151 u	< 0.1245 u	< 0.247 u
1-Methylnaphthalene	1.96E+02	(1)	7.20E+02	(5)	1.71E+00	(8)	< 0.114 u	< 0.1167 u	< 0.1085 u	< 0.1095 u	< 0.1064 u	< 0.2196 u	< 0.114 u	< 0.1115 u	< 0.1058 u	36 u	< 0.1066 u	< 0.1054 u	< 1.1155 u	< 0.6871 u	16 u	< 0.184 u	< 0.1042 u	< 0.1094 u	< 0.2189 u	
2,4,5-Trichlorophenol	6.16E+01	(1)	2.89E+02	(5)	9.76E+00	(8)	< 0.1453 u	< 0.1467 u	< 0.1364 u	< 0.1377 u	< 0.1338 u	< 0.2761 u	< 0.143 u	< 0.1402 u	< 0.1384 u	< 0.1367 u	< 0.134 u	< 0.1335 u	< 1.4024 u	< 0.8839 u	< 0.2327 u	< 0.2313 u	< 0.131 u	< 0.1281 u	< 0.1376 u	< 0.2752 u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.89E+02	(5)	9.99E+00	(8)	< 0.1422 u	< 0.1456 u	< 0.1353 u	< 0.1366 u	< 0.1324 u	< 0.2739 u	< 0.1422 u	< 0.1391 u	< 0.1284 u	< 0.1356 u	< 0.1325 u	< 0.1315 u	< 1.3913 u	< 0.857 u	< 0.2409 u	< 0.2295 u	< 0.13 u	< 0.1272 u	< 0.1365 u	< 0.273 u
2,4-Dichlorophenol	1.86E+02	(1)	8.07E+02	(5)	1.22E+01	(8)	< 0.123 u	< 0.1259 u	< 0.117 u	< 0.1181 u	< 0.1148 u	< 0.237 u	< 0.123 u	< 0.1203 u	< 0.1119 u	< 0.1179 u	< 0.115 u	< 0.1137 u	< 1.2094 u	< 0.7413 u	< 0.1997 u	< 0.1985 u	< 0.1124 u	< 0.111 u	< 0.1181 u	< 0.2681 u
2,4-Dimethylphenol	1.25E+02	(1)	5.26E+02	(5)	9.51E+01	(8)	< 0.0967 u	< 0.098 u	< 0.092 u	< 0.0929 u	< 0.0903 u	< 0.1883 u	< 0.0967 u	< 0.0946 u	< 0.088 u	< 0.0922 u	< 0.0904 u	< 0.0894 u	< 0.9459 u	< 0.5207 u	< 0.157 u	< 0.156 u	< 0.0884 u	< 0.0865 u	< 0.0928 u	< 0.1856 u
2,4-Dinitrophenol	1.25E+02	(1)	5.26E+02	(5)	9.88E+00	(8)	< 0.0511 u	< 0.0523 u	< 0.0486 u	< 0.0491 u	< 0.0477 u	< 0.0985 u	< 0.0511 u	< 0.05 u	< 0.0465 u	< 0.0487 u	< 0.0478 u	< 0.0473 u	< 0.5 u	< 0.308 u	< 0.083 u	< 0.0825 u	< 0.0467 u	< 0.0457 u	< 0.0491 u	< 0.0981 u
2,4-Dinitrotoluene	1.71E+01	(1)	8.25E+01	(4)	7.25E+01	(8)	< 0.11 u	< 0.1126 u	< 0.1047 u																	

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

[illegible]

- No screening level of analytical result available
- NMED - Risk Assessment Guidance for Site Investigations and Remediation (July 2015)
- EPA - Regional Screening Levels (Nov 2015)
 - 1) NMED Residential Screening Level
 - 2) EPA Residential Screening Level
 - 3) EPA Residential - Screening Levels (June 2015) updated to 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 - 4) NMED Industrial Occupational Screening Level
 - 5) NMED Construction Worker Screening Level
 - 6) EPA Industrial - Screening Levels (June 2015)
 - 7) EPA Industrial - Screening Levels (June 2015) updated to 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 - 8) Soil/GW NMED Alternative Dation Factor (DAF) = 20
 - 9) Soil/GW Risk based EPA DAF = 20
 - 10) Soil/GW MCL-based EPA DAF = 20
 - 11) NMED Table 6-2 FPH Soil Screening Levels "known out" with DAF = 1.0 - see Section 5 for use of screening levels

Bold represents value above Non-Residential Screening Level

Italicized highlight represents value above Leachate (DAF) Screening Level

Underlined with yellow highlight value exceeds Non-Residential Screening Level and DAF

* sample analyzed for hexavalent chromium, see amended lab report #1050223

* sample reanalyzed for hexavalent chromium, see lab report #1050063

v = Potential detection above the practical quantitation limit (PQL)

w result is not detected at method detection limit (MDL)

j = estimated result at concentration above MDL but less than PQL

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

[illegible]

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

[illegible]

Table 7
SWAU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (ppb) (mg/kg) Soil/GW	Source	SWAU 10-7 (6-67)	SWAU 10-7 (18-207)	SWAU 10-8 (2-47)	SWAU 10-8 (6-67)	SWAU 10-8 (18-207)	SWAU 10-9 (2-47)	SWAU 10-9 (6-67)	SWAU 10-9 (18-207)	SWAU 10-10 (2-47)	SWAU 10-10 (6-67)	SWAU 10-10 (18-207)	SWAU 10-11 (6-67)	SWAU 10-11 (18-207)	SWAU 10-11 (18-207)	SWAU 10-12 (6-67)	SWAU 10-12 (20-227)	SWAU 10-13 (2-47)	SWAU 10-13 (6-67)	SWAU 10-13 (18-207)	SWAU 10-14 (6-67)						
							1505059-002 5/1/2015	1505059-006 5/2/2015	1505057-005 4/30/2015	1505057-006 4/30/2015	1505057-007 4/30/2015	1505057-001 4/30/2015	1505057-002 4/30/2015	1505057-003 4/30/2015	1505058-001 4/30/2015	1505058-002 4/30/2015	1505058-003 4/30/2015	150570-003 5/12/2015	150570-004 5/12/2015	150570-003 5/12/2015	150617-001 5/12/2015	150617-002 5/12/2015	150617-003 5/12/2015	150617-004 5/12/2015	150617-005 5/12/2015	150570-001 5/12/2015						
Chrysene	1.53E+02	(1)	3.23E+03	(4)	2.74E+03	(8)	< 0.119	< 0.1177	< 1.1424	< 0.1162	< 0.1154	< 1.0012	< 0.9976	< 0.1163	< 0.2383	< 1.218	< 0.1183	< 1.1249	< 1.2072	< 0.1141	< 0.1163	< 0.1103	< 0.1059	< 0.1185	< 0.11	< 0.1126						
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	9.01E+01	(8)	< 0.1284	< 0.127	< 1.2325	< 0.1254	< 0.1245	< 1.0802	< 1.0763	< 0.1255	< 0.2463	< 1.3141	< 0.1276	< 1.2137	< 1.3025	< 0.1232	< 0.1255	< 0.1191	< 0.1142	< 0.1278	< 0.1187	< 0.1214						
Dibenzofuran							< 0.1268	< 0.1254	< 1.1267	< 0.1238	< 0.1229	< 1.0664	< 1.0625	< 0.1239	< 0.2412	< 1.2973	< 0.128	< 1.1981	< 1.2927	< 0.1216	< 0.1239	< 0.1175	< 0.1128	< 0.1262	< 0.1172	< 0.1199						
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	1.44E+03	(8)	< 0.1345	< 0.133	< 1.2913	< 0.1334	< 0.1305	< 1.1316	< 1.1275	< 0.1315	< 0.258	< 1.3766	< 0.1337	< 1.2714	< 1.3644	< 0.1329	< 0.1334	< 0.1247	< 0.1197	< 0.1339	< 0.1243	< 0.1272						
Dibenzophthalate	6.11E+05	(1)	2.38E+06	(5)	2.38E+04	(8)	< 0.1091	< 0.1079	< 1.047	< 0.1065	< 0.1058	< 0.9176	< 0.9143	< 0.1066	< 0.2092	< 1.1163	< 0.1084	< 1.031	< 1.1064	< 0.1046	< 0.1066	< 0.1011	< 0.097	< 0.1086	< 0.1008	< 0.1032						
Dibenzophthalate	6.16E+03	(1)	2.69E+04	(5)	4.98E+03	(8)	< 0.134	< 0.1326	< 1.2866	< 0.1309	< 0.13	< 1.1276	< 1.1235	< 0.131	< 0.2571	< 1.3718	< 0.1332	< 1.267	< 1.3596	< 0.1286	< 0.131	< 0.1243	< 0.1192	< 0.1334	< 0.1239	< 0.1268						
Dibenzophthalate							< 0.1319	< 0.1305	< 1.2665	< 0.1289	< 0.128	< 1.11	< 1.1059	< 0.129	< 0.2531	< 1.3593	< 0.1311	< 1.2472	< 1.3383	< 0.1266	< 0.1289	< 0.1223	< 0.1174	< 0.1313	< 0.122	< 0.1248						
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.97E+04	(8)	< 0.1438	< 0.1422	< 1.3805	< 0.1405	< 0.1395	< 1.2099	< 1.2055	< 0.1406	< 0.2759	< 1.4719	< 0.1429	< 1.3595	< 1.4588	< 0.1379	< 0.1405	< 0.1334	< 0.128	< 0.1432	< 0.1329	< 0.136						
Fluorene	2.32E+03	(1)	1.00E+04	(5)	1.18E+03	(8)	< 0.1614	< 0.1596	8.1	< 0.1576	< 0.1565	< 1.3574	< 1.3524	< 0.1577	< 0.3095	2.2	< 0.1603	1.8	< 1.6366	< 0.1548	< 0.1577	< 0.1496	< 0.1435	1.1	< 0.1491	0.2						
Hexachlorobenzene	3.32E+00	(1)	1.60E+01	(4)	1.96E+00	(8)	< 0.1119	< 0.1106	< 1.0737	< 0.1093	< 0.1085	< 0.9413	< 0.9376	< 0.1094	< 0.2146	< 1.1448	< 0.1112	< 1.0574	< 1.1347	< 0.1073	< 0.1093	< 0.1037	< 0.0995	< 0.1113	< 0.1044	< 0.1058						
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	1.39E+00	(8)	< 0.1173	< 0.116	< 1.1255	< 0.1145	< 0.1137	< 0.9865	< 0.9829	< 0.1146	< 0.2349	< 1.2091	< 0.1165	< 1.1084	< 1.1894	< 0.1125	< 0.1146	< 0.1087	< 0.1043	< 0.1167	< 0.1084	< 0.1059						
Hexachlorocyclopentadiene	3.76E+02	(1)	8.67E+02	(5)	1.97E+01	(8)	< 0.0822	< 0.0813	< 0.7891	< 0.0803	< 0.0797	< 0.6915	< 0.6881	< 0.0804	< 0.1577	< 0.8413	< 0.0817	< 0.777	< 0.8339	< 0.0788	< 0.0803	< 0.0762	< 0.0731	< 0.0818	< 0.076	< 0.0778						
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	9.77E+01	(8)	< 0.1055	< 0.1043	< 1.0127	< 0.1031	< 0.1023	< 0.8875	< 0.8843	< 0.1031	< 0.2024	< 1.0797	< 0.1048	< 0.9972	< 1.0701	< 0.1012	< 0.1031	< 0.0978	< 0.0939	< 0.105	< 0.0975	< 0.0998						
Internal 1,2,3-cyclopentene	1.53E+00	(1)	3.23E+01	(4)	2.96E+00	(8)	< 0.1347	< 0.1332	< 1.2929	< 0.1316	< 0.1306	< 1.1331	< 1.129	< 0.1317	< 0.2584	< 1.3785	< 0.1338	< 1.2731	< 1.3662	< 0.1292	< 0.1316	< 0.1249	< 0.1198	< 0.1341	< 0.1245	< 0.1274						
Naphthalene	4.97E+01	(1)	1.93E+02	(5)	1.21E+00	(8)	< 0.1128	< 0.1115	8	< 0.1094	< 0.1084	< 0.9487	< 0.9453	< 0.1101	< 0.2181	5.8	< 0.1121	5.3	< 1.2	< 0.1082	< 0.1102	< 0.1046	< 0.1003	3.9	< 0.1042	< 0.1067						
Nitrobenzene	6.04E+01	(1)	2.35E+02	(4)	2.12E+01	(8)	< 0.122	< 0.1207	< 1.1713	< 0.1192	< 0.1184	< 1.0266	< 1.0228	< 0.1193	< 0.2341	< 1.2489	< 0.1213	< 1.1534	< 1.2378	< 0.117	< 0.1192	< 0.1131	< 0.1086	< 0.1215	< 0.1128	< 0.1154						
N Nitrosodipropylamine	7.86E+01	(8)	3.39E+00	(7)	2.39E+03	(8)	< 0.1229	< 0.1215	< 1.1792	< 0.12	< 0.1192	< 0.1035	< 1.0297	< 0.1021	< 0.2537	< 1.2573	< 0.1221	< 1.1612	< 1.2461	< 0.1178	< 0.12	< 0.1139	< 0.1093	< 0.1223	< 0.1136	< 0.1162						
N Nitrosodiphenylamine	7.94E+03	(1)	1.71E+01	(4)	1.45E+04	(8)	< 0.1061	< 0.1048	< 1.0185	< 0.1036	< 0.1029	< 0.8927	< 0.8894	< 0.1037	< 0.2036	< 1.086	< 0.1054	< 1.003	< 1.0703	< 0.1018	< 0.1037	< 0.0984	< 0.0944	< 0.1056	< 0.0981	< 0.1004						
Pentachlorophenol	9.85E+00	(1)	4.48E+01	(4)	8.97E+01	(8)	< 0.074	< 0.0732	< 0.7103	< 0.0723	< 0.0718	< 0.6225	< 0.6203	< 0.0721	< 0.142	< 0.7573	< 0.0735	< 0.6995	< 0.7506	< 0.071	< 0.0723	< 0.0686	< 0.0658	< 0.0737	< 0.0684	< 0.07						
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	1.27E+03	(8)	< 0.124	< 0.1226	15	< 0.1211	< 0.1203	< 1.0431	< 1.0393	< 0.1212	< 0.2379	4.1	< 0.1232	3.6	< 1.2577	< 0.1189	< 0.1212	< 0.115	< 0.1103	2.3	< 0.1146	< 0.1173						
Phenol	1.83E+04	(1)	7.74E+00	(8)	7.72E+00	(8)	< 0.1062	< 0.105	< 1.0196	< 0.1038	< 0.103	< 0.8938	< 0.8903	< 0.1038	< 0.2018	< 1.0871	< 0.1055	< 1.004	< 1.0774	< 0.1019	< 0.1038	< 0.0985	< 0.0945	0.91	< 0.0942	< 0.1005						
Pyrene	1.74E+03	(1)	7.53E+03	(5)	2.83E+03	(8)	< 0.151	< 0.1513	< 1.4683	< 0.1491	< 0.1484	< 1.2868	< 1.2822	< 0.1495	< 0.2944	< 1.5655	< 0.152	< 1.4459	< 1.5516	< 0.1467	< 0.1495	< 0.1418	< 0.1361	< 0.1523	< 0.1414	< 0.1447						
Pyridine	7.86E+01	(8)	1.20E+03	(8)	2.01E+00	(8)	< 0.0996	< 0.0985	< 0.956	< 0.0973	< 0.0966	< 0.8378	< 0.8348	< 0.0974	< 0.191	< 1.0193	< 0.099	< 0.9414	< 1.0102	< 0.0955	< 0.0973	< 0.0923	< 0.0886	< 0.0991	< 0.0921	< 0.0942						
Total Petroleum Hydrocarbons (mg/kg)																																
Gasoline Range Organics (GRO)							< 1	u	670	v	10	v	< 1	u	12	J	< 1	u	< 1	560	v	< 1	u	40	v	68	v	< 1	u	50	v	
Diesel Range Organics (DRO)							< 6	u	< 5	u	9700	v	25	v	< 6.3	u	310	v	< 62	u	99	v	< 5	u	3900	v	870	v	< 6.4	u	< 5	u
Motor Oil Range Organics (MRO)							< 50	u	< 49	u	2000	v	< 56	u	< 57	u	170	v	< 56	u	98	v	< 50	u	680	v	280	v	< 58	u	< 50	u

- No screening level or analytical result available
 NMED - Risk Assessment Guidance for Site Investigations and Remediation (July 2015)
 EPA - Regional Screening Levels (Nov 2015)
 (1) NMED Residential Screening Level
 (2) EPA Residential Screening Level
 (3) EPA Residential - Screening Levels (June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 (4) NMED Industrial Occupational Screening Level
 (5) NMED Construction Worker Screening Level
 (6) EPA Industrial - Screening Levels (June 2015)
 (7) EPA Industrial - Screening Levels (June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 (11) NMED Table 6-2 TPH - Soil Screening Levels "unknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
 (12) SoilGW MCL-based EPA DAF = 20
 (13) SoilGW Risk-based EPA DAF = 20
 (14) NMED Table 6-2 TPH - Soil Screening Levels "unknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF
 * - sample reanalyzed for hexavalent chromium, see amended lab report #1505223
 ** - sample reanalyzed for hexavalent chromium, see lab report #1505003
 v = reportable detection above the Practical Quantitation Limit (PQL)
 u = result is not detected at method detection limit (MDL)
 j = estimated result at concentration above MDL but less than PQL

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

[illegible]

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gulfport Refinery
Gulfport, New Mexico

	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (ppb) Soil/GW	Source	SWMU 10-14 (21-27)	SWMU 10-15 (24-7)	SWMU 10-15 (14-67)	SWMU 10-15 (18-20)	SWMU 10-16 (2-4)	SWMU 10-16 (4-5.5)	SWMU 10-16 (8-9)	SWMU 10-17 (6-8)	SWMU 10-18 (2-5)	SWMU 10-18 (8-20)	SWMU 10-19 (2-5)	SWMU 10-19 (12-41)	SWMU 10-19 (18-20)	SWMU 10-20 (2-5)	SWMU 10-20 (8-20)	SWMU 10-20 (10-12)	SWMU 10-20 (15-18)	SWMU 10-20 (20-27)	SWMU 10-21 (2-5)																							
							1505579-002 5/12/2015	1505617-006 5/13/2015	1505617-007 5/13/2015	1505617-008 5/13/2015	1505705-001 5/13/2015	1505705-002 5/13/2015	1505705-003 5/13/2015	1505617-009 5/13/2015	1605814-001 5/16/2016	1605814-002 5/16/2016	1605814-003 5/17/2016	1605817-005 5/17/2016	1605817-006 5/17/2016	1605817-007 5/17/2016	1605817-008 5/17/2016	1605817-001 5/17/2016	1605817-002 5/17/2016	1605817-003 5/17/2016	1605817-004 5/17/2016	1605817-005 5/18/2016																						
Chrysene	1.53E+02	(1)	3.23E+03	(4)	2.74E+03	(8)	< 0.1106	u	< 0.1192	u	< 0.1177	u	< 0.1082	u	< 0.1123	u	< 0.1108	u	< 0.1122	u	< 1.464	u	< 0.1032	u	< 0.0997	u	< 0.0979	u	< 0.1	u	< 0.097	u	< 0.095	u	< 9.9	u	< 0.1074	u	< 0.1075	u	< 0.1	u	< 0.086	u	< 0.091	u	< 0.087	u
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	9.01E+01	(8)	< 0.1193	u	< 0.1286	u	< 0.127	u	< 0.1167	u	< 0.1212	u	< 0.1195	u	< 0.1211	u	< 1.2369	u	< 0.098	u	< 0.0947	u	< 0.093	u	< 0.097	u	< 0.093	u	< 0.09	u	< 9.4	u	< 0.102	u	< 0.1021	u	< 0.097	u	< 0.091	u	< 0.087	u		
Dibenzofuran							< 0.1178	u	< 0.127	u	< 0.1254	u	< 0.1152	u	< 0.1197	u	< 0.118	u	< 0.1195	u	< 1.231	u	< 0.1213	u	< 0.1176	u	< 0.1157	u	< 0.12	u	< 0.12	u	< 0.11	u	< 12	u	< 0.1269	u	< 0.1289	u	< 0.12	u	< 0.11	u	< 0.11	u		
Dibenz(p,h)anthracene	4.93E+04	(1)	2.15E+05	(5)	1.44E+03	(8)	< 0.135	u	< 0.1348	u	< 0.133	u	< 0.1222	u	< 0.127	u	< 0.1252	u	< 0.1268	u	< 1.2957	u	< 0.1229	u	< 0.1188	u	< 0.1166	u	< 0.12	u	< 0.12	u	< 0.11	u	< 12	u	< 0.1279	u	< 0.128	u	< 0.12	u	< 0.11	u	< 0.11	u		
Dibenz(f,h)anthracene	6.11E+05	(1)	2.38E+06	(5)	2.38E+04	(8)	< 0.1013	u	< 0.1093	u	< 0.1079	u	< 0.0991	u	< 0.107	u	< 0.1028	u	< 1.0507	u	< 0.1185	u	< 0.1146	u	< 0.1125	u	< 0.12	u	< 0.11	u	< 0.11	u	< 11	u	< 0.1234	u	< 0.1235	u	< 0.12	u	< 0.11	u	< 0.11	u				
Dibenz(g,h)anthracene	6.16E+03	(1)	2.69E+04	(5)	4.98E+02	(8)	< 0.1245	u	< 0.1343	u	< 0.1326	u	< 0.1218	u	< 0.1265	u	< 0.1248	u	< 0.1264	u	< 1.2912	u	0.14	J	0.089	J	< 0.086	u	< 0.089	u	< 0.086	u	< 0.083	u	< 8.7	u	< 0.0943	u	< 0.0944	u	< 0.089	u	< 0.084	u	< 0.08	u		
Dibenz(i,h)anthracene							< 0.1225	u	< 0.1322	u	< 0.1305	u	< 0.1199	u	< 0.1246	u	< 0.1228	u	< 0.1244	u	< 1.271	u	< 0.1034	u	< 0.0999	u	< 0.0981	u	< 0.1	u	< 0.098	u	< 0.095	u	< 10	u	< 0.1076	u	< 0.1077	u	< 0.1	u	< 0.096	u	< 0.092	u		
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.97E+04	(8)	< 0.1136	u	< 0.1441	u	< 0.1423	u	< 0.1307	u	< 0.1358	u	< 0.1339	u	< 0.1356	u	< 1.3854	u	< 0.0698	u	< 0.0675	u	< 0.0662	u	< 0.069	u	< 0.066	u	< 0.064	u	< 6.7	u	< 0.0727	u	< 0.0727	u	< 0.069	u	< 0.065	u	< 0.062	u		
Fluorene	2.32E+03	(1)	1.00E+04	(5)	1.18E+03	(8)	< 0.1499	u	< 0.1617	u	< 0.1596	u	< 0.1466	u	< 0.1523	u	< 0.1502	u	< 0.1521	u	7.1	v	< 0.1109	u	< 0.1072	u	< 0.1053	u	< 0.11	u	< 0.1	u	< 0.1	u	< 11	u	1.5	v	2.1	v	0.49	v	< 0.1	u	< 0.098	u		
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	1.36E+00	(8)	< 0.1039	u	< 0.1121	u	< 0.1106	u	< 0.1017	u	< 0.1056	u	< 0.1041	u	< 0.1055	u	< 1.0776	u	< 0.0955	u	< 0.0923	u	< 0.0907	u	< 0.094	u	< 0.09	u	< 0.088	u	< 9.2	u	< 0.0995	u	< 0.0995	u	< 0.094	u	< 0.089	u	< 0.085	u		
Hexachlorocyclopentadiene	6.16E+01	(1)	2.69E+02	(5)	1.36E+00	(8)	< 0.1089	u	< 0.1175	u	< 0.1156	u	< 0.1066	u	< 0.1107	u	< 0.1091	u	< 0.1105	u	< 1.1295	u	< 0.1365	u	< 0.132	u	< 0.1296	u	< 0.13	u	< 0.13	u	< 0.13	u	< 13	u	< 0.1422	u	< 0.1422	u	< 0.13	u	< 0.13	u	< 0.12	u		
Hexachlorocyclopentadiene	3.70E+02	(1)	8.07E+02	(5)	1.97E+01	(8)	< 0.0764	u	< 0.0824	u	< 0.0813	u	< 0.0747	u	< 0.0776	u	< 0.0765	u	< 0.0775	u	< 0.7919	u	< 0.1385	u	< 0.1339	u	< 0.1315	u	< 0.14	u	< 0.13	u	< 0.13	u	< 13	u	< 0.1443	u	< 0.1443	u	< 0.14	u	< 0.15	u	< 0.12	u		
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	9.77E+01	(8)	< 0.098	u	< 0.1057	u	< 0.1044	u	< 0.0959	u	< 0.0996	u	< 0.0982	u	< 0.0995	u	< 1.0163	u	< 0.1041	u	< 0.1006	u	< 0.0988	u	< 0.1	u	< 0.098	u	< 0.096	u	< 10	u	< 0.1084	u	< 0.1084	u	< 0.1	u	< 0.097	u	< 0.092	u		
Internal 1,2,3-cyclopentene	1.53E+00	(1)	3.23E+01	(4)	2.96E+00	(8)	< 0.1251	u	< 0.1349	u	< 0.1332	u	< 0.1224	u	< 0.1273	u	< 0.1254	u	< 0.127	u	< 1.2975	u	< 0.0946	u	< 0.0915	u	< 0.0898	u	< 0.093	u	< 0.089	u	< 0.087	u	< 9.1	u	< 0.0985	u	< 0.0985	u	< 0.093	u	< 0.088	u	< 0.084	u		
Naphthalene	4.97E+01	(1)	1.93E+02	(5)	1.21E+00	(8)	< 0.1048	u	< 0.113	u	< 0.1115	u	< 0.1025	u	< 0.1065	u	< 0.105	u	< 0.1063	u	24	v	< 0.1163	u	< 0.1124	u	< 0.1104	u	< 0.111	u	0.41	v	< 0.11	u	< 11	u	8	v	8.5	v	0.78	v	< 0.11	u	< 0.1	u		
Nitrobenzene	6.04E+01	(1)	2.35E+02	(4)	2.12E+01	(8)	< 0.1134	u	< 0.1223	u	< 0.1207	u	< 0.1109	u	< 0.1152	u	< 0.1136	u	< 0.115	u	< 1.1755	u	< 0.125	u	< 0.1209	u	< 0.1187	u	< 0.12	u	< 0.12	u	< 0.12	u	< 12	u	< 0.1302	u	< 0.1303	u	< 0.12	u	< 0.12	u	< 0.11	u	< 0.11	u
N-Nitrosodipropylamine	7.80E-01	(8)	3.30E+00	(7)	2.39E-03	(9)	< 0.1141	u	< 0.1231	u	< 0.1215	u	< 0.1117	u	< 0.116	u	< 0.1144	u	< 0.1158	u	< 1.1834	u	< 0.1165	u	< 0.1126	u	< 0.1105	u	< 0.12	u	< 0.11	u	< 0.11	u	< 11	u	< 0.1213	u	< 0.1213	u	< 0.11	u	< 0.11	u	< 0.1	u		
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	1.45E-04	(8)	< 0.086	u	< 0.1063	u	< 0.105	u	< 0.0964	u	< 0.1002	u	< 0.0988	u	< 0.1	u	< 1.0222	u	< 0.1183	u	< 0.1144	u	< 0.1123	u	< 0.12	u	< 0.12	u	< 0.11	u	< 11	u	< 0.1232	u	< 0.1232	u	< 0.12	u	< 0.11	u	< 0.1	u		
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	8.97E-01	(8)	< 0.0687	u	< 0.0741	u	< 0.0732	u	< 0.0673	u	< 0.0699	u	< 0.0689	u	< 0.0698	u	< 0.7128	u	< 0.0779	u	< 0.0753	u	< 0.0739	u	< 0.077	u	< 0.074	u	< 0.072	u	< 7.5	u	< 0.0811	u	< 0.0811	u	< 0.077	u	< 0.073	u	< 0.069	u		
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	1.27E+03	(8)	< 0.1152	u	< 0.1242	u	< 0.1226	u	< 0.1127	u	< 0.1154	u	< 0.1169	u	15	v	< 0.0823	u	< 0.0796	u	< 0.0781	u	< 0.081	u	0.61	v	< 0.076	u	< 7.9	u	3.2	v	5	v	1	v	< 0.077	u	< 0.073	u				
Phenol	1.83E+04	(1)	7.74E+04	(5)	7.72E+02	(8)	< 0.0987	u	< 0.1064	u	< 0.1051	u	< 0.0965	u	< 0.1003	u	< 0.0989	u	< 0.1001	u	52	v	< 0.0913	u	< 0.0882	u	< 0.0868	u	< 0.09	u	< 0.086	u	< 0.084	u	< 8.8	u	30	v	18	v	< 0.085	u	< 0.081	u				
Pyrene	1.74E+03	(1)	7.53E+03	(5)	2.93E+03	(8)	< 0.1421	u	< 0.1533	u	< 0.1511	u	< 0.139	u	< 0.1448	u	< 0.1424	u	< 0.1442	u	< 1.4735	u	< 0.0916	u	< 0.0885	u	< 0.0869	u	< 0.09	u	< 0.086	u	< 0.084	u	< 8.8	u	0.77	v	0.33	v	0.13	v	< 0.085	u	< 0.081	u		
Pyridine	7.80E-01	(8)	1.20E+03	(8)	2.01E+00	(8)	< 0.0925	u	< 0.0998	u	< 0.0985	u	< 0.0905	u	< 0.094	u	< 0.0927	u	< 0.0939	u	< 0.9594	u	< 0.0961	u	< 0.0928	u	< 0.0912	u	< 0.095	u	< 0.091	u	< 0.088	u	< 9.3	u	< 0.1	u	< 0.1001	u	< 0.095	u	< 0.089	u	< 0.085	u		
Total Petroleum Hydrocarbons (mg/kg)																																																
Gasoline Range Organics (GRO)																																																
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)			< 6.2	u	< 5	u	< 2.6	u	< 1	u	< 1	u	< 1	u	< 1	u	1300	v	1.5	J	1	J	0.66	J	< 0.6449	u	270	v	< 0.5228	u	1.1	J	1100	v	640	v	220	v	< 0.5213	u	2			
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)			< 56	u	< 49	u	< 48	u	< 48	u	< 50	u	< 50	u	< 50																													

Table 7
SWAU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (ppb) SoilGW	Source	01 5/18/2016	1609943-002 5/18/2016	1609943-003 5/18/2016	1609943-004 5/18/2016	1609943-005 5/18/2016	1609967-001 9/19/2016	1609967-002 9/19/2016	1609967-003 9/19/2016	1609967-004 9/19/2016	1609967-005 9/19/2016	1609967-006 9/19/2016	1609967-007 9/19/2016	1609967-008 9/19/2016	1609967-009 9/19/2016													
Metals (mg/kg)																																	
Antimony	3.13E+01	(1)	1.42E+02	(5)	9.68E+01	(8)	u	< 7.3205	u	< 6.8	u	< 7.3	u	< 2.9	u	< 2.2222	u	< 1.1461	u	1.1	J	< 1.2345	u	< 2.4091	u	2.1	J	< 1.1611	u	< 2.4915	u	1.6	J
Arsenic	1.25E+03	(1)	2.15E+01	(4)	4.41E+03	(8)	v	1.8	v	1.3	v	2.4	v	2.6	v	< 1.9626	u	1	J	< 0.9076	u	< 1.0903	u	< 2.1278	u	< 1.0181	u	< 1.0254	u	< 2.2031	u	< 1.0232	u
Barium	1.56E+04	(1)	4.35E+03	(5)	3.98E+04	(8)	v	220	v	1000	v	290	v	350	v	730	v	190	v	120	v	130	v	510	v	96	v	190	v	460	v		
Beryllium	1.56E+02	(1)	1.48E+02	(5)	2.89E+03	(8)	v	1.3	v	0.91	v	0.89	v	0.97	v	1.1	v	0.82	v	0.6	v	0.99	v	1.3	v	0.95	v	0.58	v	1.4	v	0.86	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	1.38E+03	(8)	u	< 0.0783	u	< 0.0775	u	< 0.0782	u	< 0.0768	u	< 0.14	u	< 0.0722	u	< 0.0648	u	< 0.0778	u	< 0.1518	u	< 0.0726	u	< 0.0712	u	< 0.157	u	< 0.073	u
Chromium	9.66E+01	(1)	1.34E+02	(5)	2.97E+08	(8)	v	11	v	12	v	12	v	14	v	13	v	6.3	v	12	v	15	v	16	v	7.2	v	16	v	15	v		
Hexavalent Chromium	3.05E+00	(1)	6.69E+01	(5)	1.43E+00	(8)	u	< 0.64	u	< 0.64	u	< 0.64	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u	< 0.1	u
Cobalt	2.30E+01	(2)	3.50E+02	(6)	7.97E+01	(8)	v	5.6	v	8.8	v	4.9	v	7.8	v	< 0.047	u	0.071	u	0.12	u	0.19	u	0.15	u	< 0.049	u	0.12	u	0.34	u	0.076	u
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.70E+02	(8)	v	0.048	J	0.044	J	0.04	J	0.046	J	0.28	J	0.56	J	0.51	J	0.54	J	0.2	J	0.3	J	0.45	J	0.2	J		
Iron	5.50E+04	(2)	8.20E+03	(6)	1.03E+05	(8)	v	20000	v	18000	v	4000	v	17000	v	15000	v	11000	v	18000	v	20000	v	20000	v	20000	v	12000	v	23000	v	16000	v
Lead	4.00E+02	(1)	8.00E+02	(4)	4.19E+03	(10)	v	5.1	v	2.6	v	4.3	v	3.2	v	2.6	v	0.95	v	2.3	v	3.9	v	1.5	v	1.1	v	2.1	v	2.9	v	< 0.2001	u
Manganese	1.80E+03	(2)	2.80E+04	(6)	8.26E+03	(8)	v	240	v	1800	v	570	v	520	v	450	v	850	v	370	v	200	v	290	v	1400	v	500	v	300	v	1100	v
Mercury	1.38E+01	(1)	2.07E+01	(5)	9.94E+00	(8)	v	0.0043	u	< 0.0006	u	0.044	u	< 0.0007	u	0.0072	u	0.0026	u	0.0041	u	0.0033	u	0.0028	u	0.0011	u	0.0031	u	0.0004	u	0.0014	u
Nickel	1.56E+03	(1)	6.19E+03	(5)	7.71E+03	(8)	v	11	v	35	v	8.6	v	15	v	13	v	13	v	5.7	v	8.9	v	12	v	16	v	5.7	v	94	v	15	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	1.51E+02	(8)	u	< 1.3487	u	< 1.2475	u	< 1.346	u	< 0.0379	u	< 2.0723	u	< 1.858	u	< 2.2321	u	< 4.3557	u	< 2.0843	u	< 2.0993	u	< 4.5047	u	< 2.0948	u		
Silver	3.91E+02	(1)	1.77E+03	(5)	2.03E+02	(8)	u	< 0.0392	u	< 0.0363	u	< 0.0391	u	< 0.0385	u	< 0.1383	u	< 0.0639	u	< 0.0768	u	< 0.1499	u	< 0.0772	u	< 0.0772	u	< 0.155	u	< 0.0721	u		
Vanadium	3.94E+02	(1)	6.16E+02	(5)	1.96E+04	(8)	v	21	v	17	v	18	v	17	v	13	v	12	v	13	v	18	v	23	v	15	v	25	v	18	v		
Zinc	2.35E+04	(1)	1.06E+05	(5)	1.09E+05	(8)	v	20	v	27	v	20	v	23	v	21	v	25	v	11	v	18	v	22	v	26	v	11	v	26	v	27	v
Volatiles (mg/kg)																																	
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	5.30E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.07	u	< 0.012	u	< 0.0022	u	< 0.2042	u	< 0.0016	u	< 0.0019	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(4)	7.53E+03	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.045	u	< 0.02	u	< 0.0022	u	< 0.1302	u	< 0.0016	u	< 0.0019	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	7.09E+02	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.12	u	< 0.054	u	< 0.0022	u	< 0.3458	u	< 0.0016	u	< 0.0019	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	3.28E+02	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.086	u	< 0.039	u	< 0.0022	u	< 0.2515	u	< 0.0016	u	< 0.0019	u
1,1-Dichloroethane	7.86E+01	(1)	3.89E+02	(4)	2.06E+03	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.039	u	< 0.016	u	< 0.0022	u	< 0.1153	u	< 0.0016	u	< 0.0019	u
1,1-Dichloroethene	4.46E+02	(1)	4.35E+02	(5)	2.87E+01	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0003	u	< 0.0003	u	< 0.0003	u	< 0.24	u	< 0.11	u	< 0.0004	u	< 0.6889	u	< 0.0003	u	< 0.0003	u
1,1-Dichloropropene	1.1	(1)	1.00E+01	(5)	1.51E+02	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.058	u	< 0.026	u	< 0.0022	u	< 0.1693	u	< 0.0016	u	< 0.0019	u
1,2,3-Trichloropropene	6.30E+01	(2)	9.30E+02	(6)	6.20E+02	(8)	u	< 0.0005	u	< 0.0004	u	< 0.0004	u	< 0.0005	u	< 0.0005	u	< 0.0004	u	< 0.11	u	< 0.05	u	< 0.005	u	< 0.3193	u	< 0.0004	u	< 0.0005	u		
1,2,3-Trichloropropene	6.10E+03	(1)	2.1E+00	(4)	7.68E+04	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.13	u	< 0.058	u	< 0.0022	u	< 0.3691	u	< 0.0016	u	< 0.0019	u
1,2,4-Trichlorobenzene	8.20E+01	(1)	7.91E+01	(5)	2.60E+00	(8)	u	< 0.0006	u	< 0.0005	u	< 0.0005	u	< 0.0007	u	< 0.0006	u	< 0.0006	u	< 0.0005	u	< 0.078	u	< 0.038	u	< 0.0007	u	< 0.2282	u	< 0.0005	u	< 0.0006	u
1,2,4-Trinitrobenzene	5.80E+01	(2)	2.45E+02	(6)	6.20E+00	(8)	J	0.0003	J	0.001	J	0.0003	J	0.0011	J	0.0004	J	0.0016	J	0.0004	J	5.3	J	1.2	J	0.0015	J	5.8	J	0.0146	J	0.0015	J
1,2-Dibromochloropropane	8.58E+02	(1)	1.18E+00	(4)	3.45E+04	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.22	u	< 0.1	u	< 0.0002	u	< 0.6536	u	< 0.0002	u	< 0.0002	u
1,2-Dibromochloropropane (DBP)	6.70E+01	(1)	3.31E+03	(4)	5.19E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.052	u	< 0.024	u	< 0.0022	u	< 0.1518	u	< 0.0016	u	< 0.0019	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	6.70E+01	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0002	u	< 0.0003	u	< 0.0003	u	< 0.0003	u	< 0.0002	u	< 0.064	u	< 0.029	u	< 0.0003	u	< 0.1862	u	< 0.0002	u	< 0.0003	u
1,2-Dichlorobenzene (EDC)	8.32E+00	(1)	4.07E+01	(4)	1.30E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.19	u	< 0.087	u	< 0.0022	u	< 0.5564	u	< 0.0016	u	< 0.0019	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	3.58E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.061	u	< 0.038	u	< 0.0022	u	< 0.1379	u	< 0.0016	u	< 0.0019	u
1,3,5-Trinitrobenzene	7.80E+02	(2)	1.20E+04	(6)	3.02E+01	(8)	J	< 0.0003	J	0.0007	J	< 0.0003	J	0.0007	J	0.0004	J	0.0011	J	0.0001	J	1.9	J	0.43	J	0.0011	J	2.6	J	0.0046	J	0.0011	J
1,3-Dichlorobenzene	-	-	-	-	-	-	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0004	u	< 0.0004	u	< 0.0003	u	< 0.0003	u	< 0.06	u	< 0.027	u	< 0.0004	u	< 0.175	u	< 0.0003	u	< 0.0004	u
1,3-Dichloropropene	1.60E+03	(2)	2.30E+04	(6)	3.84E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0017	u	< 0.083	u	< 0.038	u	< 0.0022	u	< 0.2421	u	< 0.0016	u	< 0.0019	u
1,4-Dichlorobenzene	1.38E+01	(1)	1.59E+02	(4)	1.96E+00	(8)	u	< 0.0004	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0004	u	< 0.0003	u	< 0.09	u	< 0.041	u	< 0.004	u	< 0.2644	u	< 0.0003	u	< 0.0004	u		
1-Methylnaphthalene																																	

Table 7
SWAU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (200) (mg/kg Soil/GW)	Source	SWMU 12-01 (12-16-01)	1609943-002 5/18/2016	1609943-003 5/18/2016	1609943-004 5/18/2016	1609943-005 5/18/2016	1609857-001 5/19/2016	1609857-002 5/19/2016	1609857-003 5/19/2016	1609857-004 5/19/2016	1609857-005 5/19/2016	1609857-006 5/19/2016	1609857-007 5/19/2016	1609857-008 5/19/2016	1609857-009 5/19/2016	1609857-010 5/19/2016	1609857-011 5/19/2016	1609857-012 5/19/2016	1609857-013 5/19/2016	1609857-014 5/19/2016	1609857-015 5/19/2016	1609857-016 5/19/2016	1609857-017 5/19/2016	1609857-018 5/19/2016	1609857-019 5/19/2016			
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	3.87E+00	(8)	J	< 0.0003	0.0013	J	< 0.0002	0.0014	J	0.0004	J	0.0018	J	0.0004	J	0.69	J	0.41	v	0.0018	J	1	J	0.0341	v	0.0018	J		
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	1.39E+00	(8)	u	< 0.0004	u	< 0.0004	u	< 0.0005	u	< 0.0005	u	< 0.0004	u	< 0.089	u	< 0.041	u	< 0.0005	u	< 0.2609	u	< 0.0004	u	< 0.0004	u				
Isopropylbenzene	2.36E+03	(1)	2.74E+03	(6)	1.68E+02	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0003	u	< 0.0003	u	0.0002	J	0.0002	J	0.24	J	0.14	J	0.0005	J	0.54	J	0.0019	v	0.0004	J		
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	8.16E+00	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0003	u	< 0.0004	u	< 0.23	u	< 0.1	u	< 0.0004	u	< 0.6706	u	0.0009	J	< 0.0003	u				
Methylene chloride	4.08E+02	(1)	1.21E+03	(5)	6.64E+00	(8)	u	< 0.0019	u	< 0.0017	u	< 0.0022	u	< 0.0021	u	< 0.0017	u	< 0.21	u	< 0.096	u	< 0.0022	u	< 0.6153	u	< 0.0016	u	< 0.0019	u				
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	1.21E+00	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.0021	u	< 0.0017	u	3.7	v	0.85	v	< 0.0022	u	3.8	J	0.0063	v	< 0.0019	u		
n-Butylbenzene	3.95E+03	(2)	5.85E+04	(8)	3.44E+02	(8)	u	< 0.0005	u	< 0.0004	u	< 0.0004	u	< 0.0005	u	< 0.0005	u	< 0.0004	u	0.5	J	0.18	J	< 0.0005	u	0.95	J	0.0008	J	< 0.0005	u		
n-Propylbenzene	3.80E+03	(2)	2.40E+04	(8)	3.54E+02	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0004	J	0.0006	J	0.0003	J	0.39	J	0.24	J	0.0006	J	0.93	J	0.0029	v	0.0006	J		
sec-Butylbenzene	7.80E+03	(2)	1.20E+05	(8)	1.74E+03	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0003	u	< 0.0004	u	< 0.0004	u	< 0.0003	u	0.34	J	0.14	J	< 0.0004	u	0.74	J	0.0006	J	< 0.0003	u		
Styrene	7.26E+03	(1)	1.02E+04	(5)	3.04E+02	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0003	u	< 0.0002	u	< 0.065	u	< 0.03	u	< 0.0003	u	< 0.1905	u	< 0.0002	u	< 0.0002	u				
tert-Butylbenzene	7.85E+03	(2)	1.20E+05	(8)	4.75E+02	(8)	u	< 0.0003	u	< 0.0003	u	< 0.0002	u	< 0.0003	u	< 0.0003	u	< 0.028	u	< 0.0003	u	< 0.1569	u	< 0.0002	u	< 0.0003	u						
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	4.78E+00	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0003	u	< 0.0003	u	< 0.0003	u	< 0.06	u	< 0.028	u	< 0.0003	u	< 0.177	u	< 0.0002	u	< 0.0003	u				
Toluene	5.22E+03	(1)	1.40E+04	(5)	1.79E+02	(8)	v	0.0015	J	0.0062	v	0.0012	J	0.007	v	0.0012	J	0.0074	v	0.0014	J	0.25	J	0.49	v	0.0068	v	0.29	J	0.0031	v	0.0069	v
trans-1,2-DCE	2.94E+02	(1)	3.05E+02	(5)	8.99E+00	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.02	u	< 0.093	u	< 0.0002	u	< 0.5973	u	< 0.0002	u	< 0.0002	u				
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	4.13E+01	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0003	u	< 0.0002	u	< 0.0002	u	< 0.11	u	< 0.049	u	< 0.0003	u	< 0.3123	u	< 0.0002	u	< 0.0002	u				
Trichloroethene (TCE)	6.77E+00	(1)	6.30E+00	(5)	2.58E+01	(8)	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0022	u	< 0.0021	u	< 0.0017	u	< 0.078	u	< 0.036	u	< 0.2288	u	< 0.0016	u	< 0.0019	u				
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	2.31E+02	(8)	u	< 0.0002	u	< 0.0002	u	< 0.0002	u	< 0.0003	u	< 0.0003	u	< 0.0002	u	< 0.055	u	< 0.025	u	< 0.1596	u	< 0.0002	u	< 0.0002	u				
Vinyl chloride	7.42E+01	(1)	2.84E+01	(4)	1.99E+02	(8)	u	< 0.0005	u	< 0.0005	u	< 0.0004	u	< 0.0006	u	< 0.0005	u	< 0.0008	u	< 0.0004	u	< 0.06	u	< 0.027	u	< 0.0006	u	< 0.1745	u	< 0.0004	u	< 0.0005	u
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	4.39E+01	(8)	v	0.0009	J	0.0039	v	< 0.0007	u	0.0004	J	0.0055	v	0.0013	J	12	v	3.4	v	0.0053	v	10	v	0.0317	v	0.0051	v		
Semi-volatiles (mg/kg)																																	
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	2.60E+00	(8)	u	< 0.13	u	< 0.12	u	< 0.13	u	< 0.12	u	< 0.123	u	< 0.1099	u	< 1.3468	u	< 0.1776	u	< 0.1216	u	< 0.1232	u	< 0.1294	u	< 0.1232	u		
1,2-Dichlorobenzene	2.18E+03	(1)	2.50E+03	(5)	8.79E+01	(8)	u	< 0.024	u	< 0.086	u	< 0.024	u	< 0.089	u	< 0.0871	u	< 0.0775	u	< 0.9536	u	< 0.0505	u	< 0.0861	u	< 0.0772	u	< 0.0516	u	< 0.0772	u		
1,3-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	1.06E+00	(8)	u	< 0.095	u	< 0.087	u	< 0.095	u	< 0.093	u	< 0.0857	u	< 0.0879	u	< 0.0785	u	< 0.9623	u	< 0.0912	u	< 0.0869	u	< 0.088	u	< 0.0925	u	< 0.088	u
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	1.06E+00	(8)	u	< 0.1	u	< 0.095	u	< 0.1	u	< 0.1	u	< 0.0938	u	< 0.0962	u	< 0.0859	u	< 1.0526	u	< 0.0998	u	< 0.095	u	< 0.0963	u	< 0.1011	u	< 0.0963	u
1-Methylcyclohexane	1.86E+02	(5)	7.20E+02	(7)	1.71E+00	(8)	u	< 0.12	u	< 0.11	u	< 0.12	u	< 0.12	u	< 0.1114	u	< 0.1143	u	< 0.102	u	5	v	1.1	v	< 0.1129	u	0.82	v	0.76	v	< 0.1144	u
2,4,5-Trichlorophenol	6.16E+01	(1)	2.89E+04	(5)	3.76E+02	(8)	u	< 0.12	u	< 0.11	u	< 0.12	u	< 0.12	u	< 0.111	u	< 0.1138	u	< 0.016	u	< 1.246	u	< 0.1183	u	< 0.1125	u	< 0.114	u	< 0.1197	u	< 0.114	u
2,4-Dichlorophenol	1.86E+02	(1)	8.07E+02	(5)	1.22E+01	(8)	u	< 0.12	u	< 0.1	u	< 0.11	u	< 0.11	u	< 0.1034	u	< 0.1061	u	< 0.0947	u	< 1.1615	u	< 0.1101	u	< 0.1048	u	< 0.1063	u	< 0.1116	u	< 0.1062	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+02	(5)	9.51E+01	(8)	u	< 0.13	u	< 0.12	u	< 0.13	u	< 0.13	u	< 0.1294	u	< 0.1235	u	< 0.1103	u	1.5	J	0.46	v	< 0.132	u	0.17	J	< 0.1299	u	< 0.1237	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	9.51E+01	(8)	u	< 0.082	u	< 0.074	u	< 0.081	u	< 0.079	u	< 0.0754	u	< 0.0674	u	< 0.8258	u	< 0.0783	u	< 0.0745	u	< 0.0755	u	< 0.0793	u	< 0.0755	u		
2,4-Dinitrotoluene	1.71E+01	(1)	8.25E+01	(4)	7.25E+01	(8)	u	< 0.11	u	< 0.1	u	< 0.11	u	< 0.11	u	< 0.099	u	< 0.1016	u	< 0.0907	u	< 1.1119	u	< 0.1054	u	< 0.1004	u	< 0.1017	u	< 0.1068	u	< 0.1017	u
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.51E+01	(8)	u	< 0.13	u	< 0.12	u	< 0.13	u	< 0.13	u	< 0.1173	u	< 0.1203	u	< 0.1075	u	< 1.1174	u	< 0.1249	u	< 0.1189	u	< 0.1205	u	< 0.1266	u	< 0.1205	u
2-Chlorophenol	2.96E+03	(1)	2.83E+04	(8)	8.41E+02	(8)	u	< 0.097	u	< 0.088	u	< 0.097	u	< 0.094	u	< 0.0973	u	< 0.0895	u	< 0.0795	u	< 0.9802	u	< 0.0929	u	< 0.0885	u	< 0.0897	u	< 0.0942	u	< 0.0897	u
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.70E+01	(8)	u	< 0.097	u	< 0.088	u	< 0.097	u	< 0.094	u	< 0.0874	u	< 0.0897	u	< 0.0801	u	< 0.9815	u	< 0.093	u	< 0.0886	u	< 0.0898	u	< 0.0943	u	< 0.0898	u
2-Methylnaphthalene	2.40E+02	(2)	3.00E+03	(8)	5.61E+01	(8)	u	< 0.15	u	< 0.13	u	< 0.15	u	< 0.14	u	< 0.1316	u	< 0.135	u	< 0.1205	u	8.5	v	1.9	v	< 0.1333	u	1.4	v	1.3	v	< 0.1351	u
2-Methylphenol (o-cresol)	3.30E+03	(2)	4.10E+04	(8)	2.21E+02	(8)	u	< 0.1	u	< 0.094	u	< 0.1	u	< 0.097	u	< 0.0951	u	< 0.0849	u	4.7	J	2.7	v	< 0.0939	u	0.53	J	0.17	J	< 0.0952	u		
2-Nitrophenol	3.30E+02	(2)	8.00E+03	(8)	2.36E+01	(8)	u	< 0.13	u	< 0.12	u	< 0.13	u	< 0.13	u	< 0.1195	u	< 0.1226	u	< 0.1095	u	< 1.3419	u	< 0.1272	u	< 0.1221	u	< 0.1228	u	< 0.1289	u	< 0.1227	u
3-Nitrophenol	-	-	-	-	-	-																											

Table 7
SWMU 10 Soil Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (ppb) (mg/kg) Soil/GW	Source	SWMU ID-21 (13-14)	SWMU ID-21 (20-22)	SWMU ID-22 (2-5)	SWMU ID-22 (8-9)	SWMU ID-23 (2-5)	SWMU ID-23 (15-16)	SWMU ID-24 (2-5)	SWMU ID-24 (6-4)	SWMU ID-24 (8-10)	SWMU ID-24 (15-16)	SWMU ID-25 (2-5)	SWMU ID-25 (10-12)	SWMU ID-25 (16.5-18)
Chrysene	1.53E+02	(1)	3.23E+03	(4)	2.74E+03	(8)	u < 0.11	u < 0.095	u < 0.1	u < 0.1	u < 0.0844	u < 0.0968	u < 0.0865	u < 1.0601	u < 0.1005	u < 0.0957	u < 0.097	u < 0.1019	u < 0.097
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	9.01E+01	(8)	u < 0.1	u < 0.091	u < 0.099	u < 0.097	u < 0.0897	u < 0.092	u < 0.0821	u < 1.0067	u < 0.0954	u < 0.0909	u < 0.0921	u < 0.0967	u < 0.0921
Dibenzofuran							u < 0.12	u < 0.11	u < 0.12	u < 0.12	u < 0.1115	u < 0.1144	u < 0.1021	u < 1.2522	u < 0.1187	u < 0.113	u < 0.1146	u < 0.1201	u < 0.1145
Dibenz(p,h)anthracene	4.93E+04	(1)	2.15E+05	(5)	1.44E+03	(8)	u < 0.13	u < 0.11	u < 0.12	u < 0.12	u < 0.1085	u < 0.1112	u < 0.0993	u < 1.2179	u < 0.1154	u < 0.1099	u < 0.1114	u < 0.117	u < 0.1114
Dibenz(a,h)anthracene	6.11E+05	(1)	2.38E+06	(5)	2.38E+04	(8)	u < 0.12	u < 0.11	u < 0.12	u < 0.12	u < 0.1085	u < 0.1112	u < 0.0993	u < 1.2179	u < 0.1154	u < 0.1099	u < 0.1114	u < 0.117	u < 0.1114
Dibenz(a,h)anthracene	6.16E+03	(1)	2.69E+04	(5)	4.98E+03	(8)	u < 0.11	u < 0.094	u < 0.12	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11
Dibenz(a,h)anthracene	6.16E+03	(1)	2.69E+04	(5)	4.98E+03	(8)	u < 0.11	u < 0.094	u < 0.12	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11	u < 0.11
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.97E+04	(8)	u < 0.073	u < 0.065	u < 0.071	u < 0.069	u < 0.0639	u < 0.0655	u < 0.0585	u < 0.7171	u < 0.068	u < 0.0647	u < 0.0656	u < 0.0689	u < 0.0656
Fluorene	2.32E+03	(1)	1.00E+04	(5)	1.18E+03	(8)	u < 0.11	u < 0.1	u < 0.11	u < 0.11	u < 0.1015	u < 0.1041	u < 0.0929	u < 1.1396	u < 0.16	u < 0.1029	u < 0.19	u < 0.15	u < 0.1042
Hexachlorobenzene	3.32E+03	(1)	1.60E+01	(4)	1.36E+00	(8)	u < 0.097	u < 0.088	u < 0.097	u < 0.094	u < 0.0874	u < 0.0897	u < 0.0803	u < 0.9817	u < 0.093	u < 0.0886	u < 0.0898	u < 0.0943	u < 0.0898
Hexachlorocyclopentadiene	6.16E+01	(1)	2.69E+02	(5)	1.36E+00	(8)	u < 0.14	u < 0.13	u < 0.14	u < 0.13	u < 0.125	u < 0.1282	u < 0.1144	u < 1.480	u < 0.133	u < 0.126	u < 0.1284	u < 0.1348	u < 0.1283
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	1.97E+01	(8)	u < 0.14	u < 0.13	u < 0.14	u < 0.14	u < 0.1258	u < 0.13	u < 0.1161	u < 1.4234	u < 0.1349	u < 0.1285	u < 0.1302	u < 0.1368	u < 0.1302
Hexachlorobenzene	4.31E+01	(1)	1.88E+02	(5)	9.77E+01	(8)	u < 0.11	u < 0.096	u < 0.11	u < 0.1	u < 0.0953	u < 0.0977	u < 0.0872	u < 1.0696	u < 0.1014	u < 0.0965	u < 0.0979	u < 0.1028	u < 0.0978
Internal 1,2,3-tricyclopentene	1.53E+03	(1)	3.23E+01	(4)	2.96E+00	(8)	u < 0.096	u < 0.087	u < 0.096	u < 0.093	u < 0.0866	u < 0.0888	u < 0.0793	u < 0.9722	u < 0.0923	u < 0.0878	u < 0.0889	u < 0.0934	u < 0.0889
Naphthalene	4.97E+01	(1)	1.93E+02	(5)	1.21E+00	(8)	u < 0.12	u < 0.11	u < 0.12	u < 0.11	u < 0.1064	u < 0.1092	u < 0.0975	u < 1.9	u < 0.39	u < 0.1079	u < 0.28	u < 0.38	u < 0.1093
Nitrobenzene	6.04E+01	(1)	2.35E+02	(4)	2.12E+01	(8)	u < 0.13	u < 0.12	u < 0.13	u < 0.12	u < 0.1144	u < 0.1174	u < 0.1048	u < 1.2848	u < 0.1218	u < 0.116	u < 0.1175	u < 0.1234	u < 0.1175
N Nitrosodipropylamine	7.80E-01	(8)	3.30E+00	(7)	2.39E+03	(9)	u < 0.12	u < 0.11	u < 0.12	u < 0.12	u < 0.1066	u < 0.1093	u < 0.0976	u < 1.1965	u < 0.1134	u < 0.108	u < 0.1095	u < 0.115	u < 0.1094
N Nitrosodipropylamine	7.80E-01	(8)	3.30E+00	(7)	2.39E+03	(9)	u < 0.12	u < 0.11	u < 0.12	u < 0.12	u < 0.1066	u < 0.1093	u < 0.0976	u < 1.1965	u < 0.1134	u < 0.108	u < 0.1095	u < 0.115	u < 0.1094
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	8.97E+01	(8)	u < 0.079	u < 0.072	u < 0.079	u < 0.077	u < 0.0713	u < 0.0731	u < 0.0653	u < 0.8002	u < 0.0758	u < 0.0722	u < 0.0732	u < 0.0769	u < 0.0732
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	1.27E+03	(8)	u < 0.084	u < 0.076	u < 0.083	u < 0.081	u < 0.0753	u < 0.0773	u < 0.069	u < 1.4	u < 0.32	u < 0.0763	u < 0.39	u < 0.29	u < 0.0774
Phenol	1.83E+04	(1)	7.74E+04	(5)	7.72E+02	(8)	u < 0.093	u < 0.084	u < 0.092	u < 0.09	u < 0.0835	u < 0.0857	u < 0.0765	u < 0.9377	u < 1.4	u < 0.0846	u < 0.0858	u < 0.0901	u < 0.0858
Pyrene	1.74E+03	(1)	7.53E+03	(5)	2.83E+03	(8)	u < 0.093	u < 0.085	u < 0.093	u < 0.09	u < 0.0838	u < 0.0859	u < 0.0767	u < 0.9408	u < 0.0892	u < 0.0849	u < 0.0861	u < 0.0904	u < 0.0861
Pyridine	7.80E-01	(8)	1.20E+03	(8)	2.01E+00	(8)	u < 0.098	u < 0.089	u < 0.097	u < 0.095	u < 0.0879	u < 0.0901	u < 0.0805	u < 0.9869	u < 0.0935	u < 0.0891	u < 0.0903	u < 0.0948	u < 0.0903
Total Petroleum Hydrocarbons (mg/kg)																			
Gasoline Range Organics (GRO)							J	0.6	J	0.76	J	0.6	J	0.73	J	< 0.55	u < 0.51	u < 0.47	u < 0.47
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-	-	v < 4.5	u < 3.8	u < 4.5	u < 4.5	u < 4.1	u < 2	u < 1.8	u < 550	v < 2.9	J	790	v < 96	v < 4.5
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	-	-	u < 62	u < 53	u < 62	u < 57	u < 56	u < 55	u < 50	u < 69	u < 60	u < 53	u < 100	u < 57	u < 56

- No screening level or analytical result available
 NMED - Risk Assessment Guidance for Site Investigations and Remediation (July 2015)
 EPA - Regional Screening Levels (Nov 2015)
 (1) NMED Residential Screening Level
 (2) EPA Residential Screening Level
 (3) EPA Residential - Screening Levels (June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 (4) NMED Industrial Occupational Screening Level
 (5) NMED Construction Worker Screening Level
 (6) EPA Industrial - Screening Levels (June 2015)
 (7) EPA Industrial - Screening Levels (June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
 (8) Soil/GW MCL-based EPA DAF = 20
 (9) Soil/GW Risk-based EPA DAF = 20
 (10) Soil/GW MCL-based EPA DAF = 20
 (11) NMED Table 6-2 TPA - Soil Screening Levels "unknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF
 * - sample reanalyzed for hexavalent chromium, see amended lab report #1505223
 ** - sample reanalyzed for hexavalent chromium, see lab report #1505003
 v = reportable detection above the Practical Quantitation Limit (PQL)
 u = result is not detected at method detection limit (MDL)
 j = estimated result at concentration above MDL but less than PQL

Table 8
SWMU 10 Groundwater Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	MS-10T NMMS	MS-30T NMMS	MS-50T NMMS	MS-110T NMMS	MS-170T NMMS	MS-10-14 NMMS	MS-570T NMMS	MS-970T NMMS	MS-900T NMMS	MS-120T NMMS	MS-320T NMMS
Lab ID			1505001-001	1505005-001	1505218-001	1505998-001	1505700-001	1505701-001	1505708-001	1505710-001	1505998-001	1505998-003	1505998-001
Sample Date			4/29/2015	4/29/2015	5/4/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/20/2016	5/20/2016	9/21/2016
Metals (mg/l) TOTAL													
Antimony	0.006	(2)	0.0011 v	0.0013 J	0.0008 J	< 0.002 u	< 0.002 u	< 0.002 u	< 0.002 u	NA	< 0.002 u	NA	0.00056 J
Arsenic	0.01	(2)	0.008 J	< 0.022 u	< 0.015 u	0.016 Z	0.023 Z	0.029 Z	0.012 Z	NA	0.026 Z	NA	0.017 Z
Barium	2	(2)	0.74 v	0.28 v	0.57 v	5.3 Z	7.3 Z	7 Z	0.37 v	NA	0.26 v	NA	1.1 v
Beryllium	0.004	(2)	0.0024 v	0.00091 J	0.0011 J	0.017 Z	0.037 Z	0.035 Z	0.0015 J	NA	0.0011 J	NA	0.00043 J
Cadmium	0.005	(2)	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.005 u	< 0.005 u	< 0.001 u	NA	< 0.001 u	NA	< 0.001 u
Chromium	0.05	(3)	0.013 v	< 0.002 u	0.0051 J	0.073 v	0.17 Z	0.15 Z	0.0062 v	NA	0.03 v	NA	< 0.003 u
Hexavalent Chromium	0.000252	(4)	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	NA	0.0005 v	NA	< 0.00015 u
Cobalt	0.006	(1)	0.012 v	0.0059 J	0.0056 J	0.077 v	0.14 v	0.13 v	0.025 v	NA	0.011 v	NA	0.0033 J
Cyanide	0.2	(3)	0.046 v	0.14 v	0.013 v	< 0.005 u	< 0.005 u	< 0.005 u	0.055 v	NA	1.05 v	NA	0.143 v
Iron	13,800	(4)	16 Z	2.6 Z	5.7 Z	86 Z	140 Z	130 Z	9.4 Z	NA	7.1 Z	NA	1.9 Z
Lead	0.015	(2)	0.017 Z	0.0024 J	0.0064 v	0.18 Z	0.28 Z	0.24 Z	0.014 v	NA	0.011 v	NA	0.0021 v
Manganese	2,020	(4)	1.2 Z	0.52 Z	0.69 Z	13 Z	18 Z	22 Z	2.9 Z	NA	1.4 Z	NA	2.1 Z
Mercury	0.002	(3)	<0.000059 u	<0.000059 u	<0.000059 u	0.00075 v	0.00039 v	0.00021 v	<0.000059 u	NA	0.00016 J	NA	0.000085 J
Nickel	0.372	(4)	0.19 Z	0.0067 J	0.0044 J	0.13 Z	0.26 Z	0.25 Z	0.64 Z	NA	0.026 v	NA	0.059 v
Selenium	0.05	(3)	0.021 J	0.036 J	0.036 J	0.0099 J	0.008 J	0.01 J	0.019 v	NA	0.04 v	NA	0.041 J
Silver	0.05	(3)	< 0.002 u	< 0.002 u	< 0.002 u	< 0.002 u	< 0.011 u	< 0.011 u	< 0.002 u	NA	< 0.003 u	NA	< 0.003 u
Vanadium	0.0631	(4)	0.028 J	0.01 J	0.013 J	0.12 v	0.17 J	0.16 J	0.019 J	NA	0.024 J	NA	0.0068 J
Zinc	10	(3)	0.071 v	0.023 v	0.054 v	0.19 v	0.45 v	0.36 v	0.046 v	NA	0.043 v	NA	0.0097 J
Chloride	250	(3)	3600 v	7100 v	2800 v	2000 v	330 v	370 v	2300 v	NA	1800 v	NA	1800 v
Fluoride	1.6	(3)	< 0.58 u	< 0.29 u	< 0.029 u	< 0.145 u	1.2 v	1.5 v	0.55 v	NA	< 0.113 u	NA	< 0.25 u
Sulfate	600	(3)	340 v	1100 v	310 v	380 v	370 v	370 v	440 v	NA	260 v	NA	110 v
Metals (mg/l) DISSOLVED													
Antimony (D)	0.006	(2)	0.00093 J	0.00074 J	< 0.001 u	< 0.001 u	0.00023 J	<0.00014 u	< 0.001 u	NA	< 0.002 u	NA	< 0.002 u
Arsenic (D)	0.01	(2)	0.01 J	0.011 J	0.012 J	0.0039 J	0.0025 v	0.003 v	0.011 J	NA	< 0.05 u	NA	0.017 Z
Barium (D)	1	(3)	0.45 v	0.23 v	0.32 v	0.24 v	0.085 v	0.18 v	0.22 v	NA	0.11 v	NA	1.4 v
Beryllium (D)	0.004	(2)	0.00052 J	0.0004 J	0.00042 J	<0.00031 u	<0.00031 u	0.0009 J	<0.00031 u	NA	< 0.0003 u	NA	< 0.0003 u
Cadmium (D)	0.005	(2)	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	NA	< 0.001 u	NA	< 0.001 u
Chromium (D)	0.05	(3)	0.0045 J	0.0055 J	0.0039 J	0.0054 J	0.008 v	0.0075 v	0.0094 v	NA	< 0.002 u	NA	< 0.002 u
Cobalt (D)	0.05	(3)	0.0064 v	0.0081 v	0.0035 J	0.01 v	0.0044 J	0.0051 J	0.023 v	NA	0.0074 v	NA	0.0049 J
Iron (D)	1	(3)	0.58 Z	0.068 v	0.011 J	0.78 Z	2.6 Z	3.9 Z	0.61 Z	NA	0.42 Z	NA	0.23 v
Lead (D)	0.015	(2)	0.001 J	<0.00013 u	<0.00013 u	0.00074 J	0.0014 v	0.0068 v	0.0026 v	J	< 0.001 u	NA	< 0.002 u
Manganese (D)	0.2	(3)	0.93 Z	0.45 Z	0.27 Z	3.9 Z	0.91 Z	1.1 Z	2.4 Z	NA	1.2 Z	NA	2.1 Z
Nickel (D)	0.372	(4)	0.21 Z	0.0053 J	0.0028 J	0.024 v	0.012 v	0.011 v	0.65 Z	NA	0.019 v	NA	0.076 v
Selenium (D)	0.05	(3)	0.03 v	0.041 J	0.036 J	0.0076 J	0.003 v	0.0031 v	0.02 v	NA	0.038 J	NA	0.039 v
Silver (D)	0.05	(3)	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	< 0.001 u	NA	< 0.003 u	NA	< 0.003 u
Vanadium (D)	0.0631	(4)	0.0045 J	0.0048 J	0.002 J	0.0052 J	0.011 J	0.016 J	0.0057 J	NA	0.01 J	NA	0.003 J
Zinc (D)	10	(3)	0.029 v	0.033 v	0.038 v	0.049 v	0.062 v	0.014 v	0.15 v	NA	0.046 v	NA	0.0049 J
Volatiles (ug/l)													
1,1,1,2-Tetrachloroethane	5.72	(4)	< 0.11 u	< 0.11 u	< 0.11 u	< 0.221 u	< 0.221 u	< 0.221 u	< 0.221 u	< 0.11 u	< 1.115 u	< 0.111 u	< 5.573 u
1,1,1-Trichloroethane	60	(3)	< 0.078 u	< 0.078 u	< 0.078 u	< 0.155 u	< 0.155 u	< 0.155 u	< 0.155 u	< 0.078 u	< 0.915 u	< 0.091 u	< 4.575 u
1,1,2,2-Tetrachloroethane	10	(3)	< 0.18 u	< 0.18 u	< 0.18 u	< 0.359 u	< 0.359 u	< 0.359 u	< 0.359 u	< 0.18 u	< 1.282 u	< 0.128 u	< 6.412 u
1,1,2-Trichloroethane	5	(2)	< 0.079 u	< 0.079 u	< 0.079 u	< 0.158 u	< 0.158 u	< 0.158 u	< 0.158 u	< 0.079 u	< 1.273 u	< 0.127 u	< 6.366 u
1,1-Dichloroethane	25	(3)	< 0.4 u	< 0.4 u	< 0.4 u	0.93 J	< 0.8 u	< 0.8 u	< 0.8 u	3.1 v	6.1 J	< 0.108 u	< 5.403 u
1,1-Dichloroethene	5	(3)	< 0.099 u	< 0.099 u	0.12 J	< 0.199 u	< 0.199 u	< 0.199 u	< 0.199 u	0.73 J	< 1.072 u	< 0.107 u	< 5.361 u
1,1-Dichloropropene	-	-	< 0.115 u	< 0.115 u	< 0.115 u	< 0.23 u	< 0.23 u	< 0.23 u	< 0.23 u	< 0.115 u	< 1.331 u	< 0.133 u	< 6.656 u
1,2,3-Trichlorobenzene	0.00747	(4)	< 0.266 u	< 0.266 u	< 0.266 u	< 0.533 u	< 0.533 u	< 0.533 u	< 0.533 u	< 0.266 u	< 1.129 u	< 0.113 u	< 5.643 u
1,2,3-Trichloropropane	70	(2)	< 0.158 u	< 0.158 u	< 0.158 u	< 0.317 u	< 0.317 u	< 0.317 u	< 0.317 u	< 0.158 u	< 2.02 u	< 0.202 u	< 10.1 u
1,2,4-Trichlorobenzene (V)	15	(1)	< 0.283 u	< 0.283 u	< 0.283 u	< 0.565 u	< 0.565 u	< 0.565 u	< 0.565 u	< 0.283 u	< 1.328 u	< 0.133 u	< 6.639 u
1,2,4-Trimethylbenzene	0.2	(2)	< 0.136 u	< 0.136 u	< 0.136 u	< 0.272 u	< 0.272 u	< 0.272 u	< 0.272 u	< 0.136 u	< 2.343 u	< 0.234 u	< 11.717 u

Table 8
SWMU 10 Groundwater Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	MS-10T NMMS	MS-30T NMMS	MS-50T NMMS	MS-110T NMMS	MS-170T NMMS	MS-10T NMMS	MS-50T NMMS	MS-90T NMMS	MS-200T NMMS	MS-120T NMMS	MS-320T NMMS
Lab ID			1505001-001	1505005-001	1505218-001	1505698-001	1505700-001	1505701-001	1505708-001	1505710-001	1505998-001	1505998-003	1506066-001
Sample Date			4/29/2015	4/29/2015	5/4/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/20/2016	5/20/2016	9/21/2016
1,2-Dibromoethane (EDB)	0.05	(2)	< 0.134 u	< 0.134 u	< 0.134 u	< 0.267 u	< 0.267 u	< 0.267 u	< 0.267 u	< 0.134 u	< 1.118 u	< 0.112 u	< 5.589 u
1,2-Dichlorobenzene (V)	600	(2)	< 0.118 u	< 0.118 u	< 0.118 u	< 0.237 u	< 0.237 u	< 0.237 u	< 0.237 u	< 0.118 u	< 4 u	< 0.4 u	< 20 u
1,2-Dichloroethane (EDC)	5	(2)	< 0.176 u	0.48 J	0.32 J	< 0.353 u	< 0.353 u	< 0.353 u	< 0.353 u	0.47 J	< 1.15 u	< 0.115 u	< 5.751 u
1,2-Dichloropropane	5	(2)	< 0.151 u	< 0.151 u	< 0.151 u	< 0.302 u	< 0.302 u	< 0.302 u	< 0.302 u	< 0.151 u	< 1.098 u	< 0.11 u	< 5.491 u
1,3,5-Trimethylbenzene	12	(1)	< 0.123 u	< 0.123 u	3.9 v	22 v	< 0.246 u	< 0.246 u	< 0.246 u	< 0.123 u	64 v	< 0.115 u	46 J
1,3-Dichlorobenzene (V)	-		< 0.093 u	< 0.093 u	< 0.093 u	< 0.187 u	< 0.187 u	< 0.187 u	< 0.187 u	< 0.093 u	< 1.432 u	< 0.143 u	< 7.159 u
1,3-Dichloropropane	370	(1)	< 0.172 u	< 0.172 u	< 0.172 u	< 0.344 u	< 0.344 u	< 0.344 u	< 0.344 u	< 0.172 u	< 1.557 u	< 0.156 u	< 7.786 u
1,4-Dichlorobenzene (V)	75	(2)	< 0.166 u	< 0.166 u	< 0.166 u	< 0.332 u	< 0.332 u	< 0.332 u	< 0.332 u	< 0.166 u	< 1.427 u	< 0.143 u	< 7.133 u
1-Methylnaphthalene (V)	11	(5)	< 0.538 u	< 0.538 u	3.1 J	70 v	< 1.077 u	< 1.077 u	< 1.077 u	< 0.538 u	140 v	3.9 J	110 J
2,2-Dichloropropane	-		< 0.152 u	< 0.152 u	< 0.152 u	< 0.303 u	< 0.303 u	< 0.303 u	< 0.303 u	< 0.152 u	< 1.666 u	< 0.167 u	< 8.332 u
2-Butanone	5660	(4)	< 0.363 u	1.4 J	< 0.363 u	< 0.725 u	< 0.725 u	< 0.725 u	2.9 J	< 0.363 u	630 v	5.7 J	< 36.85 u
2-Chlorotoluene	240	(1)	< 0.079 u	< 0.079 u	< 0.079 u	< 0.158 u	< 0.158 u	< 0.158 u	< 0.158 u	< 0.079 u	< 4 u	< 0.4 u	< 20 u
2-Hexanone	-		< 0.477 u	< 0.477 u	< 0.477 u	< 0.953 u	< 0.953 u	< 0.953 u	< 0.953 u	< 0.477 u	69 J	3.2 J	< 41.993 u
2-Methylnaphthalene (V)	36	(1)	< 0.594 u	< 0.594 u	3.8 J	96 v	1.5 J	< 1.189 u	< 1.189 u	< 0.594 u	210 v	4.9 v	140 J
4-Chlorotoluene	250	(1)	< 0.149 u	< 0.149 u	< 0.149 u	< 0.299 u	< 0.299 u	< 0.299 u	< 0.299 u	< 0.149 u	< 1.281 u	< 0.128 u	< 6.407 u
4-Isopropyltoluene	-		< 0.189 u	< 0.189 u	0.92 J	2.7 v	< 0.377 u	< 0.377 u	< 0.377 u	< 0.189 u	2.5 J	< 0.141 u	< 7.031 u
4-Methyl-2-pentanone	-		< 0.257 u	< 0.257 u	0.61 J	< 0.513 u	< 0.513 u	< 0.513 u	< 0.513 u	< 0.257 u	63 J	2.4 J	< 21.382 u
Acetone	14100	(4)	< 0.936 u	< 0.936 u	< 0.936 u	8.8 J	3.4 J	2.7 J	9.7 J	1.6 J	1400 v	20 v	< 245.437 u
Benzene	5	(2)	4.7 v	2.9 v	27 v	2.5 v	0.47 J	0.47 J	0.51 J	0.24 J	1600 v	0.15 J	320 v
Bromobenzene	62	(1)	< 0.108 u	< 0.108 u	< 0.108 u	< 0.216 u	< 0.216 u	< 0.216 u	< 0.216 u	< 0.108 u	< 0.977 u	< 0.098 u	< 4.885 u
Bromodichloromethane	1.34	(4)	< 0.09 u	< 0.09 u	< 0.09 u	< 0.179 u	< 0.179 u	< 0.179 u	< 0.179 u	< 0.09 u	< 1.398 u	1.8 v	< 6.989 u
Bromoform	33	(5)	< 0.162 u	< 0.162 u	< 0.162 u	< 0.325 u	< 0.325 u	< 0.325 u	< 0.325 u	< 0.162 u	< 1.021 u	0.16 J	< 5.107 u
Bromomethane	7.54	(4)	< 1.161 u	< 1.161 u	< 1.161 u	< 2.322 u	< 2.322 u	< 2.322 u	< 2.322 u	< 1.161 u	< 7.799 u	< 0.78 u	< 38.994 u
Carbon disulfide	810	(4)	< 0.673 u	< 0.673 u	< 0.673 u	< 1.346 u	< 1.346 u	< 1.346 u	< 1.346 u	< 0.673 u	< 5.975 u	< 0.597 u	< 29.874 u
Carbon Tetrachloride	5	(2)	< 0.078 u	< 0.078 u	< 0.078 u	< 0.156 u	< 0.156 u	< 0.156 u	< 0.156 u	< 0.078 u	< 1.082 u	< 0.108 u	< 5.41 u
Chlorobenzene	100	(2)	< 0.093 u	< 0.093 u	< 0.093 u	< 0.187 u	< 0.187 u	< 0.187 u	< 0.187 u	< 0.093 u	< 1.145 u	< 0.114 u	< 5.723 u
Chloroethane	20900	(4)	< 0.105 u	< 0.105 u	< 0.105 u	< 0.209 u	< 0.209 u	< 0.209 u	< 0.209 u	< 0.105 u	< 1.91 u	< 0.191 u	< 9.551 u
Chloroform	100	(3)	< 0.215 u	< 0.215 u	< 0.215 u	< 0.43 u	< 0.43 u	< 0.43 u	< 0.43 u	< 0.215 u	< 0.888 u	3.4 v	< 4.439 u
Chloromethane	20.3	(4)	< 0.174 u	< 0.174 u	< 0.174 u	< 0.347 u	< 0.347 u	< 0.347 u	< 0.347 u	< 0.174 u	< 2.128 u	< 0.213 u	< 10.64 u
cis-1,2-DCE	70	(2)	< 0.081 u	< 0.081 u	< 0.081 u	< 0.161 u	< 0.161 u	< 0.161 u	< 0.161 u	0.39 J	< 1.242 u	< 0.124 u	< 6.208 u
cis-1,3-Dichloropropene	4.7	(4)	< 0.133 u	< 0.133 u	< 0.133 u	< 0.266 u	< 0.266 u	< 0.266 u	< 0.266 u	< 0.133 u	< 1.065 u	< 0.107 u	< 5.327 u
Dibromochloromethane	1.68	(4)	< 0.097 u	< 0.097 u	< 0.097 u	< 0.194 u	< 0.194 u	< 0.194 u	< 0.194 u	< 0.097 u	< 0.867 u	1.3 v	< 4.337 u
Dibromomethane	8.3	(1)	< 0.234 u	< 0.234 u	< 0.234 u	< 0.469 u	< 0.469 u	< 0.469 u	< 0.469 u	< 0.234 u	< 1.191 u	< 0.119 u	< 5.957 u
Dichlorodifluoromethane	197	(4)	< 0.692 u	< 0.692 u	< 0.692 u	< 1.385 u	< 1.385 u	< 1.385 u	< 1.385 u	< 0.692 u	< 3.573 u	< 0.357 u	< 17.866 u
Ethylbenzene	700	(2)	< 0.101 u	< 0.101 u	1.6 v	40 v	< 0.202 u	< 0.202 u	< 0.202 u	< 0.101 u	290 v	< 0.112 u	200 v
Hexachlorobutadiene (V)	2.95	(4)	< 0.251 u	< 0.251 u	< 0.251 u	< 0.503 u	< 0.503 u	< 0.503 u	< 0.503 u	< 0.251 u	< 1.986 u	< 0.199 u	< 9.93 u
Isopropylbenzene	447	(4)	< 0.152 u	< 0.152 u	1.2 v	8.5 v	< 0.304 u	< 0.304 u	< 0.304 u	< 0.152 u	20 v	< 0.105 u	24 J
Methyl tert-butyl ether (MTBE)	143	(4)	6.1 v	5.5 v	< 0.174 u	14 v	13 v	16 v	150 v	19 v	3.8 J	0.8 J	17 J
Methylene Chloride	5	(2)	< 0.36 u	< 0.36 u	< 0.36 u	< 0.721 u	< 0.721 u	< 0.721 u	< 0.721 u	< 0.36 u	3.4 J	< 0.187 u	< 9.371 u
Naphthalene (V)	1.65	(4)	< 0.218 u	< 0.218 u	< 0.218 u	45 v	0.52 J	< 0.436 u	< 0.436 u	< 0.218 u	310 v	1.3 J	200 v
n-Butylbenzene	-		< 0.245 u	< 0.245 u	0.4 J	3.4 J	< 0.491 u	< 0.491 u	< 0.491 u	< 0.245 u	4 J	< 0.16 u	< 8.02 u
n-Propylbenzene	-		< 0.163 u	0.31 J	0.64 J	11 v	< 0.326 u	< 0.326 u	< 0.326 u	< 0.163 u	30 v	< 0.132 u	30 J
sec-Butylbenzene	-		< 0.229 u	< 0.229 u	0.6 J	2.2 v	< 0.457 u	< 0.457 u	< 0.457 u	< 0.229 u	1.7 J	< 0.123 u	12 J
Styrene	100	(2)	< 0.106 u	< 0.106 u	< 0.106 u	< 0.211 u	< 0.211 u	< 0.211 u	< 0.211 u	< 0.106 u	< 1.1 u	< 0.11 u	< 5.5 u
tert-Butylbenzene	-		< 0.129 u	< 0.129 u	< 0.129 u	< 0.259 u	< 0.259 u	< 0.259 u	< 0.259 u	< 0.129 u	< 1.15 u	< 0.115 u	< 5.75 u
Tetrachloroethene (PCE)	5	(2)	< 0.16 u	< 0.16 u	< 0.16 u	< 0.321 u	< 0.321 u	< 0.321 u	< 0.321 u	< 0.16 u	< 1.52 u	< 0.152 u	< 7.601 u
Toluene	750	(3)	< 0.108 u	< 0.108 u	2.7 v	6 v	< 0.217 u	0.3 J	< 0.217 u	< 0.108 u	4000 v	0.3 J	140 v
trans-1,2-DCE	100	(2)	< 0.094 u	< 0.094 u	< 0.094 u	< 0.188 u	< 0.188 u	< 0.188 u	< 0.188 u	< 0.094 u	< 4 u	< 0.4 u	< 20 u
trans-1,3-Dichloropropene	4.7	(4)	< 0.113 u	< 0.113 u	< 0.113 u	< 0.226 u	< 0.226 u	< 0.226 u	< 0.226 u	< 0.113 u	< 1.033 u	< 0.103 u	< 5.163 u
Trichloroethene (TCE)	5	(2)	< 0.163 u	< 0.163 u	< 0.163 u	< 0.327 u	< 0.327 u	< 0.327 u	< 0.327 u	0.77 J	< 1.751 u	< 0.175 u	< 8.755 u
Trichlorofluoromethane	1140	(4)	< 0.127 u	< 0.127 u	< 0.127 u	< 0.254 u	< 0.254 u	< 0.254 u	< 0.254 u	< 0.127 u	< 2.044 u	< 0.204 u	< 10.218 u

Table 8
SWMU 10 Groundwater Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

Screening Levels		Source	SNM1 10-1-GW	SNM1 10-3-GW	SNM1 10-5-GW	SNM1 10-11-GW	SNM1 10-12-GW	SNM1 10-15-GW	SNM1 10-16-GW	SNM1 10-21-GW	SNM1 10-25-GW			
Lab ID	Sample Date		1505001-001 4/29/2015	1505005-001 4/29/2015	1505218-001 5/4/2015	1505998-001 5/14/2015	1505700-001 5/14/2015	1505701-001 5/14/2015	1505708-001 5/14/2015	1505710-001 5/14/2015	1505998-001 5/20/2016	1505998-003 5/20/2016	1505998-003 9/21/2016	
Vinyl chloride	1	(3)	< 0.125 u	< 0.125 u	< 0.125 u	< 0.251 u	< 0.251 u	< 0.251 u	< 0.251 u	< 0.47 J	< 1.954 u	< 0.195 u	< 9.769 u	
Xylenes, Total	620	(3)	< 0.282 u	< 0.282 u	13 v	230 v	< 0.565 u	< 0.565 u	< 0.565 u	0.35 J	1900 v	0.72 J	1200 v	
Semivolatiles (ug/l)														
1,2,4-Trichlorobenzene	70	(2)	< 1.993 u	< 1.993 u	< 1.993 u	< 3.987 u	< 3.987 u	< 3.987 u	< 1.993 u	< 1.993 u	< 130.984 u	< 13.098 u	< 2.62 u	
1,2-Dichlorobenzene	600	(2)	< 1.899 u	< 1.899 u	< 1.899 u	< 3.798 u	< 3.798 u	< 3.798 u	< 1.899 u	< 1.899 u	< 114.254 u	< 11.425 u	< 2.285 u	
1,3-Dichlorobenzene	-		< 1.69 u	< 1.69 u	< 1.69 u	< 3.381 u	< 3.381 u	< 3.381 u	< 1.69 u	< 1.69 u	< 112.848 u	< 11.285 u	< 2.257 u	
1,4-Dichlorobenzene	75	(2)	< 1.234 u	< 1.234 u	< 1.234 u	< 2.468 u	< 2.468 u	< 2.468 u	< 1.234 u	< 1.234 u	< 119.407 u	< 11.941 u	< 2.388 u	
1-Methylnaphthalene	11	(5)	< 1.801 u	< 1.801 u	< 1.801 u	20 J	< 3.603 u	< 3.603 u	< 1.801 u	< 1.801 u	170 J	< 14.589 u	120 v	
2,4,5-Trichlorophenol	1170	(4)	< 1.617 u	< 1.617 u	< 1.617 u	< 3.233 u	< 3.233 u	< 3.233 u	< 1.617 u	< 1.617 u	< 108.993 u	< 10.899 u	< 2.18 u	
2,4,6-Trichlorophenol	11.9	(4)	< 1.258 u	< 1.258 u	< 1.258 u	< 2.517 u	< 2.517 u	< 2.517 u	< 1.258 u	< 1.258 u	< 122.288 u	< 12.229 u	< 2.446 u	
2,4-Dichlorophenol	45.3	(4)	< 1.395 u	< 1.395 u	< 1.395 u	< 2.79 u	< 2.79 u	< 2.79 u	< 1.395 u	< 1.395 u	< 116.521 u	< 11.652 u	< 2.33 u	
2,4-Dimethylphenol	354	(4)	< 1.854 u	< 1.854 u	< 1.854 u	< 3.708 u	< 3.708 u	< 3.708 u	< 1.854 u	< 1.854 u	62000 v	< 15.048 u	1100 v	
2,4-Dinitrophenol	38.8	(4)	< 1.07 u	< 1.07 u	< 1.07 u	< 2.139 u	< 2.139 u	< 2.139 u	< 1.07 u	< 1.07 u	< 137.673 u	< 13.767 u	< 2.753 u	
2,4-Dinitrotoluene	2.37	(4)	< 1.434 u	< 1.434 u	< 1.434 u	< 2.868 u	< 2.868 u	< 2.868 u	< 1.434 u	< 1.434 u	< 156.474 u	< 15.647 u	< 3.129 u	
2,6-Dinitrotoluene	0.484	(4)	< 1.49 u	< 1.49 u	< 1.49 u	< 2.981 u	< 2.981 u	< 2.981 u	< 1.49 u	< 1.49 u	< 136.691 u	< 13.669 u	< 2.734 u	
2-Chloronaphthalene	733	(4)	< 1.716 u	< 1.716 u	< 1.716 u	< 3.431 u	< 3.431 u	< 3.431 u	< 1.716 u	< 1.716 u	< 112.551 u	< 11.255 u	< 2.251 u	
2-Chlorophenol	91	(4)	< 1.204 u	< 1.204 u	< 1.204 u	< 2.408 u	< 2.408 u	< 2.408 u	< 1.204 u	< 1.204 u	< 109.186 u	< 10.919 u	< 2.184 u	
2-Methylnaphthalene	36	(1)	< 2.246 u	< 2.246 u	< 2.246 u	16 J	< 4.492 u	< 4.492 u	< 2.246 u	< 2.246 u	240 J	< 14.451 u	180 v	
2-Methylphenol	930	(1)	< 1.246 u	< 1.246 u	< 1.246 u	< 2.491 u	< 2.491 u	< 2.491 u	< 1.246 u	< 1.246 u	130000 v	< 12.696 u	2600 v	
2-Nitroaniline	190	(1)	< 1.795 u	< 1.795 u	< 1.795 u	< 3.589 u	< 3.589 u	< 3.589 u	< 1.795 u	< 1.795 u	< 137.909 u	< 13.791 u	< 2.758 u	
2-Nitrophenol	-		< 1.231 u	< 1.231 u	< 1.231 u	< 2.463 u	< 2.463 u	< 2.463 u	< 1.231 u	< 1.231 u	< 118.918 u	< 11.892 u	< 2.378 u	
3,3'-Dichlorobenzidine	1.24	(4)	< 2.608 u	< 2.608 u	< 2.608 u	< 5.217 u	< 5.217 u	< 5.217 u	< 2.608 u	< 2.608 u	< 119.787 u	< 11.979 u	< 2.396 u	
3,4-Methylphenol	930	(1)	< 1.475 u	< 1.475 u	< 1.475 u	< 2.951 u	< 2.951 u	< 2.951 u	< 1.475 u	< 1.475 u	190000 v	< 11.489 u	6.2 J	
3-Nitroaniline	-		< 1.48 u	< 1.48 u	< 1.48 u	< 2.96 u	< 2.96 u	< 2.96 u	< 1.48 u	< 1.48 u	< 147.393 u	< 14.739 u	< 2.948 u	
4,6-Dinitro-2-methylphenol	1.51	(4)	< 1.368 u	< 1.368 u	< 1.368 u	< 2.736 u	< 2.736 u	< 2.736 u	< 1.368 u	< 1.368 u	< 89.83 u	< 8.983 u	< 1.797 u	
4-Bromophenyl phenyl ether	-		< 1.409 u	< 1.409 u	< 1.409 u	< 2.817 u	< 2.817 u	< 2.817 u	< 1.409 u	< 1.409 u	< 131.835 u	< 13.183 u	< 2.637 u	
4-Chloro-3-methylphenol	-		< 1.351 u	< 1.351 u	< 1.351 u	< 2.701 u	< 2.701 u	< 2.701 u	< 1.351 u	< 1.351 u	< 127.938 u	< 12.794 u	< 2.559 u	
4-Chloroaniline	3.7	(5)	< 1.874 u	< 1.874 u	< 1.874 u	< 3.748 u	< 3.748 u	< 3.748 u	< 1.874 u	< 1.874 u	< 135.609 u	< 13.561 u	< 2.712 u	
4-Chlorophenyl phenyl ether	-		< 2.013 u	< 2.013 u	< 2.013 u	< 4.026 u	< 4.026 u	< 4.026 u	< 2.013 u	< 2.013 u	< 127.781 u	< 12.778 u	< 2.556 u	
4-Nitroaniline	98	(5)	< 1.242 u	< 1.242 u	< 1.242 u	< 2.483 u	< 2.483 u	< 2.483 u	< 1.242 u	< 1.242 u	< 127.946 u	< 12.795 u	< 2.559 u	
4-Nitrophenol	-		< 1.405 u	< 1.405 u	< 1.405 u	< 2.81 u	< 2.81 u	< 2.81 u	< 1.405 u	< 1.405 u	< 127.659 u	< 12.766 u	< 2.553 u	
Acenaphthene	535	(4)	< 1.885 u	< 1.885 u	< 1.885 u	< 3.769 u	< 3.769 u	< 3.769 u	< 1.885 u	< 1.885 u	< 127.645 u	< 12.765 u	6.5 J	
Acenaphthylene	-		< 1.866 u	< 1.866 u	< 1.866 u	< 3.732 u	< 3.732 u	< 3.732 u	< 1.866 u	< 1.866 u	< 117.837 u	< 11.784 u	< 2.357 u	
Aniline	130	(5)	< 1.546 u	< 1.546 u	< 1.546 u	< 3.092 u	< 3.092 u	< 3.092 u	< 1.546 u	< 1.546 u	< 122.03 u	< 12.203 u	< 2.441 u	
Anthracene	1720	(4)	< 1.605 u	< 1.605 u	< 1.605 u	< 3.21 u	< 3.21 u	< 3.21 u	< 1.605 u	< 1.605 u	< 124.299 u	< 12.43 u	< 2.486 u	
Azobenzene	1.2	(5)	< 2.005 u	< 2.005 u	< 2.005 u	< 4.011 u	< 4.011 u	< 4.011 u	< 2.005 u	< 2.005 u	< 133.416 u	< 13.342 u	< 2.668 u	
Benzo[a]anthracene	0.343	(4)	< 2.506 u	< 2.506 u	< 2.506 u	< 5.013 u	< 5.013 u	< 5.013 u	< 2.506 u	< 2.506 u	< 131.964 u	< 13.196 u	< 2.639 u	
Benzo[a]fluoranthene	0.2	(2)	< 2.724 u	< 2.724 u	< 2.724 u	< 5.448 u	< 5.448 u	< 5.448 u	< 2.724 u	< 2.724 u	< 135.887 u	< 13.589 u	< 2.718 u	
Benzo[b]fluoranthene	0.343	(4)	< 2.403 u	< 2.403 u	< 2.403 u	< 4.806 u	< 4.806 u	< 4.806 u	< 2.403 u	< 2.403 u	< 144.006 u	< 14.401 u	< 2.88 u	
Benzo[k]fluoranthene	-		< 3.125 u	< 3.125 u	< 3.125 u	< 6.25 u	< 6.25 u	< 6.25 u	< 3.125 u	< 3.125 u	< 132.174 u	< 13.217 u	< 2.643 u	
Benzo[k]fluoranthene	3.43	(4)	< 2.515 u	< 2.515 u	< 2.515 u	< 5.03 u	< 5.03 u	< 5.03 u	< 2.515 u	< 2.515 u	< 149.877 u	< 14.988 u	< 2.998 u	
Benzoic acid	75000	(1)	< 1.026 u	< 1.026 u	< 1.026 u	< 2.051 u	< 2.051 u	< 2.051 u	< 1.026 u	< 1.026 u	7.1 J	< 130.301 u	< 13.03 u	< 2.606 u
Benzo[1,2-d]anthracene	2000	(1)	< 1.172 u	< 1.172 u	< 1.172 u	< 2.344 u	< 2.344 u	< 2.344 u	< 1.172 u	< 1.172 u	< 150.605 u	< 15.061 u	< 3.012 u	
Bis(2-chloroethoxy)methane	59	(1)	< 1.805 u	< 1.805 u	< 1.805 u	< 3.61 u	< 3.61 u	< 3.61 u	< 1.805 u	< 1.805 u	< 140.68 u	< 14.068 u	< 2.814 u	
Bis(2-chloroethoxy)ether	9.76	(4)	< 1.774 u	< 1.774 u	< 1.774 u	< 3.547 u	< 3.547 u	< 3.547 u	< 1.774 u	< 1.774 u	< 133.677 u	< 13.368 u	< 2.674 u	
Bis(2-chloroisopropoxy)ether	9.76	(4)	< 2.059 u	< 2.059 u	< 2.059 u	< 4.119 u	< 4.119 u	< 4.119 u	< 2.059 u	< 2.059 u	< 95.445 u	< 9.545 u	< 1.909 u	
Bis(2-ethylhexyl)phthalate	6	(2)	< 3.326 u	< 3.326 u	< 3.326 u	< 6.651 u	< 6.651 u	< 6.651 u	< 3.326 u	< 3.326 u	< 130.781 u	< 13.078 u	2.8 J	
Butyl benzyl phthalate	160	(5)	< 2.37 u	< 2.37 u	< 2.37 u	< 4.74 u	< 4.74 u	< 4.74 u	< 2.37 u	< 2.37 u	< 123.904 u	< 12.39 u	< 2.478 u	
Carbazole	-		< 1.49 u	< 1.49 u	< 1.49 u	< 2.98 u	< 2.98 u	< 2.98 u	< 1.49 u	< 1.49 u	< 114.364 u	< 11.436 u	3.2 J	
Chrysene	34.3	(4)	< 2.154 u	< 2.154 u	< 2.154 u	< 4.309 u	< 4.309 u	< 4.309 u	< 2.154 u	< 2.154 u	< 138.94 u	< 13.894 u	< 2.779 u	
Dibenz[a,h]anthracene	0.106	(4)	< 3.268 u	< 3.268 u	< 3.268 u	< 6.537 u	< 6.537 u	< 6.537 u	< 3.268 u	< 3.268 u	< 133.056 u	< 13.306 u	< 2.661 u	

Table 8
SWMU 10 Groundwater Analytical Results Summary
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	MS-1-OT NMMS	MS-3-OT NMMS	MS-5-OT NMMS	MS-7-OT NMMS	MS-12-12-OT NMMS	MS-14-OT NMMS	MS-17-OT NMMS	MS-19-OT NMMS	MS-20-OT NMMS	MS-21-OT NMMS	MS-22-OT NMMS
Lab ID			1505001-001	1505005-001	1505218-001	1505998-001	1505700-001	1505701-001	1505708-001	1505710-001	1505998-001	1505998-003	1505998-001
Sample Date			4/29/2015	4/29/2015	5/4/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/14/2015	5/20/2016	5/20/2016	9/21/2016
Dibenzofuran			< 1.902 u	< 1.902 u	< 1.902 u	< 3.804 u	< 3.804 u	< 3.804 u	< 1.902 u	< 1.902 u	< 124.667 u	< 12.467 u	< 2.493 u
Diethyl phthalate	14800	(4)	< 1.673 u	< 1.673 u	< 1.673 u	< 3.347 u	< 3.347 u	< 3.347 u	< 1.673 u	< 1.673 u	< 135.726 u	< 13.573 u	< 2.715 u
Dimethyl phthalate	-		< 1.995 u	< 1.995 u	< 1.995 u	< 3.99 u	< 3.99 u	< 3.99 u	< 1.995 u	< 1.995 u	< 121.461 u	< 12.146 u	< 2.429 u
Di-n-butyl phthalate	885	(4)	< 2.103 u	< 2.103 u	< 2.103 u	< 4.206 u	< 4.206 u	< 4.206 u	< 2.103 u	< 2.103 u	< 122.177 u	< 12.218 u	< 2.444 u
Di-n-octyl phthalate	-		< 1.939 u	< 1.939 u	< 1.939 u	< 3.879 u	< 3.879 u	< 3.879 u	< 1.939 u	< 1.939 u	< 99.139 u	< 9.914 u	< 1.983 u
Fluoranthene	802	(4)	< 1.476 u	< 1.476 u	< 1.476 u	< 2.951 u	< 2.951 u	< 2.951 u	< 1.476 u	< 1.476 u	< 130.365 u	< 13.036 u	< 2.607 u
Fluorene	288	(4)	< 1.672 u	< 1.672 u	< 1.672 u	< 3.344 u	< 3.344 u	< 3.344 u	< 1.672 u	< 1.672 u	< 136.178 u	< 13.618 u	8.7 J
Hexachlorobenzene	1	(2)	< 2.022 u	< 2.022 u	< 2.022 u	< 4.045 u	< 4.045 u	< 4.045 u	< 2.022 u	< 2.022 u	< 131.654 u	< 13.165 u	< 2.633 u
Hexachlorobutadiene	2.95	(4)	< 1.949 u	< 1.949 u	< 1.949 u	< 3.898 u	< 3.898 u	< 3.898 u	< 1.949 u	< 1.949 u	< 109.224 u	< 10.922 u	< 2.184 u
Hexachlorocyclopentadiene	50	(2)	< 1.471 u	< 1.471 u	< 1.471 u	< 2.942 u	< 2.942 u	< 2.942 u	< 1.471 u	< 1.471 u	< 114.217 u	< 11.422 u	< 2.284 u
Hexachloroethane	6.9	(4)	< 1.612 u	< 1.612 u	< 1.612 u	< 3.224 u	< 3.224 u	< 3.224 u	< 1.612 u	< 1.612 u	< 118.423 u	< 11.842 u	< 2.368 u
Indeno[1,2,3-cd]pyrene	0.343	(4)	< 2.46 u	< 2.46 u	< 2.46 u	< 4.919 u	< 4.919 u	< 4.919 u	< 2.46 u	< 2.46 u	< 148.194 u	< 14.819 u	< 2.964 u
Isophorone	779	(4)	< 1.952 u	< 1.952 u	< 1.952 u	< 3.905 u	< 3.905 u	< 3.905 u	< 1.952 u	< 1.952 u	< 130.754 u	< 13.075 u	< 2.615 u
Naphthalene	1.65	(4)	< 1.834 u	< 1.834 u	< 1.834 u	4.4 J	< 3.667 u	< 3.667 u	< 1.834 u	< 1.834 u	240 J	< 12.988 u	170 v
Nitrobenzene	1.4	(4)	< 1.494 u	< 1.494 u	< 1.494 u	< 2.988 u	< 2.988 u	< 2.988 u	< 1.494 u	< 1.494 u	< 137.669 u	< 13.767 u	< 2.753 u
N-Nitrosodimethylamine	0.00165	(4)	< 1.417 u	< 1.417 u	< 1.417 u	< 2.834 u	< 2.834 u	< 2.834 u	< 1.417 u	< 1.417 u	< 107.9 u	< 10.79 u	< 2.158 u
N-Nitrosodi-n-propylamine	0.11	(5)	< 2.036 u	< 2.036 u	< 2.036 u	< 4.073 u	< 4.073 u	< 4.073 u	< 2.036 u	< 2.036 u	< 119.451 u	< 11.945 u	< 2.389 u
N-Nitrosodiphenylamine	0.0049	(4)	< 2.467 u	< 2.467 u	< 2.467 u	< 4.934 u	< 4.934 u	< 4.934 u	< 2.467 u	< 2.467 u	< 115.994 u	< 11.599 u	< 2.32 u
Phenanthrene	170	(4)	< 1.997 u	< 1.997 u	< 1.997 u	< 3.993 u	< 3.993 u	< 3.993 u	< 1.997 u	< 1.997 u	< 129.337 u	< 12.934 u	5.7 J
Pentachlorophenol	1	(2)	< 1.137 u	< 1.137 u	< 1.137 u	< 2.275 u	< 2.275 u	< 2.275 u	< 1.137 u	< 1.137 u	< 117.119 u	< 11.712 u	< 2.342 u
Phenol	5760	(4)	< 1.085 u	< 1.085 u	< 1.085 u	< 2.171 u	< 2.171 u	< 2.171 u	< 1.085 u	< 1.085 u	89000 v	< 9.926 u	< 1.985 u
Pyrene	117	(4)	< 2.318 u	< 2.318 u	< 2.318 u	< 4.636 u	< 4.636 u	< 4.636 u	< 2.318 u	< 2.318 u	< 154.722 u	< 15.472 u	< 3.094 u
Pyridine	20	(1)	< 1.674 u	< 1.674 u	< 1.674 u	< 3.348 u	< 3.348 u	< 3.348 u	< 1.674 u	< 1.674 u	< 108.027 u	< 10.803 u	< 2.161 u
TPH (mg/l)													
Gasoline Range Organics (GRO)	-		0.028 J	0.033 J	0.21 v	1.5 v	< 0.08 u	< 0.08 u	0.78 v	< 0.04 u	25 v	0.047 J	8.6 v
Diesel Range Organics (DRO)	-		< 0.91 u	< 0.91 u	3.1 v	5.5 v	< 0.91 u	< 0.91 u	1 v	< 0.91 u	440 v	NA	20 v
Motor Oil Range Organics (MRO)	-		< 5 u	< 5 u	< 5 u	< 5 u	< 5 u	< 5 u	< 5 u	< 5 u	< 50 u	NA	< 5 u

- No screening level or analytical result available

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (Nov. 2015) - Tap Water

(2) EPA - Regional Screening Levels (Nov. 2015) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2 - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

v = reportable detection above the Practical quantitation limit (PQL)

u = result is not detected at method detection limit (MDL)

j = estimated result at concentration above MDL but less than PQL

z = concentration exceeds MCL

NA = not analyzed

Table 9
Soil Cumulative Risk and Hazard Index Evaluation
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Maximum Concentration	Maximum Concentration divided by Residential Soil Screening Level	Maximum Concentration divided by Non- Residential Soil Screening Level
CARCINOGENIC CONSTITUENTS							
Metals (mg/kg)							
Arsenic	4.25E+00	(1)	2.15E+01	(4)	5.40E+00	1.27E+00	2.51E-01
Volatiles (mg/kg)							
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	4.73E-04	6.02E-06	1.23E-06
Benzene	1.78E+01	(1)	8.72E+01	(4)	8.00E+00	4.50E-01	9.17E-02
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.40E+01	1.86E-01	3.81E-02
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	9.36E-03	9.60E-06	1.94E-06
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	5.10E-01	1.25E-03	4.23E-04
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	2.60E+01	5.24E-01	1.64E-01
Semi-volatiles (mg/kg)							
1-Methylnaphthalene	1.80E+02	(3)	7.30E+02	(7)	7.60E+01	4.22E-01	1.04E-01
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.50E+00	3.94E-03	8.19E-04
Carcinogenic Constituents Cumulative Risk x 10⁻⁵						2.86E+00	6.50E-01
NON-CARCINOGENIC CONSTITUENTS							
Metals (mg/kg)							
Antimony	3.13E+01	(1)	1.42E+02	(5)	4.00E+00	1.28E-01	2.83E-02
Barium	1.56E+04	(1)	4.35E+03	(5)	2.90E+03	1.86E-01	6.66E-01
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.80E+00	1.15E-02	1.22E-02
Cadmium	7.05E+01	(1)	7.21E+01	(5)	6.20E-02	8.79E-04	8.59E-04
Chromium	9.66E+01	(1)	1.34E+02	(5)	1.50E+02	1.55E+00	1.12E+00
Cobalt	2.30E+01	(2)	3.50E+02	(6)	9.10E+00	3.96E-01	2.60E-02
Cyanide	1.12E+01	(1)	1.21E+01	(5)	3.90E+00	3.50E-01	3.23E-01
Iron	5.50E+04	(2)	8.20E+05	(6)	2.40E+04	4.36E-01	2.93E-02
Lead	4.00E+02	(1)	8.00E+02	(4)	2.10E+01	5.25E-02	2.63E-02
Manganese	1.80E+03	(2)	2.60E+04	(6)	1.80E+03	1.00E+00	6.92E-02
Mercury	2.38E+01	(1)	2.07E+01	(5)	2.00E+00	8.41E-02	9.67E-02
Nickel	1.56E+03	(1)	6.19E+03	(5)	1.70E+01	1.09E-02	2.74E-03
Vanadium	3.94E+02	(1)	6.14E+02	(5)	4.90E+01	1.24E-01	7.98E-02
Zinc	2.35E+04	(1)	1.06E+05	(5)	3.90E+02	1.66E-02	3.67E-03
Volatiles (mg/kg)							
1,2,4-Trimethylbenzene	5.80E+01	(2)	2.40E+02	(6)	2.70E+01	4.66E-01	1.13E-01
1,3,5-Trimethylbenzene	7.80E+02	(2)	1.20E+04	(6)	1.00E+01	1.28E-02	8.33E-04
2-Butanone	3.74E+04	(1)	9.17E+04	(5)	4.24E-03	1.13E-07	4.63E-08
2-Hexanone	2.00E+02	(2)	1.30E+03	(6)	9.62E-04	4.81E-06	7.40E-07
4-Methyl-2-pentanone	5.81E+03	(1)	2.02E+04	(5)	0.00E+00	0.00E+00	0.00E+00
Acetone	6.63E+04	(1)	2.42E+05	(5)	1.50E-01	2.26E-06	6.21E-07
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.20E-01	1.81E-02	1.79E-02
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	9.68E-04	6.23E-07	5.97E-07

Table 9
Soil Cumulative Risk and Hazard Index Evaluation
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Maximum Concentration	Maximum Concentration divided by Residential Soil Screening Level	Maximum Concentration divided by Non- Residential Soil Screening Level
Isopropylbenzene	2.36E+03	(1)	2.74E+03	(5)	3.10E+00	1.31E-03	1.13E-03
n-Butylbenzene	3.90E+03	(2)	5.80E+04	(6)	2.80E+00	7.18E-04	4.83E-05
n-Propylbenzene	3.80E+03	(2)	2.40E+04	(6)	5.20E+00	1.37E-03	2.17E-04
sec-Butylbenzene	7.80E+03	(2)	1.20E+05	(6)	1.80E+00	2.31E-04	1.50E-05
Toluene	5.23E+03	(1)	1.40E+04	(5)	3.60E+01	6.89E-03	2.56E-03
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	8.60E+01	9.88E-02	1.08E-01
Semi-volatiles (mg/kg)							
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.60E+01	2.92E-02	6.69E-03
2-Methylnaphthalene	2.40E+02	(2)	3.00E+03	(6)	1.30E+02	5.42E-01	4.33E-02
2-Methylphenol (cresol,o-)	3.20E+03	(2)	4.10E+04	(6)	5.60E+01	1.75E-02	1.37E-03
Benzoic acid	2.50E+05	(2)	3.30E+06	(6)	1.60E+00	6.40E-06	4.85E-07
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	2.80E-01	5.68E-06	1.30E-06
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	3.50E-01	5.68E-06	1.30E-06
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.10E+00	3.49E-03	8.07E-04
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	1.50E+01	8.63E-03	1.99E-03
Phenol	1.83E+04	(1)	7.74E+04	(5)	5.20E+01	2.84E-03	6.72E-04
Pyrene	1.74E+03	(1)	7.53E+03	(5)	3.30E-01	1.90E-04	4.38E-05
Non-Carcinogenic Constituents Hazard Index						5.56E+00	2.78E+00

NMED - Risk Assessment Guidance for Site Investigations and Remediation (July 2015)

EPA - Regional Screening Levels (Nov 2015)

(1) NMED Residential Screening Level

(2) EPA Residential Screening Level

(3) EPA Residential - Screening Levels (June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

(4) NMED Industrial Occupational Screening Level

(5) NMED Construction Worker Screening Level

(6) EPA Industrial - Screening Levels (June 2015)

(7) EPA Industrial - Screening Levels June 2015) multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

Table 10
Groundwater Cumulative Risk and Hazard Index Evaluation
Western Refining Southwest, Inc. - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	Maximum Concentration	Maximum Concentration divided by Residential Groundwater Screening Level
CARCINOGENIC CONSTITUENTS				
Metals (mg/l) DISSOLVED				
Arsenic (D)	1.00E-02	(2)	1.70E-02	1.70E+00
Chromium (D)	5.00E-02	(3)	9.40E-03	1.88E-01
Hexavalent Chromium	2.52E-04	(4)	5.00E-04	1.98E+00
Volatiles (ug/l)				
1,1-Dichloroethane	2.50E+01	(3)	6.10E+00	2.44E-01
1,2-Dichloroethane (EDC)	5.00E+00	(2)	4.80E-01	9.60E-02
Benzene	5.00E+00	(2)	1.60E+03	3.20E+02
Bromodichloromethane	1.34E+00	(4)	1.80E+00	1.34E+00
Bromoform	3.30E+01	(5)	1.60E-01	4.85E-03
Chloroform	1.00E+02	(3)	3.40E+00	3.40E-02
Dibromochloromethane	1.68E+00	(4)	1.30E+00	7.74E-01
Ethylbenzene	7.00E+02	(2)	2.90E+02	4.14E-01
Methyl tert-butyl ether (MTBE)	1.43E+02	(4)	1.50E+02	1.05E+00
Methylene Chloride	5.00E+00	(2)	3.40E+00	6.80E-01
Naphthalene	1.65E+00	(4)	3.10E+02	1.88E+02
Trichloroethene (TCE)	5.00E+00	(2)	7.70E-01	1.54E-01
Vinyl chloride	1.00E+00	(3)	4.70E-01	4.70E-01
Semivolatiles (ug/l)				
1-Methylnaphthalene	1.10E+01	(5)	1.70E+02	1.55E+01
Bis(2-ethylhexyl)phthalate	6.00E+00	(2)	2.80E+00	4.67E-01
Carcinogenic Constituents Cumulative Risk x 10⁻⁵				5.33E+02
NON-CARCINOGENIC CONSTITUENTS				
Metals TOTAL & Water Quality Parameters (mg/l)				
Cyanide	2.00E-01	(3)	1.40E-01	7.00E-01
Mercury	2.00E-03	(3)	7.50E-04	3.75E-01
Chloride	2.50E+02	(3)	7.10E+03	2.84E+01
Fluoride	1.60E+00	(3)	1.30E+00	8.13E-01
Sulfate	6.00E+02	(3)	1.10E+03	1.83E+00
Metals (mg/l) DISSOLVED				
Antimony (D)	6.00E-03	(2)	9.30E-04	1.55E-01
Barium (D)	1.00E+00	(3)	1.40E+00	1.40E+00
Beryllium (D)	4.00E-03	(2)	9.00E-04	2.25E-01
Cobalt (D)	5.00E-02	(3)	2.30E-02	4.60E-01
Iron (D)	1.00E+00	(3)	3.90E+00	3.90E+00
Lead (D)	1.50E-02	(2)	6.80E-03	4.53E-01
Manganese (D)	2.00E-01	(3)	3.90E+00	1.95E+01
Nickel (D)	3.72E-01	(4)	6.50E-01	1.75E+00
Selenium (D)	5.00E-02	(3)	4.10E-02	8.20E-01
Vanadium (D)	6.31E-02	(4)	1.60E-02	2.54E-01
Zinc (D)	1.00E+01	(3)	1.50E-01	1.50E-02
Volatiles (ug/l)				
1,1-Dichloroethene	5.00E+00	(3)	6.10E+00	1.22E+00
cis-1,2-DCE	7.00E+01	(2)	3.90E-01	5.57E-03
1,2,4-Trimethylbenzene	1.50E+01	(1)	2.20E+02	1.47E+01
1,3,5-Trimethylbenzene	1.20E+01	(1)	6.40E+01	5.33E+00
2-Butanone	5.56E+03	(4)	6.30E+02	1.13E-01
Acetone	1.41E+04	(4)	1.40E+03	9.93E-02
Isopropylbenzene	4.47E+02	(4)	2.40E+01	5.37E-02
Toluene	7.50E+02	(3)	4.00E+03	5.33E+00
Xylenes, Total	6.20E+02	(3)	1.90E+03	3.06E+00
Semivolatiles (ug/l)				
2-Methylnaphthalene	3.60E+01	(1)	2.40E+02	6.67E+00
2-Methylphenol	9.30E+02	(1)	1.30E+05	1.40E+02
3+4-Methylphenol	9.30E+02	(1)	1.90E+05	2.04E+02
Acenaphthene	5.35E+02	(4)	6.50E+00	1.21E-02
Benzoic acid	7.50E+04	(1)	7.10E+00	9.47E-05
Fluorene	2.88E+02	(4)	8.70E+00	3.02E-02
Phenanthrene	1.70E+02	(4)	5.70E+00	3.35E-02
Phenol	5.76E+03	(4)	8.90E+04	1.55E+01
Non-Carcinogenic Constituents Hazard Index				4.57E+02

(1) EPA - Regional Screening Levels (Nov. 2015) -Tap Water

(2) EPA - Regional Screening Levels (Nov. 2015) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

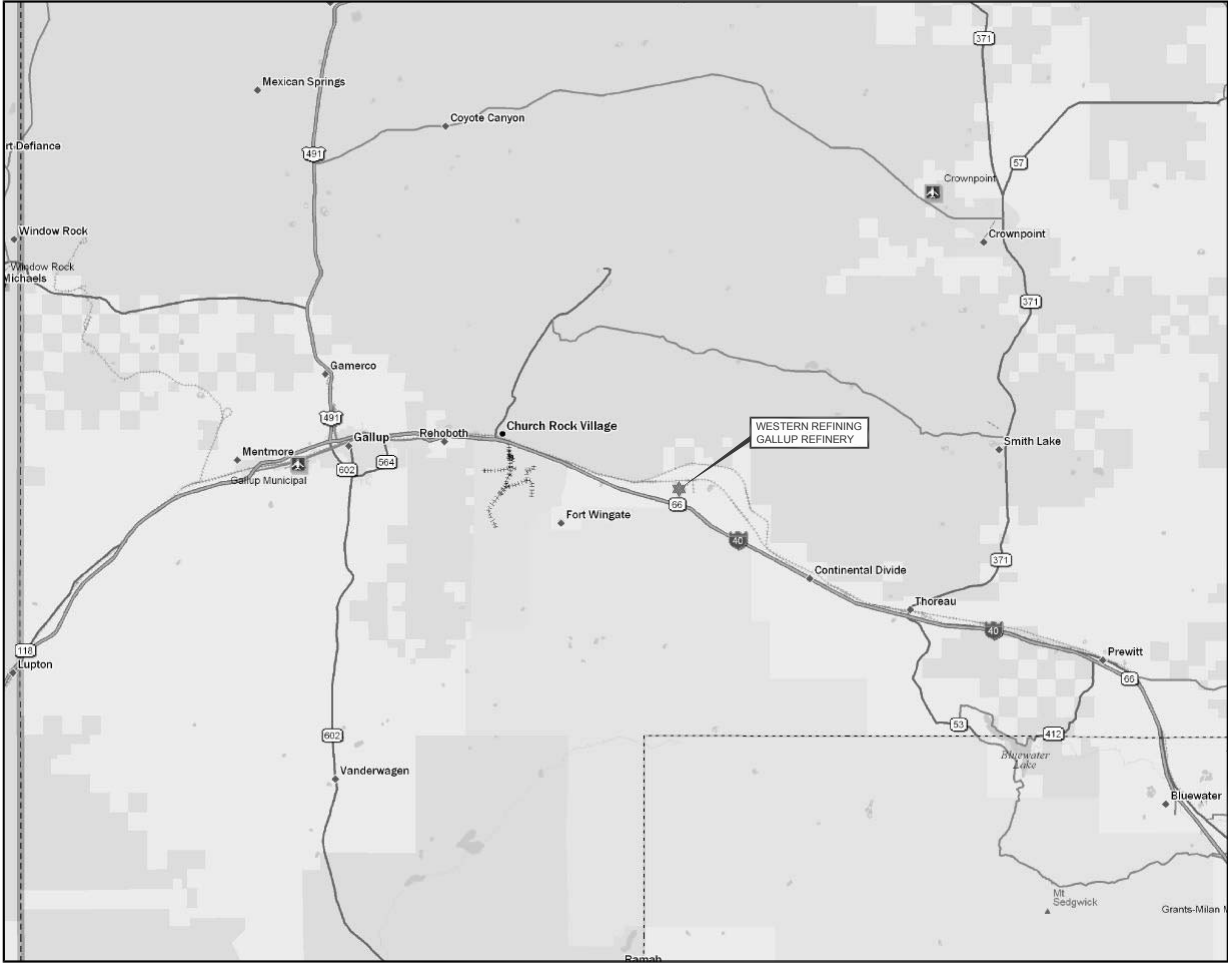
(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

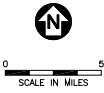
Figures

Figure 1	Site Location Map
Figure 2	SWMU No. 10 Location Map
Figure 3	SWMU No. 10 1990 RFI Sample Locations
Figure 4	SWMU No. 10 1994 RFI Sample Locations
Figure 5	Topographic Map
Figure 6	Geologic Map of New Mexico
Figure 7	Cross Section Location Map
Figure 8	Cross Section A-A' West to East
Figure 9	Cross Section B-B' North to South
Figure 10	Sand Isopach Map
Figure 11	Estimated Elevation Top of Bedrock
Figure 12	Potentiometric Surface Map
Figure 13	Arsenic Soils Concentration Map
Figure 14	Cyanide Soils Concentration Map
Figure 15	1,2,4-Trimethylbenzene Soils Concentration Map
Figure 16	1-Methylnaphthalene Soils Concentration Map
Figure 17	2-Methylnaphthalene Soils Concentration Map
Figure 18	Benzene Soils Concentration Map
Figure 19	Ethylbenzene Concentration Map
Figure 20	Naphthalene Soils Concentration Map
Figure 21	Xylenes Soils Concentration Map

Figure 22	Diesel Range Organics Soil Concentration Map
Figure 23	Motor Oil Range Organics Soils Concentration Map
Figure 24	Arsenic Groundwater Concentration Map
Figure 25	Iron and Nickel Groundwater Concentration Map
Figure 26	Manganese Groundwater Concentration Map
Figure 27	Chloride and Sulfate Groundwater Concentration Map
Figure 28	1,2,4-Trimethylbenzene Groundwater Concentration Map
Figure 29	1,3,5-Trimethylbenzene Groundwater Concentration Map
Figure 30	1-Methylnaphthalene Groundwater Concentration Map
Figure 31	2-Methylnaphthalene Groundwater Concentration Map
Figure 32	Benzene Groundwater Concentration Map
Figure 33	MTBE Groundwater Concentration Map
Figure 34	Naphthalene Groundwater Concentration Map
Figure 35	Proposed Soil Boring Map



Map Source: DeLorme Street Atlas USA 2007 Plus.



Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining|DATE:07/13/14|FILE:WestRef-B198

FIGURE 1
SITE LOCATION MAP
GALLUP REFINERY

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Aerial Map Source: Google Map, 02/19/2014.



0 100
SCALE IN FEET

LEGEND

 SWMU No. 10 LOCATION



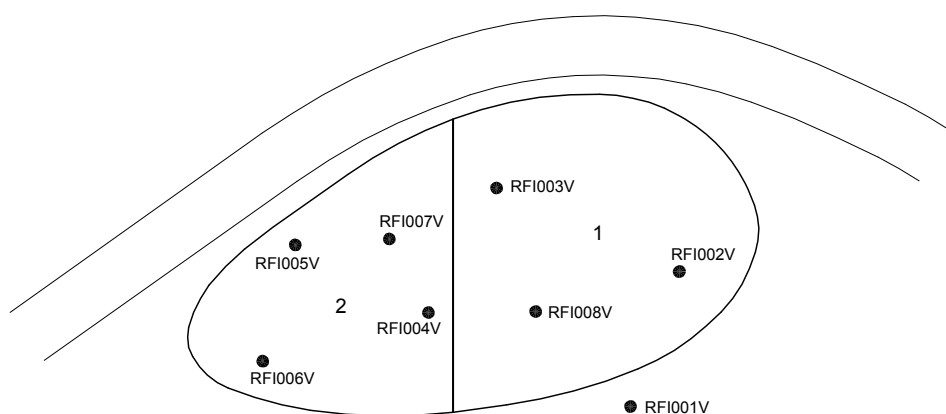
GALLUP SITE LOCATION

W Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 09/09/14 FILE: WestRef-d805

FIGURE 2
SWMU No. 10 LOCATION MAP

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LEGEND

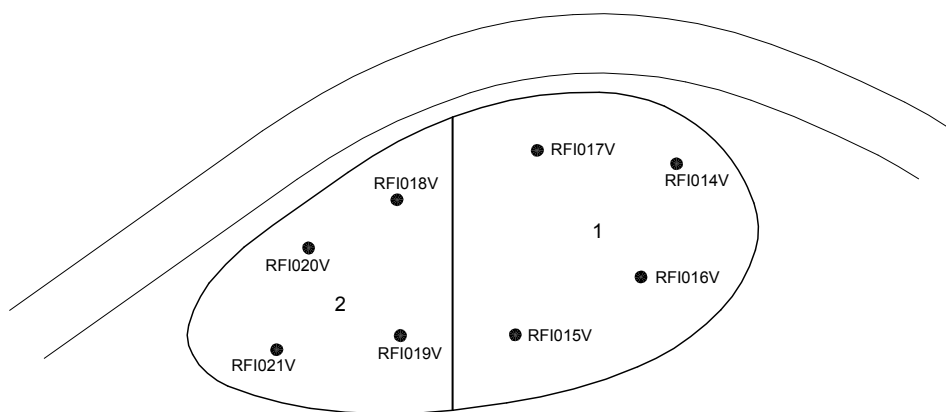
RFI002V ● 1990 RFI SOIL BORING LOCATION
AND IDENTIFICATION NUMBER

Western Refining
GALLUP REFINERY

PROJ. NO.:Western Refining|DATE:09/07/14|FILE:WestRef-dA02

FIGURE 3
SWMU No. 10
1990 RFI SAMPLE LOCATIONS
GALLUP REFINERY

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Austin, Texas 78759



LEGEND

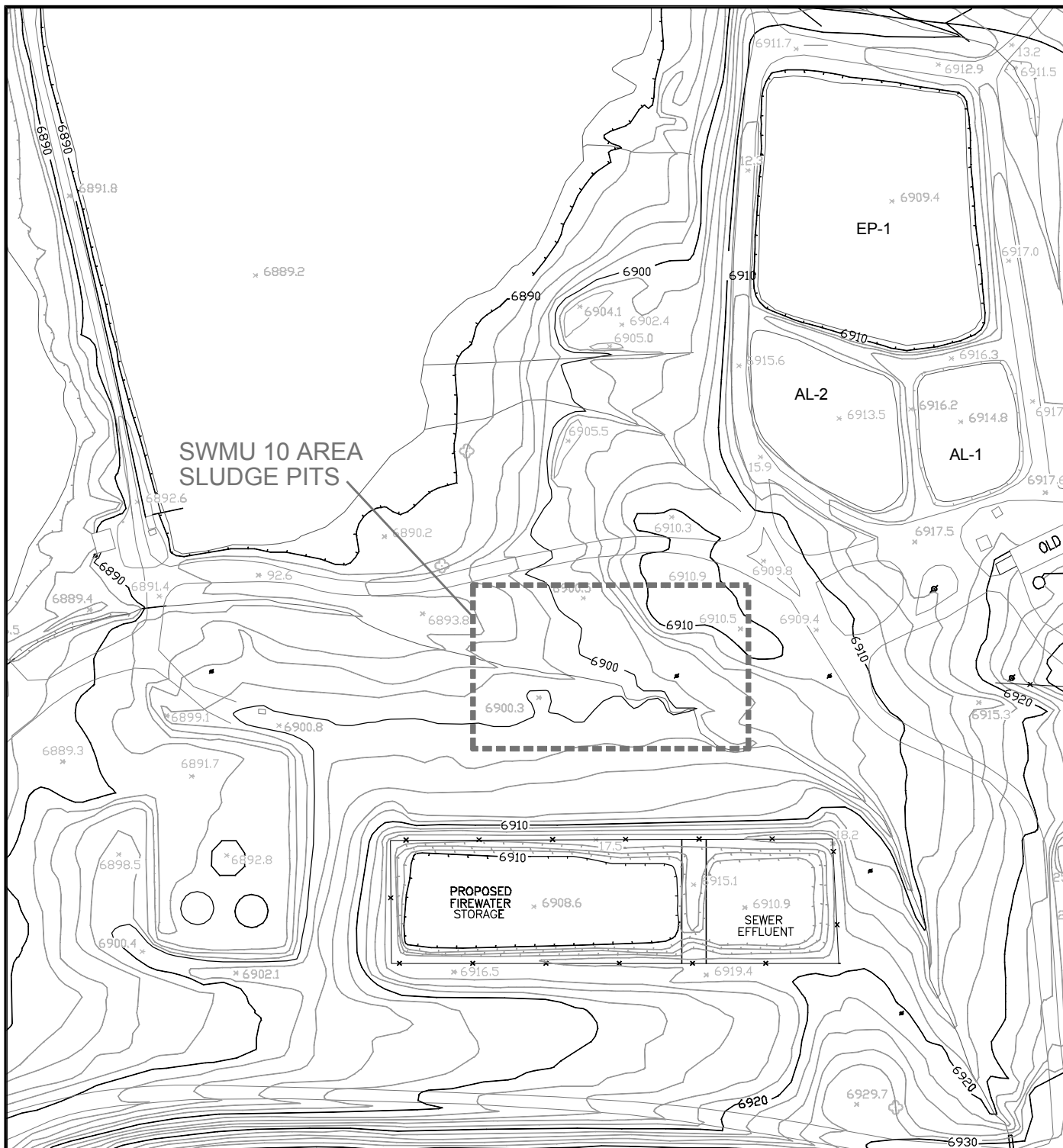
RFI014V ● 1994 RFI SOIL BORING LOCATION
AND IDENTIFICATION NUMBER

Western Refining
GALLUP REFINERY

PROJ. NO.:Western Refining | DATE:09/07/14 | FILE:WestRef-dA03

FIGURE 4
SWMU No. 10
1994 RFI SAMPLE LOCATIONS
GALLUP REFINERY

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Austin, Texas 78759



Map Source: Compiled by Photogrammetric Methods from
Photography Acquired on March 1, 1998.



0 150
SCALE IN FEET



QUADRANGLE LOCATION



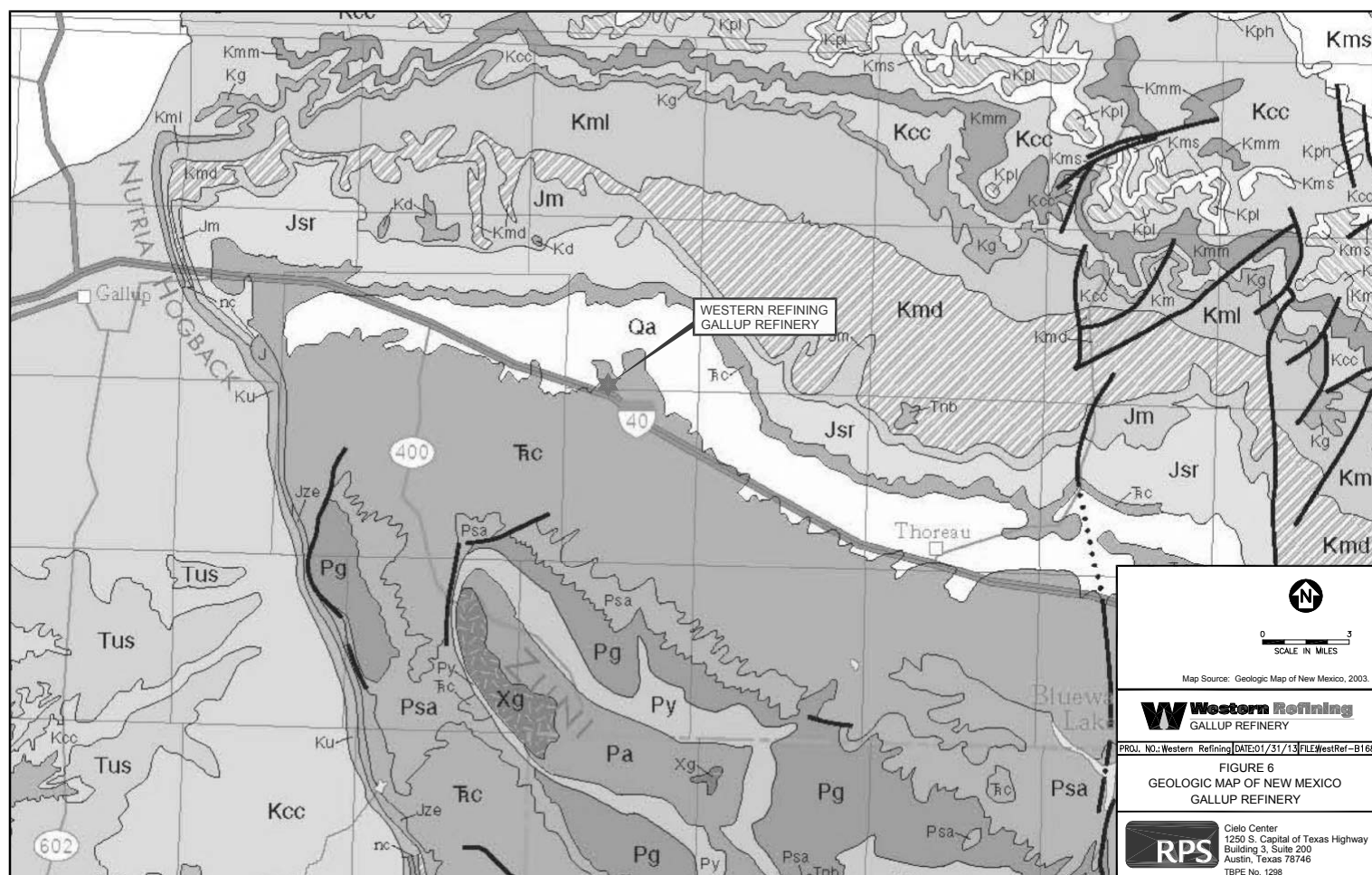
GALLUP REFINERY

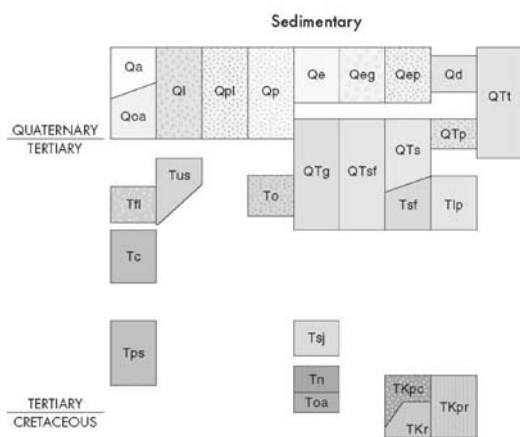
PROJ. NO.: Western Refining | DATE: 02/17/16 | FILE: WestRef-dA40

FIGURE 5 TOPOGRAPHIC MAP GALLUP REFINERY

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DESCRIPTION OF MAP UNITS

QUATERNARY

- Qa** Alluvium (Holocene to upper Pleistocene)
- Ql** Landslide deposits and colluvium (Holocene to Pleistocene)—Landslide deposits on western flanks of Socorro Mountains not shown for clarity
- Qpl** Lacustrine and playa deposits (Holocene)—Includes associated alluvial and eolian deposits of major lake basins
- Qp** Piedmont alluvial deposits (Holocene to lower Pleistocene)—Includes deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans. May locally include uppermost Pliocene deposits

TRIASSIC

Chinle Formation of previous workers (e.g., Stewart et al., 1972) is used here as Chinle Group, following Lucas (1993)

- Tr** Triassic rocks, undivided—Continental red beds
- Trp** Rock Point Formation of Chinle Group (Upper Triassic)—May locally include Wingate Sandstone (Triassic)
- Trc** Chinle Group (Upper Triassic)—Map unit includes Moenkopi Formation (Middle Triassic) at base in many areas; in eastern part of state the following five formations are mapped:
- Tr** Redonda Formation (Upper Triassic)
- Trb** Bull Canyon Formation (Norian)
- Trt** Trujillo Formation (Norian)
- Trg** Garita Creek Formation (Carnian)
- Trs** Santa Rosa Formation (Carnian)—Includes Moenkopi Formation (Middle Triassic) at base in most areas
- Trcu** Upper Chinle Group, Garita Creek through Redonda Formations, undivided
- Trm** Moenkopi Formation (Middle Triassic)



JURASSIC

To compare this map nomenclature to the USGS nomenclature, see the diagram included on this sheet (at right)

- J** Upper and Middle Jurassic rocks, undivided. In southwest includes the basalt-bearing Broken Jug Formation
- Jm** Morrison Formation—Upper Jurassic normaline rocks
- Jmsu** Morrison Formation and upper San Rafael Group (lowermost Cretaceous?—upper Jurassic)
- Jz** Zuni Sandstone (Calloway)—Consists of undivided equivalents of the Summerville Formation and Bluff Sandstone; restricted to Zuni Basin area
- Jze** Zuni and Entrada Sandstones, undivided
- Je** Entrada Sandstone (Middle Jurassic)
- Jsr** San Rafael Group (Middle Jurassic)—Consists of Entrada Sandstone, Todito and Summerville Formations, Bluff Sandstone, and locally Zuni Sandstone (or only Acoma Tongue of Zuni)

Map Source: Geologic Map of New Mexico, 2003.

Western Refining
GALLUP REFINERY

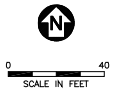
PROD. NO.: Western Refining DATE: 01/31/13 FILE: WestRef-B168

FIGURE 6
GEOLOGIC MAP OF NEW MEXICO
GALLUP REFINERY

RPS
Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298



Aerial Map Source: Google Map, 01/05/2014.



- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - MKT-29 MONITORING WELL LOCATION (PERMANENT WELL) AND IDENTIFICATION NUMBER
 - A—A' LINE OF CROSS-SECTION

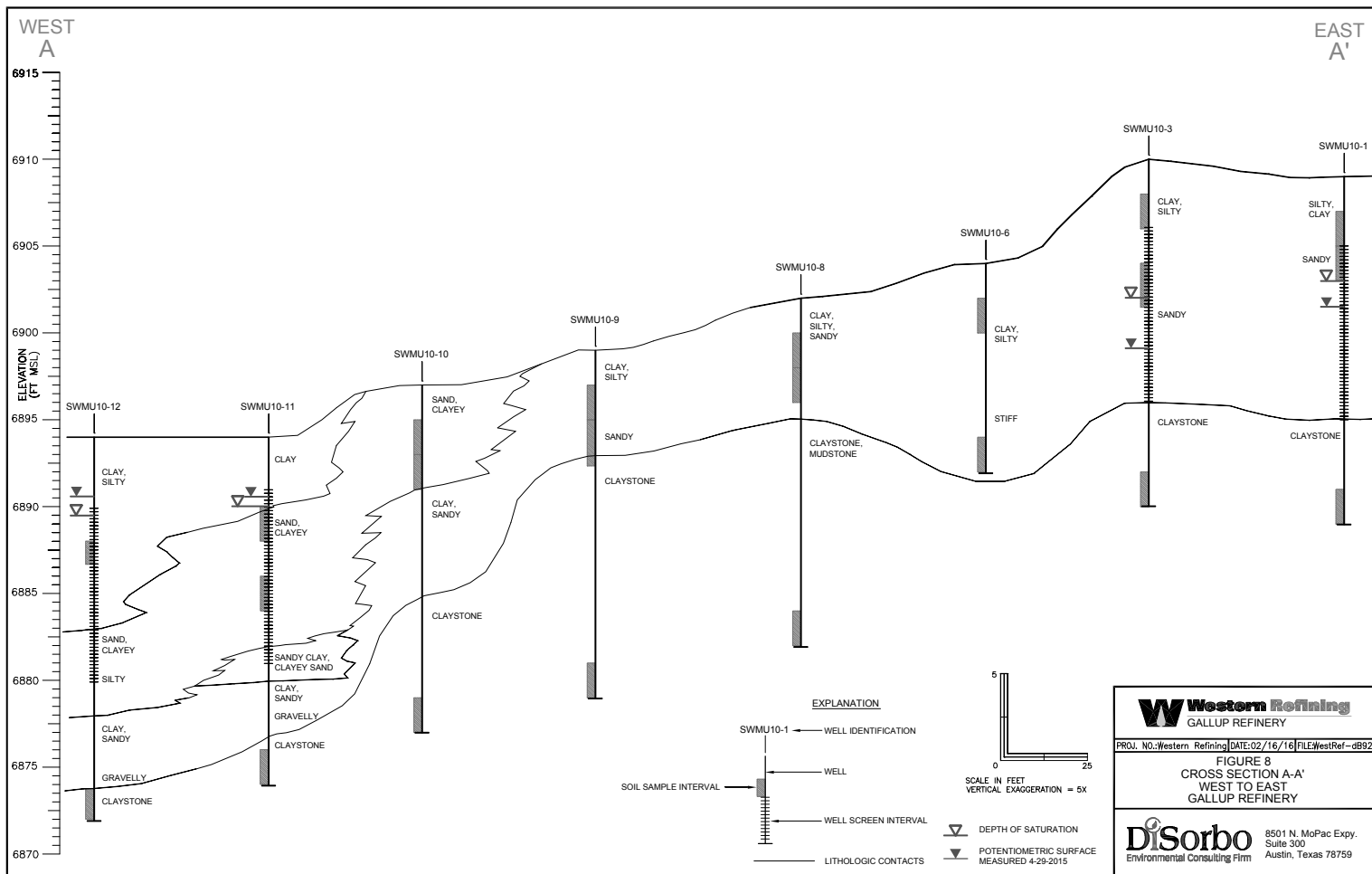


Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 07/24/16 FILE: WestRef-d893

FIGURE 7
CROSS SECTION LOCATION MAP
SWMU No. 10

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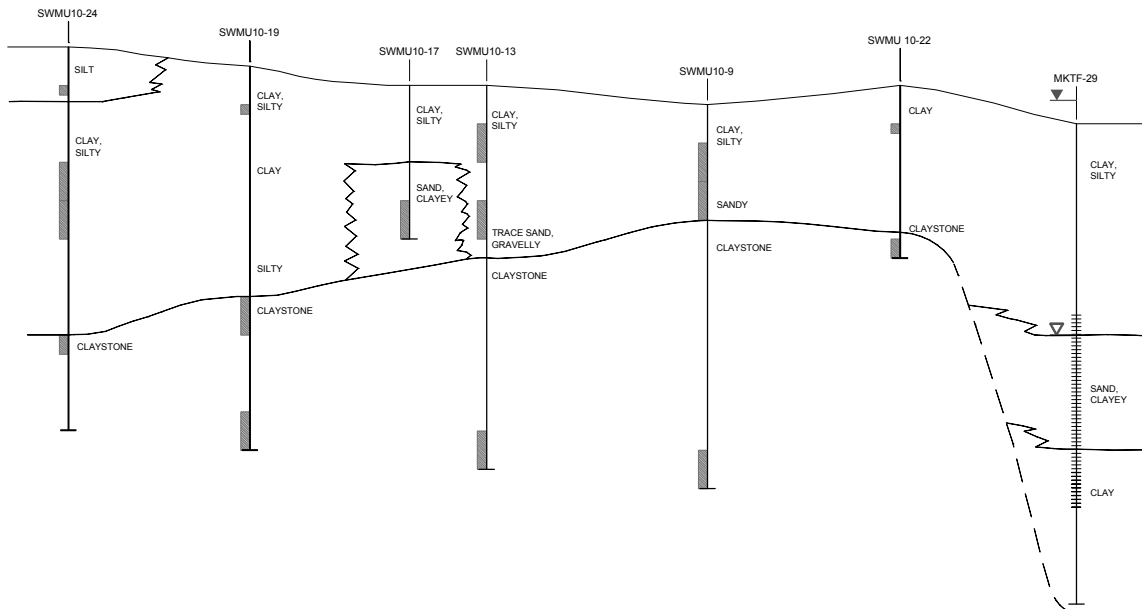


NORTH
B

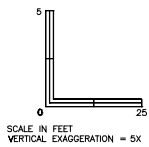
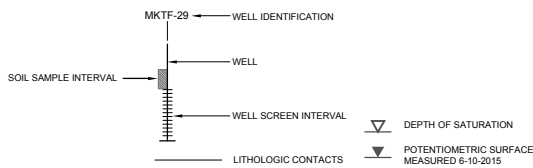
SOUTH
B'

ELEVATION (FT MSL)

ELEVATION (FT MSL)



EXPLANATION



Western Refining
GALLUP REFINERY

PROJ. NO. Western Refining DATE: 02/16/16 FILE: WestRef-d892

FIGURE 9
CROSS SECTION B-B'
NORTH TO SOUTH
GALLUP REFINERY

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

SCALE IN FEET	LEGEND 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER - MKTF-29 MONITORING WELL LOCATION (PERMANENT WELL) AND IDENTIFICATION NUMBER 5 CONTOUR LINE OF SAND THICKNESS (FT) 2.5 SAND THICKNESS (FT)	NEW MEXICO GALLUP SITE LOCATION	Western Refining GALLUP REFINERY PROJ. NO.: Western Refining DATE: 02/18/16 FILE: WestRef-dB04 FIGURE 10 SAND ISOPACH MAP SWMU No. 10 DiSorbo Environmental Consulting Firm 8501 N. MoPac Expy. Suite 300 Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

LEGEND

- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 6880 — CONTOUR LINE ESTIMATED ELEVATION ON TOP OF BEDROCK (ABOVE MSL)
- 6893 — ESTIMATED ELEVATION ON TOP OF BEDROCK (ABOVE MSL)



GALLUP SITE LOCATION



GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 02/18/16 FILE: WestRef-d895

**FIGURE 11
ESTIMATED ELEVATION
ON TOP OF BEDROCK
SWMU No. 10**

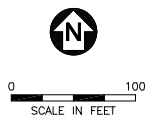
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Environmental Consulting Firm Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- MKTF-29 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 6900 CONTOUR OF GROUNDWATER ELEVATION (FT MSL)
- 6905.34 GROUNDWATER ELEVATION (FEET MSL)
- * MEASURED NOVEMBER 2014
- GROUNDWATER FLOW DIRECTION



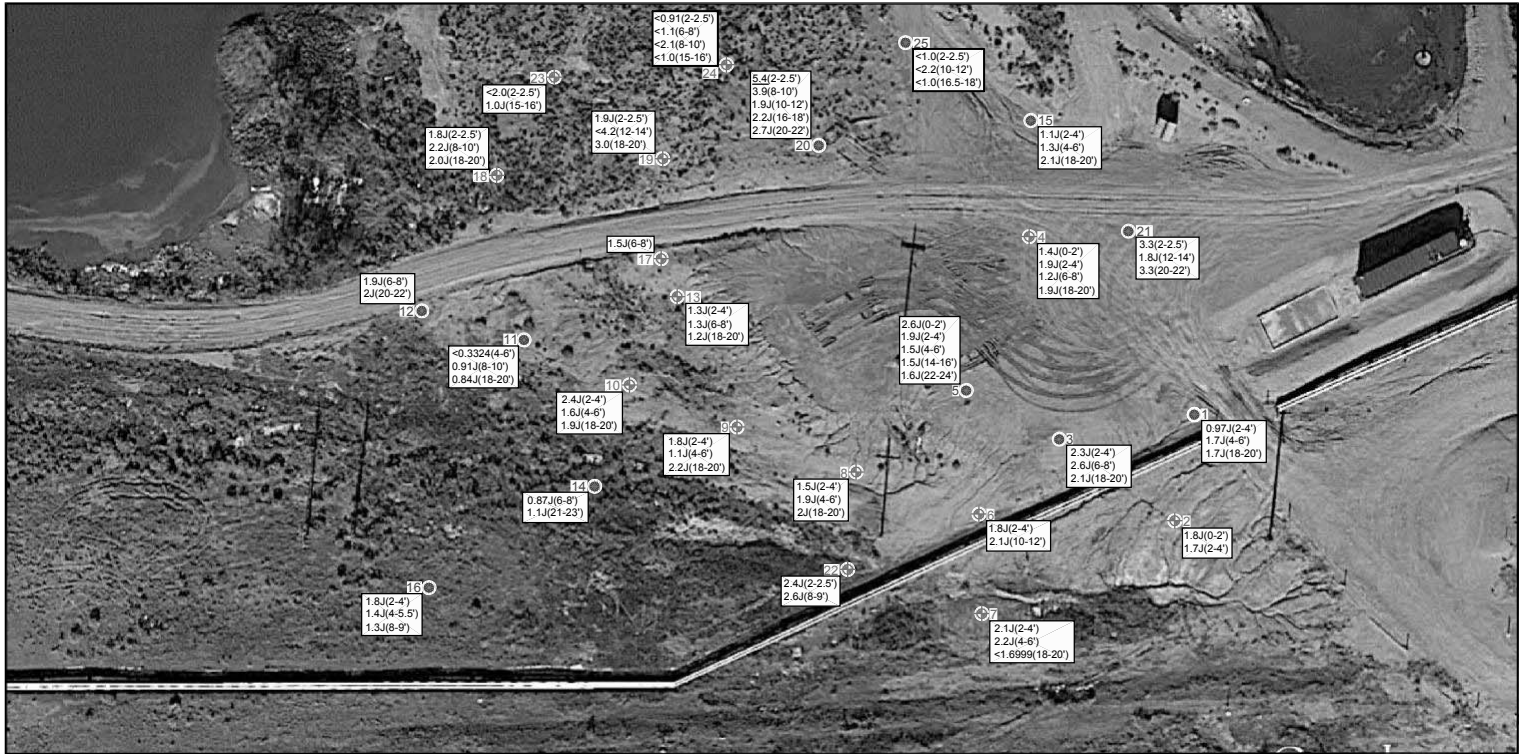
GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 02/18/16 FILE: WestRef-d896

FIGURE 12
POTENTIOMETRIC SURFACE MAP
MARCH 2015
SWMU No. 10

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Aerial Map Source: Google Map, 01/05/2014.

0 40

SCALE IN FEET

LEGEND

2

SOIL BORING LOCATION
AND IDENTIFICATION NUMBER

1

SOIL BORING / TEMPORARY WELL LOCATION
AND IDENTIFICATION NUMBER

2.4J(0-2')

ARSENIC CONCENTRATION, mg/kg
(SAMPLE DEPTH-FT)

4.25

UNDERLINED CONCENTRATION VALUE
EXCEEDS SCREENING LEVEL

NEW MEXICO

GALLUP SITE LOCATION

Western Refining

GALLUP REFINERY

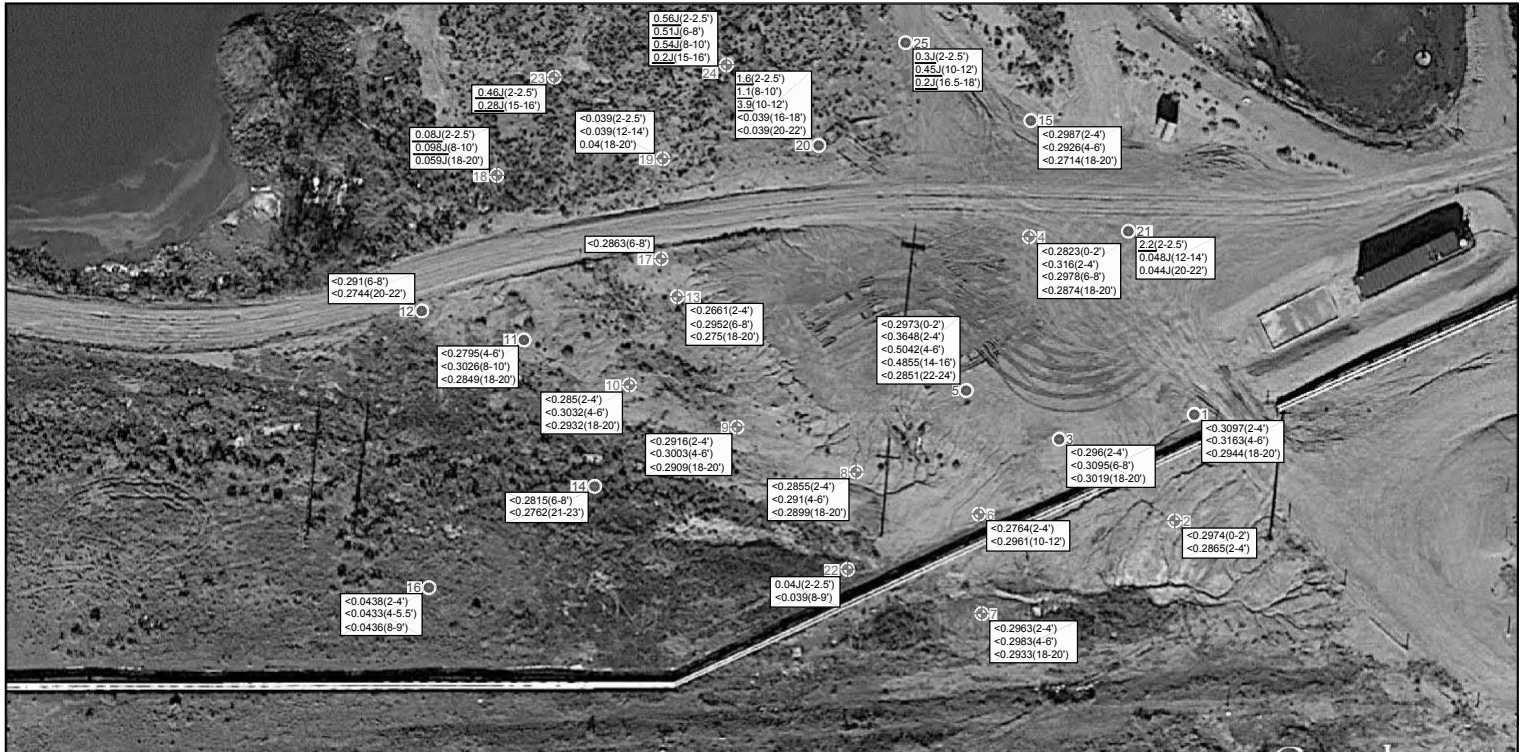
PROJ. NO.: Western Refining DATE 07/23/16 FILE WestRef-d875

FIGURE 13
ARSENIC
SOILS CONCENTRATION MAP
SWMU No. 10

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Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

0.054J(0-2') 1,2,4-TRIMETHYLBENZENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)

0.077 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



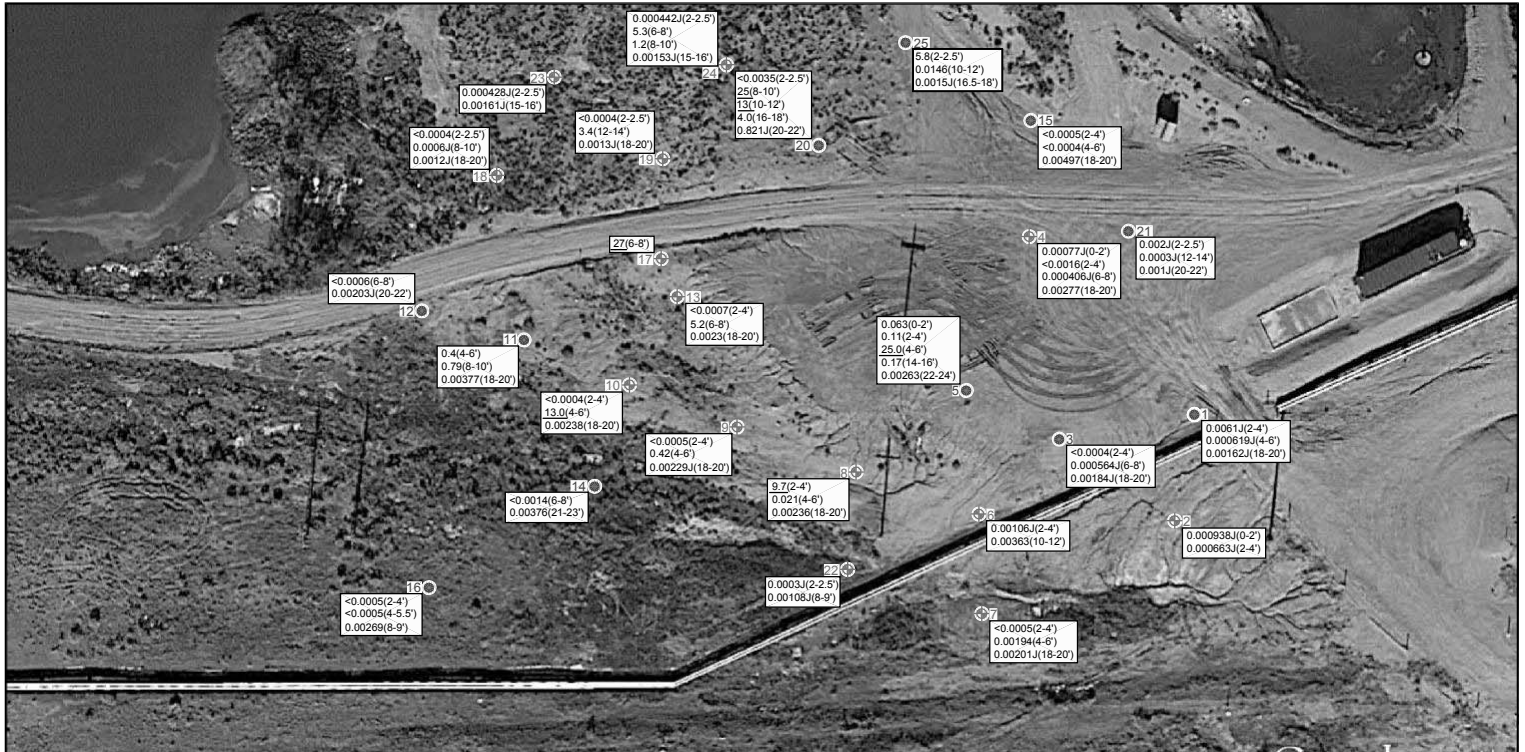
GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO. Western Refining DATE: 1/15/16 FILE: WestRef-dB115

FIGURE 14
CYANIDE
SOILS CONCENTRATION MAP
SWMU No. 10

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2  SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1  SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.063(0-2') 1,2,4-TRIMETHYLBENZENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 6.2 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

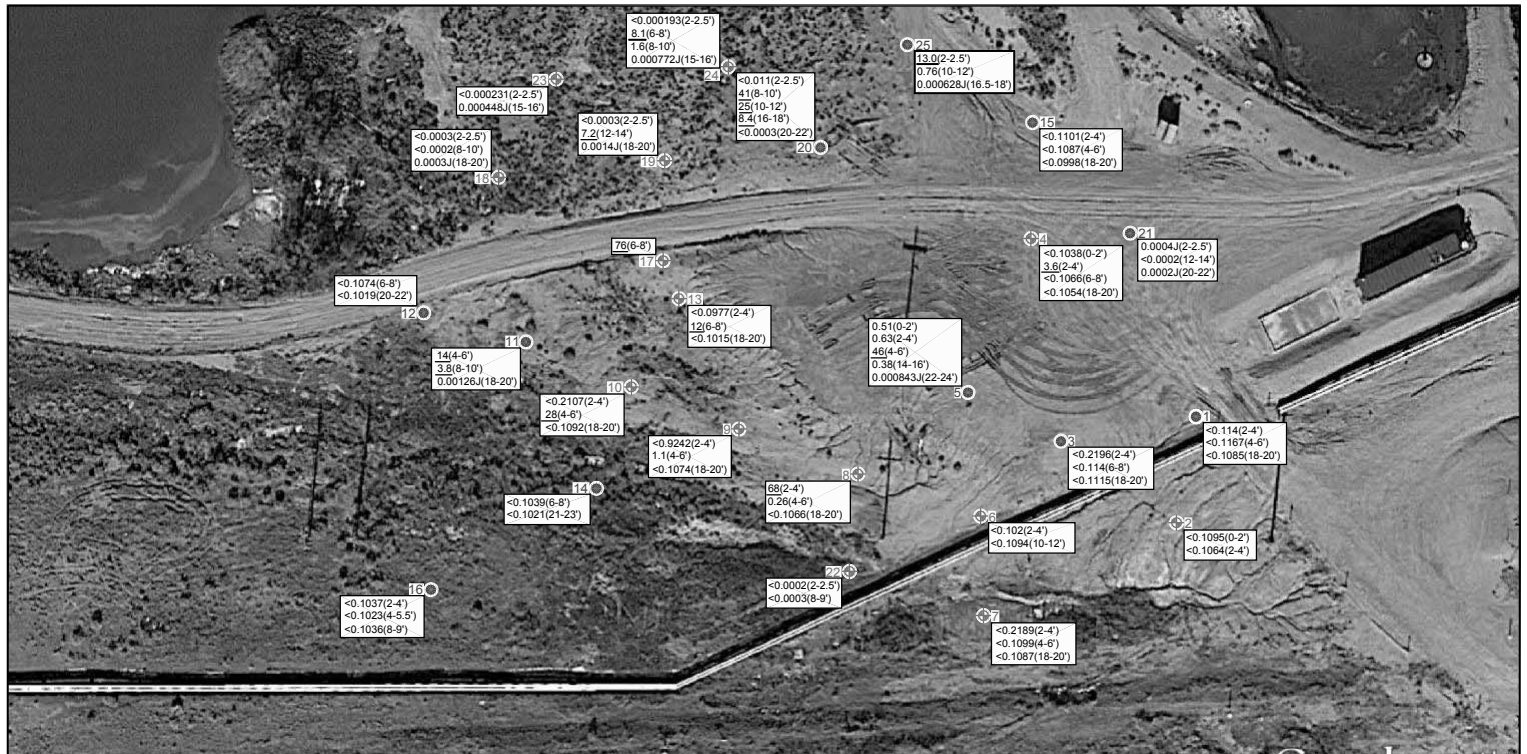


Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE 07/23/16 FILE WestRef-d866

FIGURE 15
1,2,4-TRIMETHYLBENZENE
SOILS CONCENTRATION MAP
SWMU No. 10

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

LEGEND

- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.51(0-2') 1-METHYLNAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 1.71 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



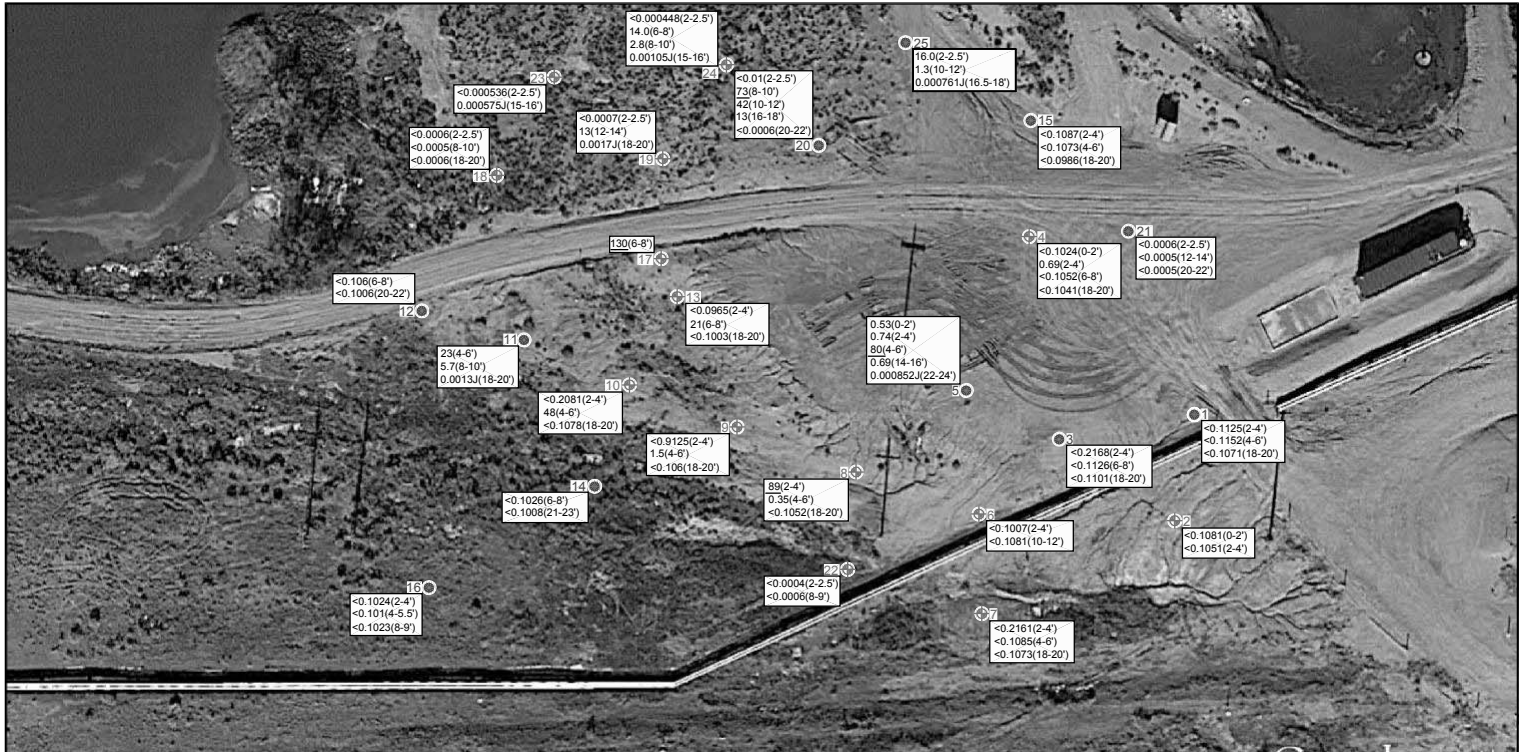
GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 07/23/16 FILE: WestRef-gb70

FIGURE 16
1-METHYLNAPHTHALENE
SOILS CONCENTRATION MAP
SWMU No. 10

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2: SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1: SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.53(0-2'): 2-METHYLNAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 56.1: UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

NEW MEXICO

GALLUP SITE LOCATION

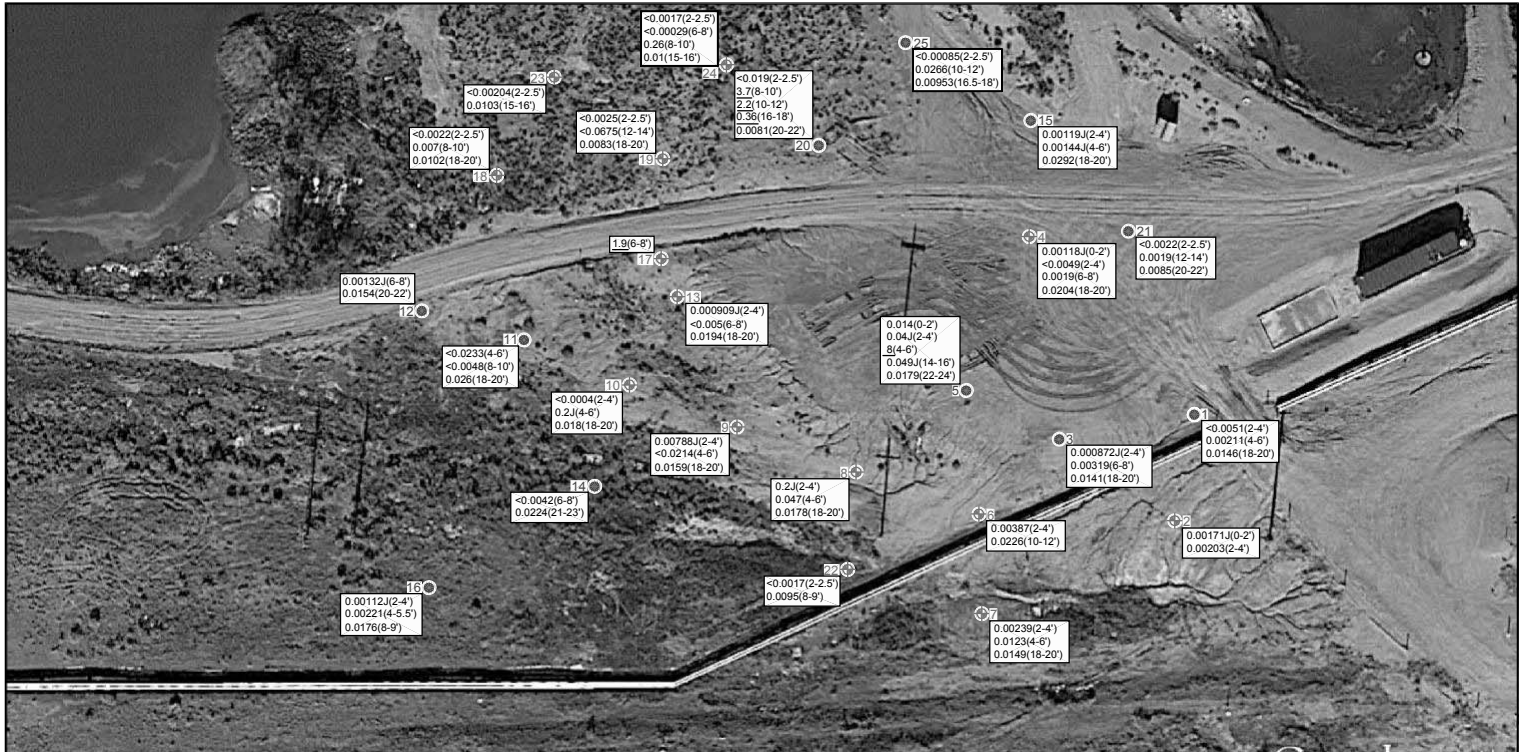
Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/03/16 FILE: WestRef-d877

FIGURE 17
2-METHYLNAPHTHALENE
SOILS CONCENTRATION MAP
SWMU No. 10

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Aerial Map Source: Google Map, 01/05/2014.

0 40

SCALE IN FEET

NEW MEXICO

GALLUP SITE LOCATION

Western Refining

GALLUP REFINERY

PROJ. NO.: Western Refining | DATE: 08/03/16 | FILE: WestRef-d867

FIGURE 18

BENZENE

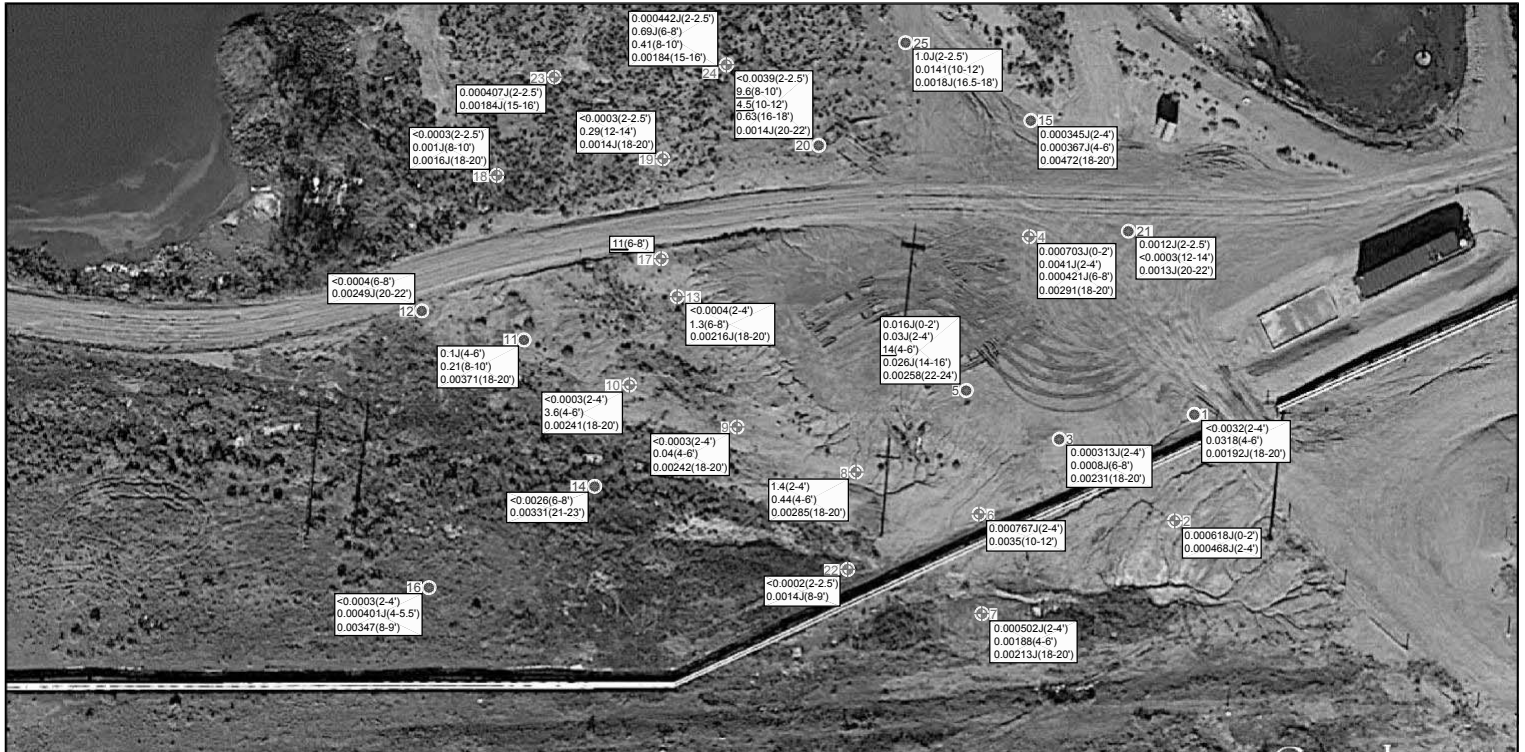
SOILS CONCENTRATION MAP

SWMU No. 10

8501 N. MoPac Expy.

Suite 300

Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

NEW MEXICO

GALLUP SITE LOCATION

Western Refining

GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/03/16 FILE: WestRef-d868

FIGURE 19

ETHYLBENZENE

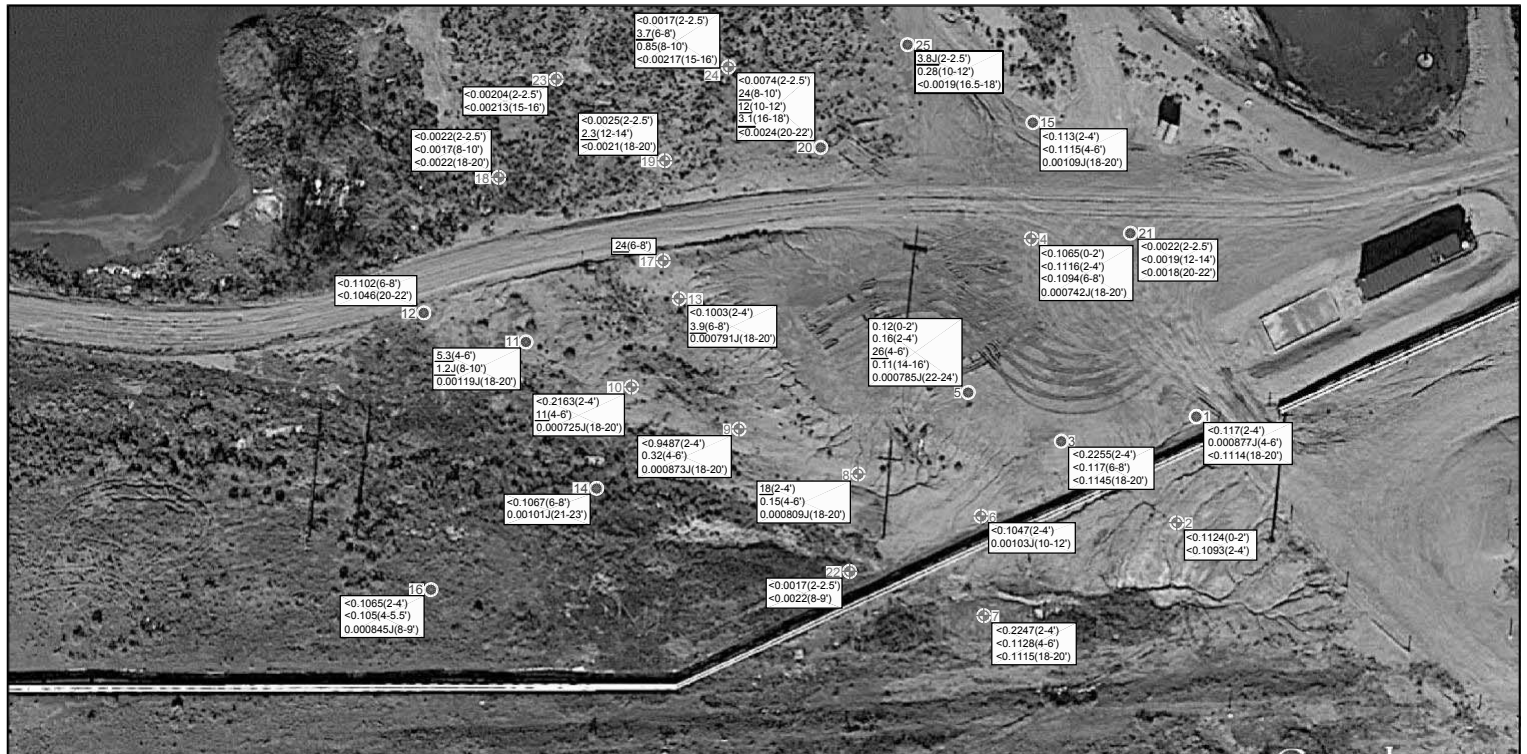
SOILS CONCENTRATION MAP

SWMU No. 10

8501 N. MoPac Expy.

Suite 300

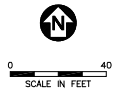
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

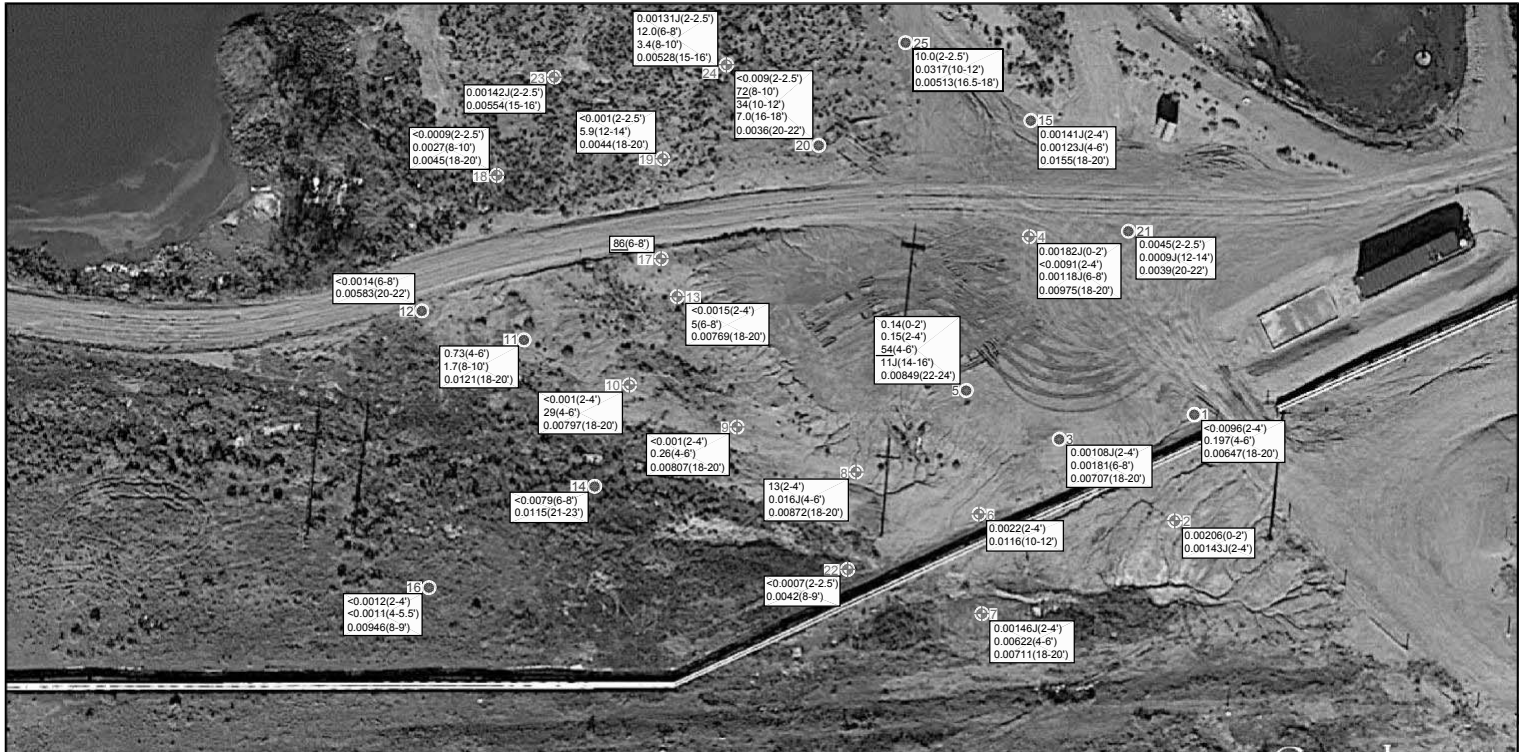
- 2  SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1  SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.12(0-2') NAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 1.21 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



PROJ. NO.: Western Refining DATE: 08/03/16 FILE: WestRef-d869

FIGURE 20
NAPHTHALENE
SOILS CONCENTRATION MAP
SWMU No. 10

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

GALLUP SITE LOCATION

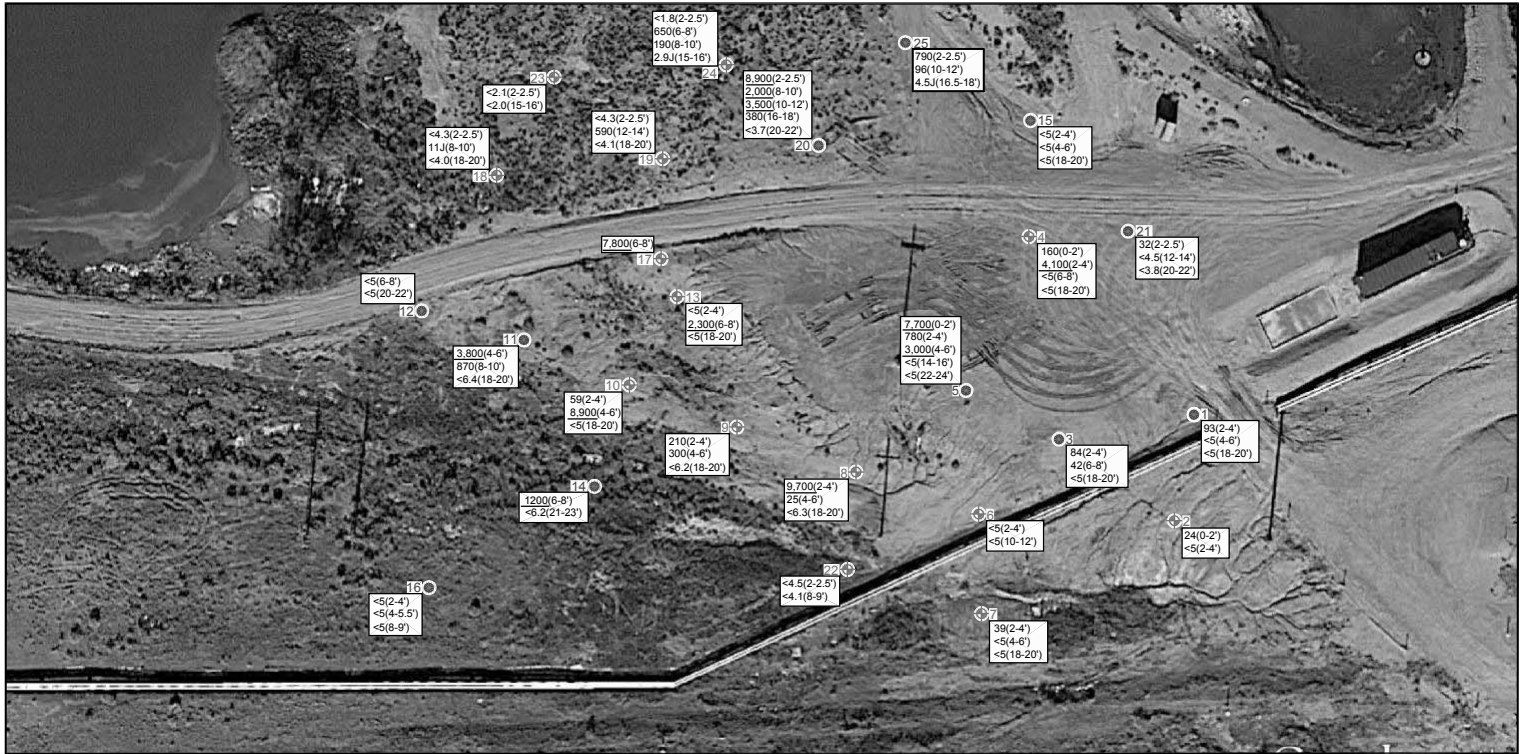
Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining | DATE: 08/05/16 | FILE: WestRef-d872

FIGURE 21
XYLENES
SOILS CONCENTRATION MAP
SWMU No. 10

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

0 40

SCALE IN FEET

LEGEND

2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER

1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

160(0-2') DIESEL RANGE ORGANICS CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)

1,000 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

NEW MEXICO

GALLUP SITE LOCATION

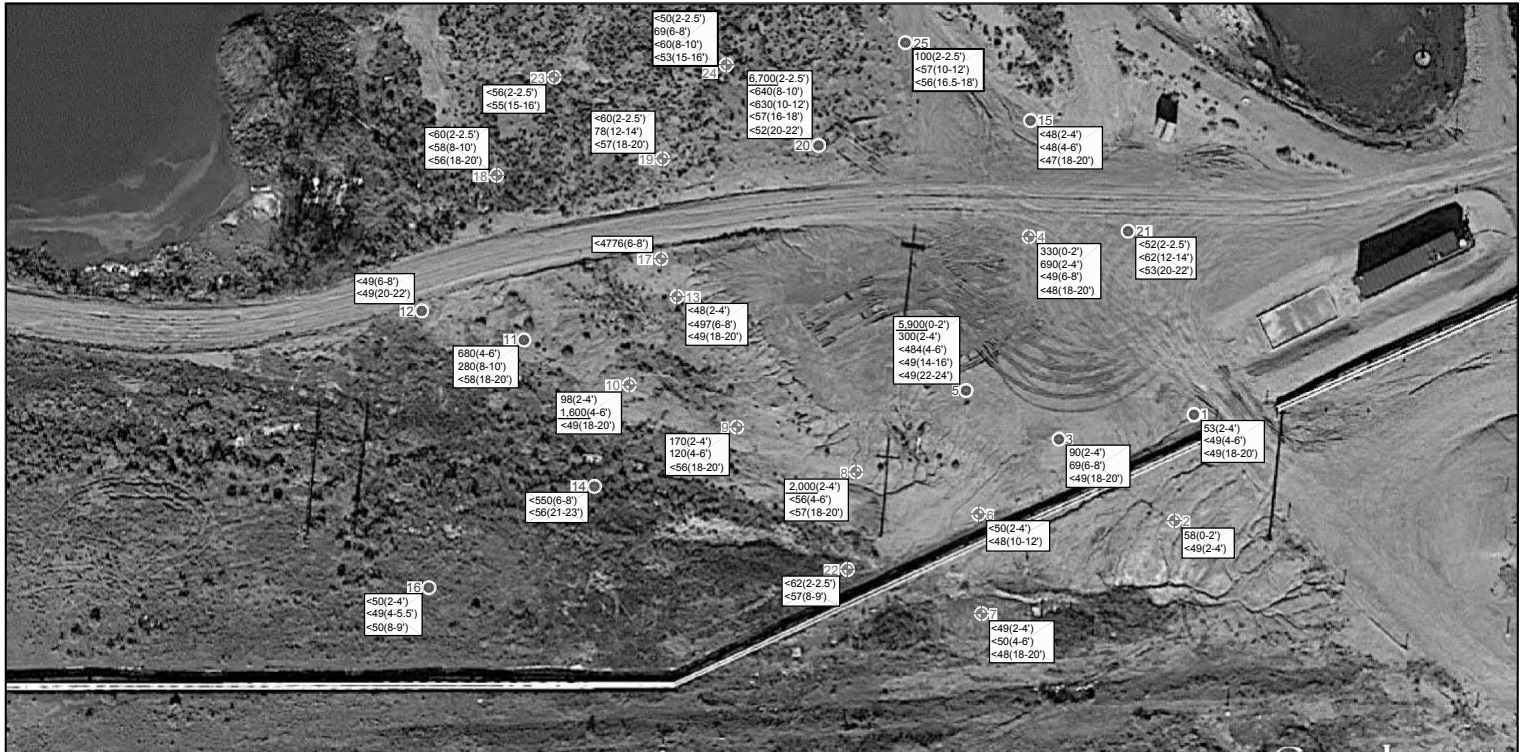
Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining | DATE: 08/05/18 | FILE: WestRef-d873

FIGURE 22
DIESEL RANGE ORGANICS
SOILS CONCENTRATION MAP
SWMU No. 10

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Aerial Map Source: Google Map, 01/05/2014.

NEW MEXICO

GALLUP SITE LOCATION

Western Refining

GALLUP REFINERY

PROJ. NO.: Western Refining | DATE: 08/05/16 | FILE: WestRef-dB74

FIGURE 23

MOTOR OIL RANGE ORGANICS

SOILS CONCENTRATION MAP

SWMU No. 10

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Suite 300

Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2  SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1  SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.016 ARSENIC CONCENTRATION, mg/l
- 0.01 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- * NOT SUFFICIENT WATER VOLUME FOR ANALYSIS



PROJ. NO.: Western Refining DATE: 08/07/16 FILE: WestRef-d880

FIGURE 24
ARSENIC
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- 0.91 MANGANESE (DISSOLVED) CONCENTRATION, mg/l
- 0.2 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- * NOT SUFFICIENT WATER VOLUME FOR ANALYSIS



GALLUP SITE LOCATION



PROJ. NO.: Western Refining DATE: 08/07/16 FILE: WestRef-d881

**FIGURE 26
MANGANESE (DISSOLVED)
GROUNDWATER CONCENTRATION MAP
SWMU No. 10**

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Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 0.44 1,2,4-TRIMETHYLBENZENE CONCENTRATION, $\mu\text{g/l}$
 - 15.0 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

W Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/07/16 FILE: WestRef-d882

FIGURE 28
1,2,4-TRIMETHYLBENZENE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 3.9 1,3,5-TRIMETHYLBENZENE CONCENTRATION, $\mu\text{g/l}$
 - 12 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

W Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/07/16 FILE: WestRef-d883

FIGURE 29
1,3,5-TRIMETHYLBENZENE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 3.1 1-METHYLNAPHTHALENE CONCENTRATION, $\mu\text{g/l}$
 - 11 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/08/16 FILE: WestRef-dB84

FIGURE 30
1-METHYLNAPHTHALENE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 3.8 2-METHYLNAPHTHALENE CONCENTRATION, $\mu\text{g/l}$
 - 3.6 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/08/16 FILE: WestRef-d885

FIGURE 31
2-METHYLNAPHTHALENE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 2.5 BENZENE CONCENTRATION, $\mu\text{g/l}$
 - 5.0 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



W Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/08/16 FILE: WestRef-d886

FIGURE 32
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Suite 300 Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 16 MTBE CONCENTRATION, $\mu\text{g/l}$
 - 143 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

W Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/08/16 FILE: WestRef-gb87

FIGURE 33
MTBE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Environmental Consulting Firm 8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.



0 40
SCALE IN FEET

- LEGEND**
- 2 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
 - 1 SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
 - 45 NAPHTHALENE CONCENTRATION, $\mu\text{g/l}$
 - 1.65 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL



GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO.: Western Refining DATE: 08/08/16 FILE: WestRef-d888

FIGURE 34
NAPHTHALENE
GROUNDWATER CONCENTRATION MAP
SWMU No. 10

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Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 01/05/2014.

LEGEND

- PROPOSED SOIL BORING LOCATION
- SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- SOIL BORING / TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER
- MONITORING WELL LOCATION (PERMANENT WELL) AND IDENTIFICATION NUMBER

MKTF-29



GALLUP SITE LOCATION

Western Refining
GALLUP REFINERY

PROJ. NO. Western Refining DATE 11/30/16 FILE WestRef-dB117

FIGURE 35
PROPOSED SOIL BORING MAP
SWMU No. 10

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Suite 300
Austin, Texas 78759

Appendix A

Waste Manifests

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number NMD001033324		2. Page 1 of 142		3. Emergency Response Phone 800-424-9300		4. Manifest Tracking Number 006757010 FLE	
		5. Generator's Name and Mailing Address WESTERN REFINING SOUTHWEST GALLUP REFINING 1-40 and 39 Route 3 Box 7 Jamestown, NM 87347		Generator's Site Address (if different than mailing address)					
Generator's Phone: 800-424-9300		6. Transporter 1 Company Name Advanced Chemical Transport Inc. (SV)						U.S. EPA ID Number CAR000070540	
7. Transporter 2 Company Name								U.S. EPA ID Number	
8. Designated Facility Name and Site Address Advanced Chemical Treatment 6133 Edith Blvd NE Albuquerque, NM 87107								U.S. EPA ID Number NMD002208627	
Facility's Phone: 505-340-5220									
9a. HM		9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
				No.	Type				
X		1. UN3175, Waste Solids containing flammable liquid, n.o.s. (benzene, xylene), 4.1, PGII		1	DM	375	P	D001 D018 K050	
X		2. RQ, UN1230, Waste Methanol, 3, PGII (D001)		1	TP	1.675	P	D001 U154	
X		3. NA3082, Hazardous waste, liquid, n.o.s. (BENZENE, CHRYSENE), 9, PGIII		3	DM	968	P	F037	
X		4. NA1993, Combustible liquid, n.o.s., Comb liq, PGIII (DIESEL IN VIALS)		1	DM	150	P	D001	
14. Special Handling Instructions and Additional Information Project Number 74076 Document #: D85375 24 hour emergency contact: CHEMTREC 800-424-9300 1) ERG#133: ACT17857 WEA- 3) ERG#171: RC5666 WEA- 2) ERG#131: ACT41300 WEA- 4) ERG#128: ACT3485 WEA-									
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.									
Generator's/Offeror's Printed/Typed Name ALVIN Dorsey				Signature <i>Alvin Dorsey</i>				Month Day Year 06/16/15	
16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____									
17. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name Larry Sanchez				Signature <i>Larry Sanchez</i>				Month Day Year 06/16/15	
Transporter 2 Printed/Typed Name				Signature				Month Day Year	
18. Discrepancy									
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection									
18b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number: _____									
Facility's Phone: _____									
18c. Signature of Alternate Facility (or Generator) _____ Month Day Year									
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)									
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a									
Printed/Typed Name				Signature				Month Day Year	

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)		21. Generator ID Number	22. Page	23. Manifest Tracking Number				
24. Generator's Name WESTERN REFINING SOUTHWEST GALLUP REFINING I-40 exit 39 Route 3 Box 7 Barnes, NM 87347		004D000333211	2 of 2	000757010FL1				
25. Transporter _____ Company Name			U.S. EPA ID Number					
26. Transporter _____ Company Name			U.S. EPA ID Number					
27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers		29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
		No.	Type					
	5) Non-RCRA/Non-DOT Regulated Material Liquid (ALUMINUM CHLORIDE HYDROXIDE SOLUTION)	15	DF	375	P			
	6) UN3082, Environmentally hazardous substances, liquid, n.o.s. (ETHANEDIOL), 9, PGIII	1	DM		P			
	7) Non-DOT Regulated Material Solid (SANDBLASTING MEDIA)	1	DM	250	P			
	8) Non-DOT Regulated Material Solid (OIL, PPE, RAGS, DEBRIS)	1	DM	175	P			
	9) Non-RCRA/Non-DOT Regulated Material Solid (SOIL - DRILL CUTTINGS)	24	DM	4.385	P			
32. Special Handling Instructions and Additional Information 5) ERGN; ACT41298 WEA- 6) ERGN171; ACT41296 WEA- 7) ERGN; RC8257 WEA- 8) ERGN; RC7334 WEA- 9) ERGN; ACT14828 WEA-								
TRANSPORTER	33. Transporter Acknowledgment of Receipt of Materials Printed/Typed Name Signature Month Day Year							
	34. Transporter Acknowledgment of Receipt of Materials Printed/Typed Name Signature Month Day Year							
FACILITY	35. Discrepancy							
	36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
DESIGN								

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number NMD000333211	2. Page 1 of 2	3. Emergency Response Phone 800-424-9300	4. Manifest Tracking Number 009001751 FLE		
5. Generator's Name and Mailing Address WESTERN REFINING SOUTHWEST GALLUP REFINING 92 GIANT CROSSING ROAD GALLUP, NM 87301 Generator's Phone: 505-722-0211				Generator's Site Address (if different than mailing address)			
6. Transporter 1 Company Name Advanced Chemical Transport Inc. (SV)				U.S. EPA ID Number CAR000070540			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address Advanced Chemical Treatment 8133 Edith Blvd NE Albuquerque, NM 87107 Facility's Phone: 505-349-5220				U.S. EPA ID Number NMD002208627			

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SEP 12 2016

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes		
		No.	Type					
X	1. NA3077, Hazardous waste, solid, n.o.s. (SOIL CONTAMINATED WITH HYDROCARBONS FROM API SEPARATOR), 9, PG III	01	DM	700	P	K051		
X	2. RQ, UN3175, Waste Solids containing flammable liquid, n.o.s. (acetone, methanol), 4.1, PG II	03	CF	375	P	D001	R003	F005
X	3. NA3082, Hazardous waste, liquid, n.o.s. (LEAD, ARSENIC), 9, PG III	01	DM	250	P	D004	D008	D009
	4. Non-RCRA/Non-DOT Regulated Material Solid (SOIL - DRILL CUTTINGS)	(15)	DM	11,000	P	NONE		

14. Special Handling Instructions and Additional Information
 Project Number 103463 Document #: D121904
 1) ERM#171: ACT8736 WEA (SD) SS DM
 2) ERM#183: ACT51807 WEA (SD) CYB
 3) ERM#171: ACT3415 WEA (SD) SS DM
 4) ACT14825 WEA (15) SS DM
 24 hour emergency contact: CHEMTREC 800-424-9300

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Officer's Printed/Typed Name ALVIN DORSEY	Signature <i>Alvin Dorsey</i>	Month 09	Day 04	Year 2016

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S.
 Port of entry/exit: _____
 Date leaving U.S.: _____

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name Robert R...	Signature <i>Robert R...</i>	Month 08	Day 01	Year 16
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

18. Discrepancy

18a. Discrepancy Indication Space	☒ Quantity	☐ Type	☐ Residue	☐ Partial Rejection	☐ Full Rejection
Line 2 amount with #1134 BS					

18b. Alternate Facility (or Generator) _____ U.S. EPA ID Number _____
 Facility's Phone: _____

18c. Signature of Alternate Facility (or Generator) _____ Month _____ Day _____ Year _____

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. <i>W111</i>	2. <i>W111</i>	3. <i>W111</i>	4. <i>W111</i>

20. Designated Facility Owner or Operator, Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a.
 Printed/Typed Name *PKIS (CWA 311)* Signature *[Signature]* Month *18* Day *11* Year *16*

Appendix B

Field Methods

Field Methods

Pursuant to the Investigation Work Plan for SWMU No. 10, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and temporary monitoring wells were installed at the Sludge Pits. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Monitoring well development;
- Fluid level measurements;
- Purging of temporary monitoring wells/groundwater sample collection;
- Sample collection and handling procedures;
- Vadose zone vapor sampling;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were drilled using the hollow-stem auger (HSA) method or a hand auger. Soil samples were collected continuously and logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) nomenclature. As shown on the boring logs, the data recorded included the lithologic interval, symbol, percent recovery, field screening results, and a sample description of the cuttings and core samples.

Soil Screening

Samples obtained from the borings were screened in the field on 2-foot intervals for evidence of contaminants. Field screening results were recorded on the soil boring logs. Field screening results were used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening included examining the soil samples for evidence of staining caused by petroleum-related compounds or other substances that may have caused staining of soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 3000 portable volatile organic constituent (VOC) monitor in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high pressure potable water wash. The sampling equipment coming in direct contact with the samples (e.g., hand augers and split-spoon samplers) were decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with non-phosphate detergent, rinse with potable water, and double rinse with deionized water.

Fluid Level Measurements

The depth to separate phase hydrocarbon, if present, and groundwater was measured prior to purging the wells of potentially stagnant groundwater. A Geotech Interface Probe was used to measure fluid levels to 0.01 foot.

Temporary Monitoring Well Development/Purging

Using a new bailer attached to the end of the clean rope, approximately three volumes of groundwater were removed from the temporary wells. The groundwater and sediment removed from the wells were transported to the bundle cleaning pad in sealed 5-gallon buckets. Bailing ceased after a minimum of three well volumes were removed from the wells.

The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft) x 3.14 x radius of well casing² (ft) x 7.48 (gals/ft).

The calculated purge volumes and actual volumes removed from each well are presented below.

Well (date)	Water Column Thickness (ft)	Calculated Purge Volume (gallons) – 3 well volumes	Actual Purge Volume (gallons)
SWMU 10-1	6.89	3.51	5.0
SWMU 10-3	3.2	1.63	2.0
SWMU 10-5	9.57	NA ⁽¹⁾	NA ⁽¹⁾
SWMU 10-11	10.22	5.22	5.25
SWMU 10-12	11.18	5.7	5.75
SWMU 10-14	8.5	4.35	5.0
SWMU 10-15	12.46	6.36	6.5
SWMU 10-16	2.78	NA ⁽²⁾	NA ⁽²⁾
SWMU 10-20	8.4	4.2	7.0
SWMU 10-21	0.43	0.2	NA ⁽³⁾
SWMU 10-25	9.76	4.98	6.0

NA – not applicable

1 – Well SWMU 10-5 was not purged of three well volumes due to very slow recovery rate.

2 – Well SWMU 10-16 was not purged of three well volumes due to very low volume of water in well combined with slow recovery rate.

3 - Well SWMU 10-21 was not developed or purged due to very low volume of water accumulating in well; all available water used for sample analyses.

Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature and the readings are presented in Table 4. A disposable bailer was used to remove groundwater from the well during the purging procedures.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers or directly from the auger bucket for borings completed with a hand auger. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Three soil samples were collected for VOC analysis in the following manner:

- Two sample aliquots were collected using a syringe for low-level VOC analysis pursuant to EPA method 5035. For these “Terracore” kits, 4- 5 grams (4cc) of soil was injected into each vial using the syringe. The syringes were disposed after soil collection.
 - Two sample aliquots were collected using a syringe for preservation with methanol. For the methanol preserved kits, 10 grams (10 cc) of soil was injected into each methanol vial using the syringe. The syringes were disposed after soil collection.
 - The third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.
-
-

An additional fourth soil sample was collected in an 8-ounce glass jar for metals analyses.

Groundwater samples were collected using disposable bailers and clean rope. The water was immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved metals analyses. Samples specified for dissolved metals analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe were used for each sample. All samples were immediately placed into an ice chest with ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for delivery to the laboratory.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 3000 portable VOC monitor. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

The instruments used to measure groundwater stabilization parameters included an YSI Professional Series Data Logger and YSI Quatro Sonde. The calibration solutions used at the beginning of each day are as follows:

- pH solution;
- 7.0 pH solution;
- 10.0 pH solution; and
- 1.413 mS/cm conductivity solution.

Management of Investigation Derived Waste

The drilling rig and drilling equipment were decontaminated on the bundle cleaning pad. The water is diverted to the Refinery's wastewater treatment system up-stream of the API Separator. The decontamination water generated from sampling equipment was collected in buckets and disposed at the bundle cleaning pad at the end of each day of sampling. All development/purge water was collected in five gallon buckets and disposed at the bundle cleaning pad.

Soil cuttings were placed into open top 55-gallon drums and were sealed when not in use. Each drum of soils was labeled and temporarily stored in a concrete curbed area pending waste characterization and disposal.

Appendix C

Boring Logs

Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Cohagan
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : 6' BGL
Start Date : 04/28/2015
Finish Date : 04/28/2015

WELL NO. SWMU 10-1

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.429'
E : W 108° 25.817'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								Well Cap Open Borehole Bentonite Pellets 2" Sch 40 PVC w/Threaded Joints 2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints 10/20 Sieve Sand Filter Pack 2" Flush Threaded Sch 40 PVC cap
-1								
0								
1	14.8			CL	100		SILTY CLAY, low, firm, damp, reddish brown, no odor,	
2								
3	25.7			CL	50		SILTY CLAY, SIMILAR TO ABOVE (STA), no odor,	
4								
5	30.9			CL	80		SANDY CLAY, low, soft, damp to moist, reddish brown, no odor,	
6		▼						
7	26.6			CL	90		SANDY CLAY, STA, very moist in sand seams, no odor,	
8								
9	20.7			CH	80		CLAY, high, firm, damp, reddish brown, no odor,	
10								
11	17.4			CH	90		CLAY, STA, stiff, no odor,	
12								
13	9.2			CH	90		CLAY, STA, water in sampling tube and on rods; clay is damp,	
14								
15	11.3			CLST/MDST	50		CLAYSTONE/MUDSTONE, low, very stiff, hard, light reddish brown, dry, no odor,	
16								
17	5.3			CLST	60		CLAYSTONE, STA, no odor,	
18								
19	3.6			CLST	90		CLAYSTONE, STA, no odor.	
20								
21								

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Houston, Texas 77002
713-955-1230

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Austin, Texas 78759
512-693-4190



Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : NA
Drilling Method : 3" Hand Auger
Sampling Method : Auger Bucket
Comments :
Total Depth : 4'
Ground Water : Not Encountered
Start Date : 05/04/2015
Finish Date : 05/04/2015

WELL NO. SWMU 10-2

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.422
E : W 108° 25.818'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0	10.5			CL	100		SILTY CLAY, low to moderate, stiff, damp, brown, gravelly, no odor,	
1								
2	8.0			CH	100		CLAY, moderate to high, very stiff, damp, reddish brown, no odor.	
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Cohagan
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : 8' BGL
Start Date : 04/28/2015
Finish Date : 04/28/2015

WELL NO. SWMU 10-3

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.427'
E : W 108° 25.828'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								Well Cap
-1								
0								Open Borehole
1	12.9			CL	100			Bentonite Pellets
2								
3	24.2			CL	50			2" Sch 40 PVC w/Threaded Joints
4								
5	16.7			CL	70			
6								
7	18.9			CL	60			
8		▼					▼	
9	17.6			CL	80			2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
10								
11	13.7			CL	90			10/20 Sieve Sand Filter Pack
12								
13	11.2			CL	90			
14				CH	90			2" FlushThreaded Sch 40 PVC cap
15	7.6			CLST/MDST	60			
16								
17	7.2			CLST/MDST	50			
18								
19	2.5			CLST/MDST	90			
20								
21								

Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Cohagan
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 04/29/2015
Finish Date : 04/29/2015

WELL NO. SWMU 10-4

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.441'
E : W 108° 25.831'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	40.5			CL	90		SILTY CLAY, low, very stiff, damp, brown, no odor,	
2								
3	335			CL	90		SILTY CLAY, low, firm to soft, damp, dark brown, becomes sandy at base with black staining, odor,	
4								
5	36.8			CL	90		SILTY SANDY CLAY, low, firm to soft, damp, reddish brown, faint odor,	
6								
7	42.7			CL	60		SILTY SANDY CLAY, SIMILAR TO ABOVE (STA), faint odor,	
8								
9	37.8			CH	100		CLAY, high, stiff, damp, reddish brown, sandy at base, faint odor,	
10								
11	25.6			CL	80		SANDY CLAY, low, soft, damp, very fine sand in seams, reddish brown, no odor,	
12								
13	31.1			CL	80		SILTY CLAY, low, firm, damp, reddish brown, trace sand, no odor,	
14								
15	32.9			CL	60		SILTY CLAY, low, firm, damp to dry, crumbly, dense at base, reddish brown trace grey, no odor,	
16								
17	14.1			CLST	70		CLAYSTONE, very stiff, dry, light reddish brown, no odor,	
18								
19	3.8			CLST	60		CLAYSTONE, SIMILAR TO ABOVE (STA).	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Cohagan
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 24'
Ground Water : Not Encountered
Start Date : 04/29/2015
Finish Date : 04/29/2015

WELL NO. SWMU 10-5

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.432'
E : W 108° 25.837'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	DESCRIPTION	Completion Results SWMU 10-5 (Temporary)
-2									Well Cap
-1									
0									
1	108			CL	90	X		SILTY CLAY, low, firm, damp, brown, black staining at base, odor,	
2									
3	61			CL	60	X		CLAY, low, very soft, damp, wood debris, light greyish green, sticky, odor,	Open Borehole
4									
5	445			CL	90	X		CLAY, SIMILAR TO ABOVE (STA), brownish green, odor,	
6									
7	330			CL	50			CLAY, STA, odor,	2" Sch 40 PVC w/Threaded Joints
8									
9	30.6			CL	90			CLAY, low, very soft, damp, light greyish green, sticky, odor,	
10									Bentonite Pellets
11	26.3			CL	90			CLAY, STA, moist, odor,	
12									
13	3.5			CL	90			CLAY, STA, moist, reddish brown clay at 13.75-14' mixed with greyish green clay, odor,	
14									
15	75.2			CL	40	X		CLAY, STA, greyish green and reddish brown clay, odor,	10/20 Sieve Sand Filter Pack
16									
17	9.4			CL	90			CLAY, STA,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
18									
19	26.8			CL	90			CLAY, STA, greyish green clay only,	
20									
21	16.5			CL	40			CLAY, STA, CLAYSTONE at base,	
22									
23	10.7			CLST	70	X		CLAYSTONE, very stiff, dry, light reddish brown with grey seams.	2" Flush Threaded Sch 40 PVC Cap
24									
25									

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : NA
Drilling Method : 3" Hand Auger
Sampling Method : Auger Bucket
Comments :
Total Depth : 12'
Ground Water : Not Encountered
Start Date : 05/04/2015
Finish Date : 05/04/2015

WELL NO. SWMU 10-6

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.422'
E : W 108° 25.834'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	2.7			CL	100		SILTY CLAY, low to moderate, firm, damp, reddish brown, no odor,	
2								
3	4.3			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA), no odor,	
4								
5	4.7			CL	100		SILTY CLAY, STA, no odor,	
6								
7	2.9			CL	100		SILTY CLAY, STA, no odor,	
8								
9	3.2			CH	100		CLAY, high, very stiff, damp, reddish brown, no odor,	
10								
11	4.1			CL	100		CLAY, low, stiff, dry, light reddish brown, refusal, no odor.	
12								
13								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 05/01/2015
Finish Date : 05/01/2015

WELL NO. SWMU 10-7

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.412'
E : W 108° 25.833'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	6.2			CL	90		SILTY CLAY, low, firm, damp, brown, no odor,	
2								
3	9.5			CL	90		SILTY CLAY, SIMILAR TO ABOVE (STA), trace black staining at base, no odor,	
4								
5	10.6			CH	90		CLAY, high, stiff to firm, damp, reddish brown, no odor,	
6								
7	9.7			CH	50		CLAY, STA, no odor,	
8								
9	9.1			CLST	60		CLAYSTONE, very stiff, dry, light reddish brown, no odor,	
10								
11	4.2			CLST	60		CLAYSTONE, STA, no odor,	
12								
13	8.1			CLST	60		CLAYSTONE, STA, no odor,	
14								
15	8.9			CLST	60		CLAYSTONE, STA, no odor,	
16								
17	8.2			CLST	50		CLAYSTONE, STA, no odor,	
18								
19	2.7			CLST	90		CLAYSTONE, STA, no odor.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Cohagan
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20' BGL
Ground Water : Not Encountered
Start Date : 04/30/2015
Finish Date : 04/30/2015

WELL NO. SWMU 10-8

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.427'
E : W 108° 25.846'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	12.9			CL	50		SILTY CLAY, low, firm, damp, brown, no odor,	
2								
3	1489			CL	60		SILTY SANDY CLAY, SIMILAR TO ABOVE (STA), sandy, hydrocarbon (hc) odor and staining at base,	
4								
5	400			CL	60		SILTY SANDY CLAY, STA, odor,	
6								
7	-				-		No Recovery,	
8								
9	22.9			CLST/ MDST	80		CLAYSTONE/MUDSTONE, very stiff, dry, light reddish brown and grey, no odor,	
10								
11	22.8			CLST	60		CLAYSTONE, STA, no odor,	
12								
13	24.6			CLST	60		CLAYSTONE, STA, no odor,	
14								
15	12.1			CLST	60		CLAYSTONE, STA, no odor,	
16								
17	10.2			CLST	70		CLAYSTONE, STA, no odor,	
18								
19	5.7			CLST	90		CLAYSTONE, STA, no odor.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 04/30/2015
Finish Date : 04/30/2015

WELL NO. SWMU 10-9

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.428'
E : W 108° 25.855'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	18			CL	80		SILTY CLAY, low, firm, dry to damp, brown, no odor,	
2								
3	19.1			CL	60		SILTY CLAY, SIMILAR TO ABOVE (STA), damp, no odor,	
4								
5	380			CL	100		SANDY CLAY, low, soft, damp, dark reddish brown with black staining, claystone at base, hydrocarbon (hc) odor,	
6								
7	27			CLST	50		CLAYSTONE, very stiff, damp to dry, light reddish brown, odor,	
8								
9	28.9			CLST	60		CLAYSTONE, STA, trace grey, no odor,	
10								
11	10.7			CLST	70		CLAYSTONE, STA, no odor,	
12								
13	4			CLST	60		CLAYSTONE, STA, no odor,	
14								
15	8.9			CLST	60		CLAYSTONE, STA, no odor,	
16								
17	6.4			CLST	50		CLAYSTONE, STA, no odor,	
18								
19	6.2			CLST	80		CLAYSTONE, STA, no odor.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 04/30/2015
Finish Date : 04/30/2015

WELL NO. SWMU 10-10

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.431'
E : W 108° 25.864'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	11.9			SC	90		CLAYEY SAND, compact to loose, dry to damp, brown, faint odor at base,	
2								
3	18.4			SC	90		CLAYEY SAND, SIMILAR TO ABOVE (STA), odor,	
4								
5	1685			SC	80		CLAYEY SAND, compact, damp, brown with black staining, hydrocarbon (hc) odor,	
6								
7	1514			CL	60		SANDY CLAY, low, soft, damp to moist, black, hc odor,	
8								
9	686			CL	90		SANDY CLAY, STA, black and dark reddish brown, hc odor,	
10								
11	655			CL	90		SILTY CLAY, STA, claystone at base, hc odor and hc stain,	
12								
13	75			CLST	40		CLAYSTONE, very stiff/dense, light reddish brown and grey, dry, faint odor,	
14								
15	18			CLST	50		CLAYSTONE, STA, no odor,	
16								
17	16.8			CLST	60		CLAYSTONE, STA, no odor,	
18								
19	8.5			CLST	90		CLAYSTONE, STA, no odor.	
20								
21								

Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20' BGL
Ground Water : 4' BGL
Start Date : 05/12/2015
Finish Date : 05/12/2015

WELL NO. SWMU 10-11

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.434'
E : W 108° 25.873'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								Well Cap Bentonite Pellets 2" Sch 40 PVC w/Threaded Joints ▼ 2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints 10/20 Sieve Sand Filter Pack 2" Flush Threaded Sch 40" PVC Cap
-1								
0								
1	13.1			CL	80		SILTY CLAY, low, firm, damp, brown, no odor,	
2							SILTY CLAY, SIMILAR TO ABOVE (STA),	
3	4.0			CL	10			
4		▼						
5	524			SC	50		CLAYEY SAND, fine, compact, moist to saturated, black, odor,	
6							CLAYEY SAND, STA, saturated,	
7	133			SC	60			
8							CLAYEY SAND, STA, dark brown, black sludge lens at 9.75', saturated, odor,	
9	570			SC	80			
10							CLAYEY SAND, STA, moist to saturated, odor,	
11	8.5			SC	70			
12							CLAYEY SAND/SANDY CLAY, low, soft, damp to very moist, brown, odor,	
13	69.2			SC/CL	70			
14							SANDY CLAY, low, firm, damp, reddish brown, gravel at base, faint odor,	
15	20.6			CL	40			
16							SANDY GRAVELLY CLAY, stiff, damp, reddish brown, no odor,	
17	7.2			CL	60		CLAYSTONE, very stiff, damp to dry, reddish purple, no odor,	
18				CLST	60		CLAYSTONE, STA, no odor.	
19	13.4			CLST	60			
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 22'
Ground Water : 4'
Start Date : 05/12/2015
Finish Date : 05/12/2015

WELL NO. SWMU 10-12

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.435'
E : W 108° 25.883'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	3.0			CL	90		SILTY CLAY, low, firm, damp, brown, no odor,	
2								Well Cap
3	5.4			CL	5		SILTY CLAY, SIMILAR TO ABOVE (STA),	Bentonite Pellets
4		▼						2" Sch 40 PVC w/Threaded Joints
5	6.0			CL	90		SILTY CLAY, STA, trace sand, very moist, no odor,	
6								
7	4.5			CL	90	X	SILTY CLAY, STA, damp, occassional black staining, hard black rock asphalt at top, 20 mm,	
8								
9	6.1			CL	70		SILTY CLAY, low, soft, damp to moist in sand, occasional gravel, brown, no odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
10	6.9			CL	70		SILTY CLAY, STA,	
11	6.1			SC	70		CLAYEY SAND, fine, compact, saturated, brown, no odor,	10/20 Sieve Sand Filter Pack
12								
13	4.9			SM	90		SILTY SAND, fine, loose, gravelly at 12.5' to 12.75' BGL, saturated, brown, no odor,	
14								
15	2.9			SM	90		SILTY SAND, STA,	2" Flush Threaded Sch 40 PVC Cap
16								
17	1.8			CL	60		SANDY CLAY, low, firm, damp, brown, no odor,	
18								
19	1.2			CL	60		GRAVELLY CLAY, STA, 10 mm gravel, no odor,	
20								
21	1.5			CLST	80	X	CLAYSTONE, very stiff, damp to dry, reddish purple, grey and dark reddish brown, no odor.	
22								
23								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20' BGL
Ground Water : Not Encountered
Start Date : 05/13/2015
Finish Date : 05/13/2015

WELL NO. SWMU 10-13

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.437'
E : W 108° 25.860'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	4.4			CL	90		SILTY CLAY, low, firm, damp to dry, brown, no odor,	
2								
3	5.6			CL	80		SILTY CLAY, SIMILAR TO ABOVE (STA), very stiff, calcareous, no odor,	
4								
5	775			CL	50		SILTY CLAY, STA,	
6								
7	1055			CH	90		CLAY, high, firm, damp, dark brown, black staining, odor,	
8								
9	721			CH	70		GRAVELLY CLAY, STA with 10 mm gravel, trace sand, damp, dark brown, odor,	
10				CLST	70		CLAYSTONE, very stiff, dry, reddish purple, faint odor,	
11	11			CLST	50		CLAYSTONE, STA, brownish purple and grey, no odor,	
12								
13	10.3			CLST	50		CLAYSTONE, STA, reddish brown and grey, no odor,	
14								
15	10.4			CLST	70		CLAYSTONE, STA, no odor,	
16								
17	12.4			CLST	10		CLAYSTONE, STA, no odor,	
18								
19	14.1			CLST	80		CLAYSTONE, STA, no odor.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 23' BGL
Ground Water : 2' BGL
Start Date : 05/12/2015
Finish Date : 05/12/2015

WELL NO. SWMU 10-14

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.424'
E : W 108° 25.867'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	3.2			CL	60			
2								
3								
4								
5	10.1			GC	10			
6				CH	50			
7	900			SC	50			
8								
9	23.7			CL	60			
10								
11	15.9			SW	80			
12								
13	22.4			SW	80			
14								
15	16.9			SW	70			
16								
17	7.9			CL	20			
18								
19	5.2			CL	50			
20				CLST	50			
21	6.1			CLST	20			
22	1.8			CLST	50			
23								
24								

Well Cap

Bentonite Pellets

2" Sch 40 PVC w/Threaded Joints

2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints

10/20 Sieve Sand Filter Pack

2" Flush Threaded Sch 40 PVC Cap

1010 Travis Street
Houston, Texas 77002
713-955-1230

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Austin, Texas 78759
512-693-4190

Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : CME75
Drilling Method : 7.25" Hollow-Stem Auger
Sampling Method : 2" Diameter Split Spoon
Comments : 2' Long
Total Depth : 20' BGL
Ground Water : 7' BGL
Start Date : 05/13/2015
Finish Date : 05/13/2015

WELL NO. SWMU 10-15

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.446'
E : W 108° 25.287'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0				CL	90			
1	11.4			CH	90			
2								
3	11.1			CL	90			
4				CL	90			
5	13.9			CH	90			
6				CL	90			
7	12.4	▼		CL	90		▼	
8								
9	12.3			SC	90			
10				CH	90			
11	10.7			CL	90			
12				CL	90			
13	8.9			CL	90			
14				SC	90			
15	8.4			CL	70			
16								
17	8.3			CL	90			
18				CLST	90			
19	7.1			CLST	70			
20								
21								

Well Cap

Bentonite Pellets

2" Sch 40 PVC w/Threaded Joints

10/20 Sieve Sand Filter Pack

2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints

2" Flush Threaded Sch 40 PVC Cap

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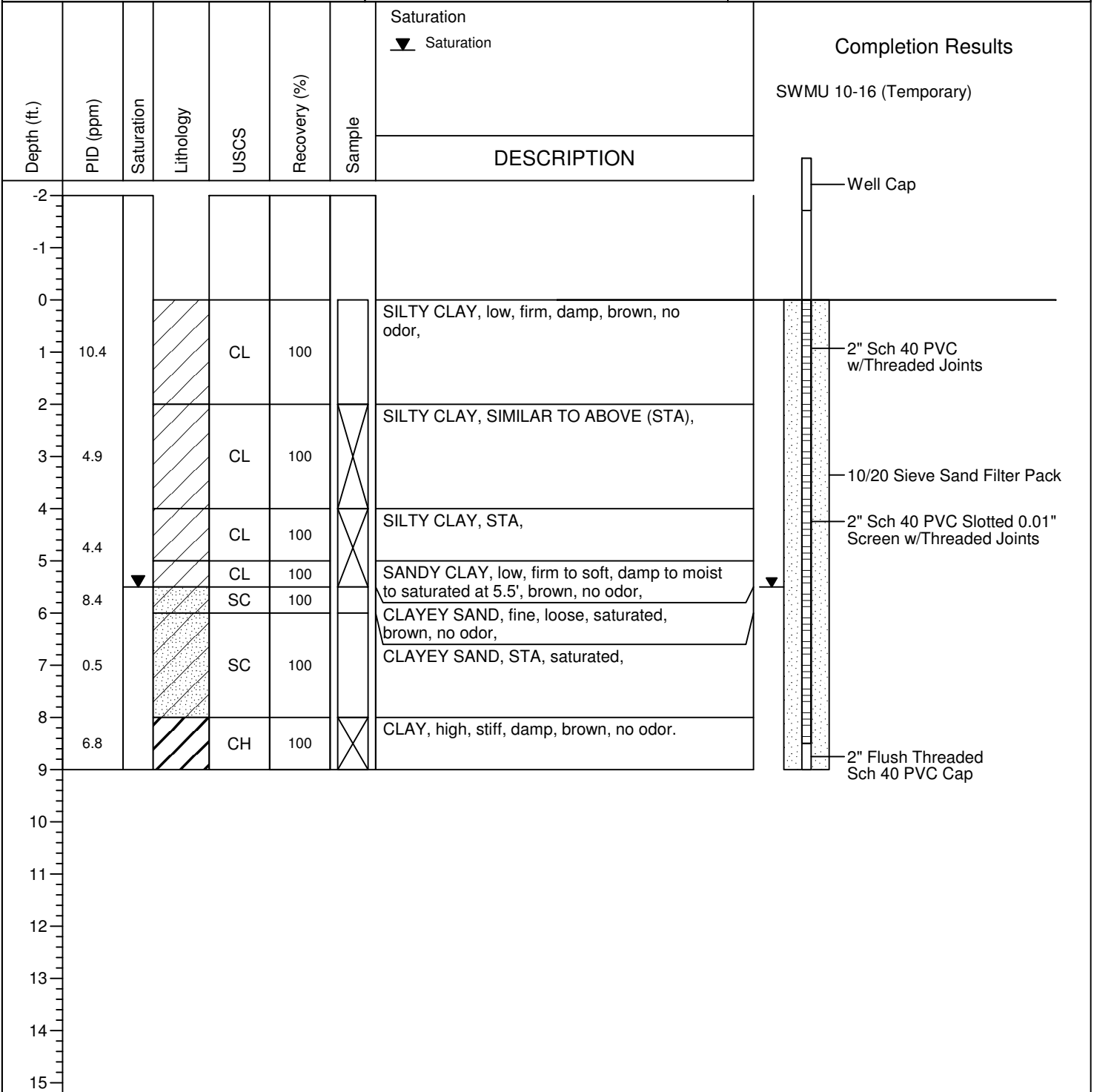
Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : NA
Drilling Method : Hand Auger
Sampling Method : Auger Bucket
Comments :
Total Depth : 9'
Ground Water : 5.5'
Start Date : 05/13/2015
Finish Date : 05/13/2015

WELL NO. SWMU 10-16

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.417'
E : W 108° 25.881'



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Western Refining SW, Inc.
Gallup Refinery - SWMU 10
Job No. WEST15005

Geologist : Tracy Payne
Driller : Enviro-Drill Inc / Aguirre
Drilling Rig : NA
Drilling Method : Hand Auger
Sampling Method : Auger Bucket
Comments :
Total Depth : 8'
Ground Water : Not Encountered
Start Date : 05/13/2015
Finish Date : 05/13/2015

WELL NO. SWMU 10-17

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.437'
E : W 108° 25.858'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	3.8			CL	100		SILTY CLAY, low, stiff, damp, brown, no odor,	
2								
3	4.1			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA), sandy at base,	
4								
5	292			SC	100		CLAYEY SAND, fine, compact, damp, faint odor,	
6								
7	1667			SC	100		CLAYEY SAND, STA, moist at base, odor.	
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME 75
Drilling Method : Hollow Stem Auger
Sampling Method : Split Spoon
Comments : Hand Auger 0-5' BGL
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 05/16/2016
Finish Date : 05/16/2016

BORING NO. SWMU 10-18

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.445'
E : W 108° 25.875'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	6.6			CL	100		SILTY CLAY, low, firm, dry to damp, brown, no odor,	
2								
3	6.2			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA),	
4								
5	8.9			CL	100		SILTY CLAY, STA,	
6								
7	18.4			CL	90		SILTY CLAY, STA,	
8								
9	20.6			CL	90		SILTY CLAY, STA, crumbly at base,	
10								
11	14.1			CLST	90		CLAYSTONE, very stiff, dry, reddish purple, no odor,	
12								
13	12.9			CLST	90		CLAYSTONE, STA, reddish purple and grey,	
14								
15	9.3			CLST	90		CLAYSTONE, STA,	
16								
17	10.1			CLST	75		CLAYSTONE, STA,	
18								
19	8.7			CLST	80		CLAYSTONE, STA.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME 75
Drilling Method : Hollow Stem Auger
Sampling Method : Split Spoon - 2'
Comments : Hand Auger 0-5' BGL
Total Depth : 20'
Ground Water : Not Encountered
Start Date : 05/17/2016
Finish Date : 05/17/2016

BORING NO. SWMU 10-19

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.446'
E : W 108° 25.861'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	3.5			CL	100		SILTY CLAY, low, firm, dry to damp, brown, no odor,	
2								
3	1.5			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA),	
4								
5	2.4			CL	100		SILTY CLAY, STA,	
6								
7	8.2			CH	70		CLAY, high, firm, damp, brown, no odor,	
8								
9	12.6			CH	70		CLAY, STA,	
10								
11	12.8			CL	90		SILTY CLAY, low, firm, crumbly, damp, reddish brown, no odor, moist, dense, grey clay at base,	
12								
13	900			CLST	90		CLAYSTONE, very stiff, dry, reddish brown and grey, chemical odor,	
14								
15	291			CLST	80		CLAYSTONE, STA, faint odor,	
16								
17	233			CLST	60		CLAYSTONE, STA, odor,	
18								
19	30.1			CLST	70		CLAYSTONE, STA.	
20								
21								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME 75
Drilling Method : Hollow Stem Auger
Sampling Method : Split Spoon - 2'
Comments : Hand Auger 0-5' BGL
Total Depth : 22'
Ground Water : 12'
Start Date : 05/17/2016
Finish Date : 05/17/2016

BORING NO. SWMU 10-20

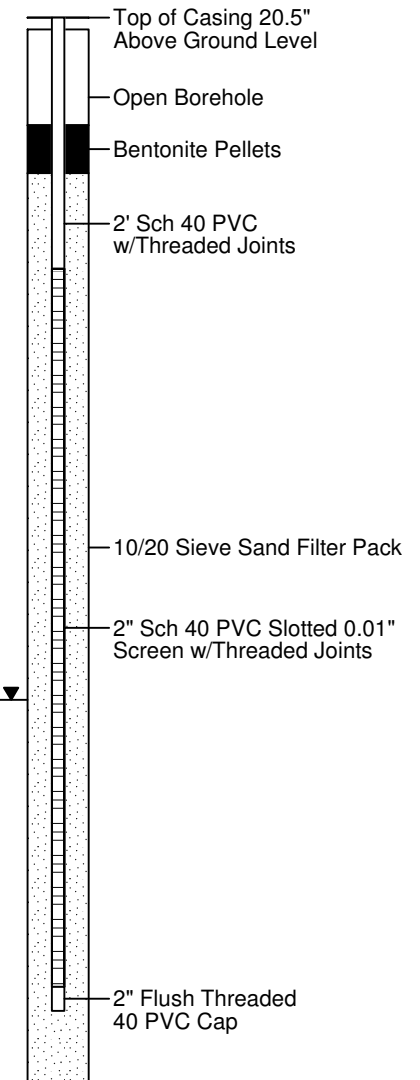
(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.447'
E : W 108° 25.849'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation
							DESCRIPTION
-2							
-1							
0							SILTY CLAY, low, firm, damp, brown, no odor,
1	1.3			CL	100		
2							SILTY CLAY, SIMILAR TO ABOVE (STA),
3	0.7			CL	100		
4							SILTY CLAY, STA,
5	1.0			CL	100		
6							SILTY CLAY, STA, odor,
7	1436			CL	100		
8							CLAY, high, firm, damp, brown, chemical odor, black staining at base,
9	1603			CH	60		
10							SILTY SANDY CLAY, moderate, firm, damp to moist, odor,
11	1715			CL	80		
12							SILTY SANDY CLAY, STA, moist to saturated, odor,
13	376			CL	90		
14							SILTY SANDY CLAY, STA, moist to saturated in sand seam at 15.5' BGL, odor,
15	77			CL	90		
16							SILTY SANDY CLAY, STA, moist to saturated, black staining, odor,
17	1022			CL	90		
18							SILTY CLAY, low, soft, damp to moist, brown, odor, claystone at base,
19	72			CL	90		
20							CLAYSTONE, very stiff, dry, reddish purple and grey, no odor.
21	10.2			CLST	80		
22							
23							

Temporary Well Settings

TEMP WELL SWMU 10-20



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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME 75
Drilling Method : Hollow Stem Auger
Sampling Method : Split Spoon
Comments :
Total Depth : 22'
Ground Water : 14'
Start Date : 05/18/2016
Finish Date : 05/18/2016

BORING NO. SWMU 10-21

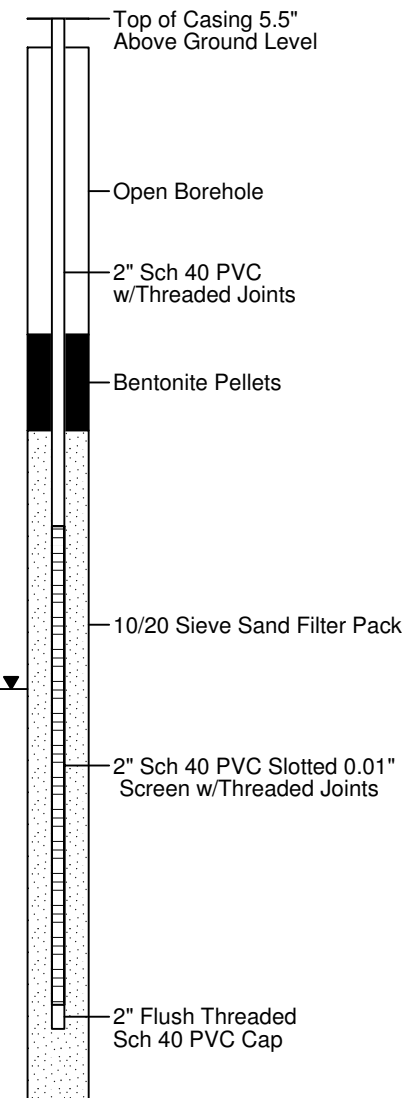
(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.442'
E : W 108°25.823'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation
							DESCRIPTION
-2							
-1							
0							
1	1.5			ML	100		SILT/GRAVEL, compact, damp, no odor,
2							
3	17.0			CL	100		SILTY CLAY, low, firm, damp, brown, no odor,
4							
5	16.7			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA), no odor,
6							
7	7.2			CL	90		SANDY SILTY CLAY, low, soft, sand in seams, damp, brown, no odor,
8							
9	9.6			CL	90		SANDY SILTY CLAY, STA, no odor,
10							
11	5.3			CH	90		CLAY, high, soft, damp, brown, no odor,
12							
13	12.1			CH	90		CLAY, STA, sandy at base, no odor,
14							
15				CL	60		SANDY SILTY CLAY, low, soft, moist to saturated in sand seams, brown, no odor,
16							
17				CL	70		SANDY SILTY CLAY, STA, saturated in sand seams, no odor,
18							
19	6.1			CL	70		SANDY SILTY CLAY, STA, damp, no odor,
20							
21	2.7			CLST	70		CLAYSTONE, very stiff, dry, reddish purple and grey, no odor.
22							
23							

Temporary Well Settings

TEMP WELL SWMU 10-21



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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig :
Drilling Method : Hand Auger
Sampling Method : Auger Bucket
Comments :
Total Depth : 9'
Ground Water : Not Encountered
Start Date : 05/18/2016
Finish Date : 05/18/2016

BORING NO. SWMU 10-22

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.418'
E : W 108° 25.846'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	5.6			CL	100		CLAY, moderate, firm, damp, brown, no odor,	
2								
3	2.0			CL	100		CLAY, SIMILAR TO ABOVE (STA),	
4								
5	4.1			CL	100		CLAY, STA,	
6								
7	6.9			CL	100		CLAY, STA,	
8				CLST	100		CLAYSTONE, very stiff, dry, reddish purple, no odor,	
9	7.2			CLST	100		CLAYSTONE, STA.	
10								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME75
Drilling Method : Hollow Stem Auger - 7.5"
Sampling Method : 2' Split Spoon - 2" Diameter
Comments : Hand Augered to 6' BGL;
Total Depth : 17' Grouted Borehole 9/19/16
Ground Water : Not Encountered
Start Date : 9/19/2016
Finish Date : 9/19/2016

BORING NO. SWMU 10-23

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.542'
E : W 108° 25.869'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	0.0			ML	100		SILT, low, soft, damp, brown, no odor,	
2								
3	0.2			ML	100		SILT, SIMILAR TO ABOVE (STA),	
4								
5	0.2			ML	100		SILT, STA,	
6								
7	2.0			CL	50		SILTY CLAY, low, firm, damp, brown, trace fine grain sand, no odor,	
8								
9	3.3			CL	60		SILTY CLAY, STA, no odor,	
10								
11	3.7			CL	90		SILTY CLAY, STA, no odor,	
12								
13	3.5			CL	60		SILTY CLAY, low, soft, damp, brown, no odor,	
14								
15	2.5			CL	90		SILTY CLAY, STA, damper than above, no odor,	
16	1.4			CLST	90		CLAYSTONE, very stiff, slightly sandy, pink, dry, no odor,	
17	1.4			CLST	90		CLAYSTONE, STA.	
18								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME75
Drilling Method : Hollow Stem Auger - 7.5"
Sampling Method : 2' Split Spoon - 2" Diameter
Comments : Hand Augered to 6' BGL;
Total Depth : 17' Grouted Borehole 9/19/16
Ground Water : Not Encountered
Start Date : 9/19/2016
Finish Date : 9/19/2016

BORING NO. SWMU 10-24

(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.452'
E : W 108° 25.856'

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation	Completion Results
							DESCRIPTION	
-2								
-1								
0								
1	2.4			ML	100		SILT, low, soft, damp, brown, no odor,	
2								
3	2.5			ML	100		SILT, SIMILAR TO ABOVE (STA),	
4								
5	1.1			ML	100		SILT, STA,	
6								
7	3000			CL	90		SILTY CLAY, low, soft to firm, damp, dark brown, odor,	
8								
9	2021			CL	90		SILTY CLAY, STA, sandy at base, very moist/oily phase separated hydrocarbon (psh) present, odor,	
10								
11	307			CL	100		SILTY CLAY, low, firm, damp, brown, odor,	
12								
13	443			CL	100		SILTY CLAY, STA, odor,	
14								
15	123			CL	90		SILTY CLAY, STA, odor,	
16	56			CLST	90		CLAYSTONE, very stiff, slightly sandy, pink, dry, faint odor,	
17	80			CLST	90		CLAYSTONE, STA.	
18								

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Western Refining SW, Inc.
Gallup Refinery - SWMU No. 10
Job No. WEST16006

Geologist : Tracy Payne
Driller : Enviro-Drill, Inc. / Cohagan
Drilling Rig : CME75
Drilling Method : Hollow Stem Auger - 7.5"
Sampling Method : 2" Split Spoon - 2" Diameter
Comments : Hand Augered to 6' BGL
Total Depth : 19'
Ground Water : 12'
Start Date : 9/19/2016
Finish Date : 9/19/2016

BORING NO. SWMU 10-25

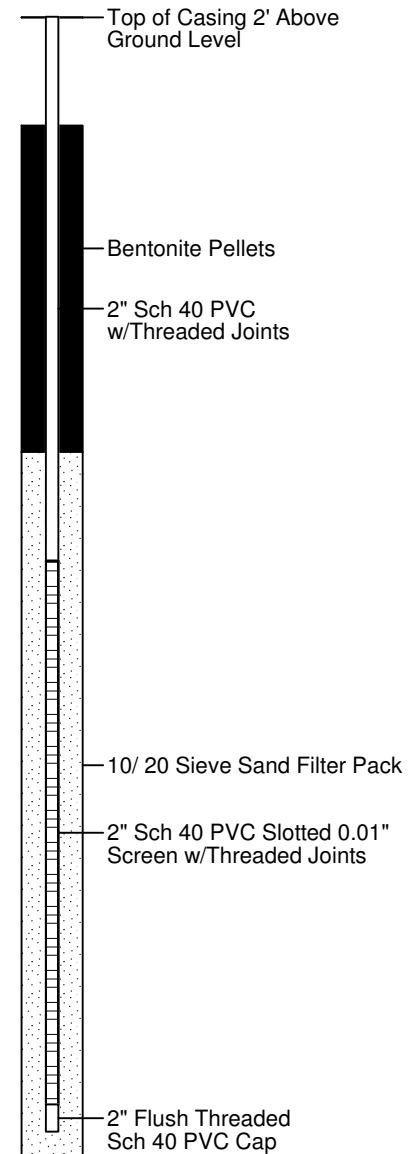
(Sheet 1 of 1)

Elev., TOC (ft.msl) :
Elev., PAD (ft. msl) :
Elev., GL (ft. msl) :
Site Coordinates :
N : N 35° 29.453'
E : W 108° 25.842

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	Saturation ▼ Saturation
							DESCRIPTION
-2							
-1							
0							SILT, low, soft, damp, brown, no odor,
1	1.9			ML	100		
2							
3	1319			CL	100		SILTY CLAY, low, soft, damp, brown, odor,
4							
5	187			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA), odor,
6							
7	108			CL	90		SILTY CLAY, low, firm, damp, brown, odor,
8							
9	201			CL	90		SILTY CLAY, STA, odor,
10							
11	367			CL	90		SANDY CLAY, low, soft, damp, brown to black discoloration in sand, odor,
12							
13	338			CL	90		SANDY CLAY, STA, odor,
14	350			CL	90		SILTY CLAY, low, firm, damp, brown, odor,
15							
16	10.6			CL	100		SANDY CLAY, low, very soft, saturated, dark brown, odor,
17							
18	5			CLST	100		SILTY CLAY, low, firm, damp, dark brown, odor,
19							
20	5			CLST	100		SANDY CLAY, low, soft to firm, very damp to moist, dark brown, faint odor,
							SANDY CLAY, STA, faint odor,
							CLAYSTONE, very stiff, dry, brown and grey,
							CLAYSTONE, STA.

Temporary Well Settings

Temp Well SWMU 10-25



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Appendix D

Analytical Data Reports



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

October 05, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1504C86

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 4/29/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 01, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', with a stylized flourish at the end.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C86

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

Project: SWMU 10

Collection Date: 4/28/2015 4:50:00 PM

Lab ID: 1504C86-001

Matrix: AQUEOUS

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: KJH	
Diesel Range Organics (DRO)	ND	0.91	1.0		mg/L	1	5/1/2015 1:48:33 PM	18985
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	5/1/2015 1:48:33 PM	18985
Surr: DNOP	104	0	76.5-150		%REC	1	5/1/2015 1:48:33 PM	18985
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.012	0.050		mg/L	1	5/5/2015 11:58:11 AM	R25979
Surr: BFB	92.9	0	80-120		%REC	1	5/5/2015 11:58:11 AM	R25979
EPA METHOD 300.0: ANIONS							Analyst: LGT	
Fluoride	ND	0.029	0.10		mg/L	1	4/30/2015 5:24:21 PM	R25896
Chloride	ND	0.13	0.50		mg/L	1	4/30/2015 5:24:21 PM	R25896
Sulfate	ND	0.11	0.50		mg/L	1	4/30/2015 5:24:21 PM	R25896
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	ND	0.00095	0.0020		mg/L	1	4/30/2015 2:11:15 PM	R25881
Beryllium	0.00067	0.00031	0.0020	J	mg/L	1	4/30/2015 2:11:15 PM	R25881
Cadmium	ND	0.00097	0.0020		mg/L	1	4/30/2015 2:11:15 PM	R25881
Chromium	0.0030	0.0018	0.0060	J	mg/L	1	4/30/2015 2:11:15 PM	R25881
Cobalt	ND	0.0013	0.0060		mg/L	1	4/30/2015 2:11:15 PM	R25881
Iron	ND	0.0073	0.020		mg/L	1	4/30/2015 2:11:15 PM	R25881
Manganese	ND	0.00027	0.0020		mg/L	1	4/30/2015 2:11:15 PM	R25881
Nickel	ND	0.0021	0.010		mg/L	1	4/30/2015 2:11:15 PM	R25881
Silver	ND	0.0012	0.0050		mg/L	1	4/30/2015 2:11:15 PM	R25881
Vanadium	ND	0.0015	0.050		mg/L	1	4/30/2015 2:11:15 PM	R25881
Zinc	0.016	0.0028	0.010		mg/L	1	4/30/2015 2:11:15 PM	R25881
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	ND	0.00095	0.0020		mg/L	1	5/4/2015 2:06:05 PM	R25943
Beryllium	ND	0.00031	0.0020		mg/L	1	5/4/2015 2:06:05 PM	R25943
Cadmium	ND	0.00097	0.0020		mg/L	1	5/4/2015 2:06:05 PM	R25943
Chromium	ND	0.0022	0.0060		mg/L	1	5/4/2015 2:06:05 PM	R25943
Cobalt	ND	0.0013	0.0060		mg/L	1	5/4/2015 2:06:05 PM	R25943
Iron	ND	0.0073	0.020		mg/L	1	5/4/2015 2:06:05 PM	R25943
Manganese	ND	0.0015	0.0020		mg/L	1	5/4/2015 2:06:05 PM	R25943
Nickel	ND	0.0023	0.010		mg/L	1	5/4/2015 2:06:05 PM	R25943
Silver	ND	0.0021	0.0050		mg/L	1	5/4/2015 2:06:05 PM	R25943
Vanadium	ND	0.0015	0.050		mg/L	1	5/4/2015 2:06:05 PM	R25943
Zinc	ND	0.0036	0.010		mg/L	1	5/4/2015 2:06:05 PM	R25943
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Antimony	0.00038	0.00014	0.0010	J	mg/L	1	5/11/2015 2:12:40 PM	R26119
Arsenic	ND	0.000065	0.0010		mg/L	1	5/11/2015 2:12:40 PM	R26119

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C86

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

Project: SWMU 10

Collection Date: 4/28/2015 4:50:00 PM

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Matrix: AQUEOUS

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Lead	ND	0.000026	0.0010		mg/L	1	5/11/2015 2:12:40 PM	R26119
Selenium	ND	0.00019	0.0010		mg/L	1	5/11/2015 2:12:40 PM	R26119
EPA 200.8: METALS							Analyst: DBD	
Antimony	0.00051	0.00022	0.0010	J	mg/L	1	5/11/2015 12:57:22 PM	R26119
Arsenic	ND	0.00044	0.0010		mg/L	1	5/11/2015 12:57:22 PM	R26119
Lead	ND	0.000069	0.00050		mg/L	1	5/11/2015 12:57:22 PM	R26119
Selenium	ND	0.00019	0.0010		mg/L	1	5/11/2015 12:57:22 PM	R26119
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	ND	0.000059	0.00020		mg/L	1	5/5/2015 2:09:31 PM	19047
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Acenaphthylene	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Aniline	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Anthracene	ND	1.6	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Azobenzene	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benz(a)anthracene	ND	2.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzo(a)pyrene	ND	2.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzo(b)fluoranthene	ND	2.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzo(g,h,i)perylene	ND	3.1	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzo(k)fluoranthene	ND	2.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzoic acid	ND	1.0	20		µg/L	1	5/5/2015 8:36:16 PM	18996
Benzyl alcohol	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Bis(2-chloroethoxy)methane	ND	1.8	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Bis(2-chloroethyl)ether	ND	1.8	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Bis(2-chloroisopropyl)ether	ND	2.1	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Bis(2-ethylhexyl)phthalate	ND	3.3	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Bromophenyl phenyl ether	ND	1.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Butyl benzyl phthalate	ND	2.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Carbazole	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Chloro-3-methylphenol	ND	1.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Chloroaniline	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Chloronaphthalene	ND	1.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Chlorophenol	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Chlorophenyl phenyl ether	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Chrysene	ND	2.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Di-n-butyl phthalate	ND	2.1	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Di-n-octyl phthalate	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Dibenz(a,h)anthracene	ND	3.3	10		µg/L	1	5/5/2015 8:36:16 PM	18996

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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C86

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

Project: SWMU 10

Collection Date: 4/28/2015 4:50:00 PM

Lab ID: 1504C86-001

Matrix: AQUEOUS

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Dibenzofuran	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
1,2-Dichlorobenzene	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
1,3-Dichlorobenzene	ND	1.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
1,4-Dichlorobenzene	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
3,3'-Dichlorobenzidine	ND	2.6	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Diethyl phthalate	ND	1.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Dimethyl phthalate	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4-Dichlorophenol	ND	1.4	20		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4-Dimethylphenol	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4,6-Dinitro-2-methylphenol	ND	1.4	20		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4-Dinitrophenol	ND	1.1	20		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4-Dinitrotoluene	ND	1.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2,6-Dinitrotoluene	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Fluoranthene	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Fluorene	ND	1.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Hexachlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Hexachlorobutadiene	ND	1.9	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Hexachlorocyclopentadiene	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Hexachloroethane	ND	1.6	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Indeno(1,2,3-cd)pyrene	ND	2.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Isophorone	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
1-Methylnaphthalene	ND	1.8	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Methylnaphthalene	ND	2.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Methylphenol	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
3+4-Methylphenol	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
N-Nitrosodi-n-propylamine	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
N-Nitrosodimethylamine	ND	1.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
N-Nitrosodiphenylamine	ND	2.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Naphthalene	ND	1.8	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Nitroaniline	ND	1.8	10		µg/L	1	5/5/2015 8:36:16 PM	18996
3-Nitroaniline	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Nitroaniline	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Nitrobenzene	ND	1.5	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2-Nitrophenol	ND	1.2	10		µg/L	1	5/5/2015 8:36:16 PM	18996
4-Nitrophenol	ND	1.4	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Pentachlorophenol	ND	1.1	20		µg/L	1	5/5/2015 8:36:16 PM	18996
Phenanthrene	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Phenol	ND	1.1	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Pyrene	ND	2.3	10		µg/L	1	5/5/2015 8:36:16 PM	18996

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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C86

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

Project: SWMU 10

Collection Date: 4/28/2015 4:50:00 PM

Lab ID: 1504C86-001

Matrix: AQUEOUS

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Pyridine	ND	1.7	10		µg/L	1	5/5/2015 8:36:16 PM	18996
1,2,4-Trichlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4,5-Trichlorophenol	ND	1.6	10		µg/L	1	5/5/2015 8:36:16 PM	18996
2,4,6-Trichlorophenol	ND	1.3	10		µg/L	1	5/5/2015 8:36:16 PM	18996
Surr: 2-Fluorophenol	89.9	0	14.9-111		%REC	1	5/5/2015 8:36:16 PM	18996
Surr: Phenol-d5	86.1	0	11.3-108		%REC	1	5/5/2015 8:36:16 PM	18996
Surr: 2,4,6-Tribromophenol	108	0	15.7-154		%REC	1	5/5/2015 8:36:16 PM	18996
Surr: Nitrobenzene-d5	111	0	47.8-106	S	%REC	1	5/5/2015 8:36:16 PM	18996
Surr: 2-Fluorobiphenyl	106	0	21.3-123		%REC	1	5/5/2015 8:36:16 PM	18996
Surr: 4-Terphenyl-d14	93.2	0	14.3-135		%REC	1	5/5/2015 8:36:16 PM	18996
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.065	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Toluene	0.21	0.11	1.0	J	µg/L	1	5/6/2015 2:07:35 PM	R26017
Ethylbenzene	ND	0.10	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Methyl tert-butyl ether (MTBE)	ND	0.17	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2,4-Trimethylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,3,5-Trimethylbenzene	ND	0.12	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2-Dichloroethane (EDC)	ND	0.18	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Naphthalene	ND	0.22	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1-Methylnaphthalene	ND	0.54	4.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
2-Methylnaphthalene	ND	0.59	4.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Acetone	2.2	0.94	10	J	µg/L	1	5/6/2015 2:07:35 PM	R26017
Bromobenzene	ND	0.11	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Bromodichloromethane	ND	0.090	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Bromoform	ND	0.16	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Bromomethane	ND	1.2	3.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
2-Butanone	ND	0.36	10		µg/L	1	5/6/2015 2:07:35 PM	R26017
Carbon disulfide	ND	0.67	10		µg/L	1	5/6/2015 2:07:35 PM	R26017
Carbon Tetrachloride	ND	0.078	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Chlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Chloroethane	ND	0.10	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Chloroform	ND	0.21	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Chloromethane	ND	0.17	3.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
2-Chlorotoluene	ND	0.079	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
4-Chlorotoluene	ND	0.15	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
cis-1,2-DCE	ND	0.081	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
cis-1,3-Dichloropropene	ND	0.13	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2-Dibromo-3-chloropropane	ND	0.14	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017

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Analytical Report

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CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

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EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Dibromochloromethane	ND	0.097	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Dibromomethane	ND	0.23	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2-Dichlorobenzene	ND	0.12	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,3-Dichlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,4-Dichlorobenzene	ND	0.17	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Dichlorodifluoromethane	ND	0.69	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1-Dichloroethene	ND	0.099	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
2,2-Dichloropropane	ND	0.15	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1-Dichloropropene	ND	0.12	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Hexachlorobutadiene	ND	0.25	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
2-Hexanone	ND	0.48	10		µg/L	1	5/6/2015 2:07:35 PM	R26017
Isopropylbenzene	ND	0.15	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
4-Isopropyltoluene	ND	0.19	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
4-Methyl-2-pentanone	ND	0.26	10		µg/L	1	5/6/2015 2:07:35 PM	R26017
Methylene Chloride	ND	0.36	3.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
n-Butylbenzene	ND	0.25	3.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
n-Propylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
sec-Butylbenzene	ND	0.23	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Styrene	ND	0.11	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
tert-Butylbenzene	ND	0.13	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1,1,2-Tetrachloroethane	ND	0.11	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1,2,2-Tetrachloroethane	ND	0.18	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Tetrachloroethene (PCE)	ND	0.16	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
trans-1,2-DCE	ND	0.094	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
trans-1,3-Dichloropropene	ND	0.11	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2,3-Trichlorobenzene	ND	0.27	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2,4-Trichlorobenzene	ND	0.28	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1,1-Trichloroethane	ND	0.078	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,1,2-Trichloroethane	ND	0.079	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Trichloroethene (TCE)	ND	0.16	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Trichlorofluoromethane	ND	0.13	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
1,2,3-Trichloropropane	ND	0.16	2.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Vinyl chloride	ND	0.13	1.0		µg/L	1	5/6/2015 2:07:35 PM	R26017
Xylenes, Total	ND	0.28	1.5		µg/L	1	5/6/2015 2:07:35 PM	R26017
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%REC	1	5/6/2015 2:07:35 PM	R26017
Surr: 4-Bromofluorobenzene	98.7	0	70-130		%REC	1	5/6/2015 2:07:35 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1504C86**

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB01

Project: SWMU 10

Collection Date: 4/28/2015 4:50:00 PM

Lab ID: 1504C86-001

Matrix: AQUEOUS

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Surr: Dibromofluoromethane	97.4	0	70-130		%REC	1	5/6/2015 2:07:35 PM	R26017
Surr: Toluene-d8	98.2	0	70-130		%REC	1	5/6/2015 2:07:35 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

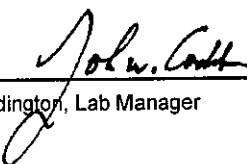
Batch #: 150501022
Project Name: 1504C86

Analytical Results Report

Sample Number	150501022-001	Sampling Date	4/28/2015	Date/Time Received	5/1/2015 11:40 AM
Client Sample ID	1504C86-001H / SWMU 10 EB01			Sampling Time	4:50 PM
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	5/5/2015	CRW	EPA 335.4	

Authorized Signature


John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 150501022
Project Name: 1504C86

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.500	mg/L	0.5	100.0	90-110	5/5/2015	5/5/2015

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
150424028-004	Cyanide	ND	0.512	mg/L	0.5	102.4	90-110	5/5/2015	5/5/2015

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	0.500	mg/L	0.5	100.0	2.4	0-20	5/5/2015	5/5/2015

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/L	0.01	5/5/2015	5/5/2015

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:Cert0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099



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Est. 1970

REPORT OF ANALYSIS

May 11, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C86-001I SWMU 10 EB01
Collected By :
Collection Date : 04/28/15 16:50

ESC Sample # : L762537-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexavalent Chromium	BDL	0.00050	mg/l	3500Cr C-2011	05/08/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/11/15 10:38 Printed: 05/11/15 10:38



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Quality Control Summary SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Matrix: Water - mg/L

Project:

EPA ID: TN00003

Collection Date: 4/28/2015

Analytic Batch: WG787240

Analysis Date: 5/8/2015

Analyst: 183

Instrument ID: IC-13

Sample Numbers: L762537-01

Method Blank Summary

Instrument	Client Sample ID	Lab Sample ID	File Name	Analysis Date	Analysis Time
D-13	Blank WG787240	Blank WG787240	8	5/8/2015	3:45 PM
D-13	LCS WG787240	LCS WG787240	10	5/8/2015	4:04 PM
D-13	LCSD WG787240	LCSD WG787240	11	5/8/2015	4:12 PM
D-13	DUP WG787240	DUP WG787240	15	5/8/2015	5:12 PM
D-13	MSD WG787240	MSD WG787240	24	5/8/2015	6:25 PM
D-13	MS WG787240	MS WG787240	26	5/8/2015	6:55 PM
D-13	1504C86-001I SWMU 10 EB01	L762537-01	42	5/8/2015	9:24 PM
D-13	DUP WG787240	DUP WG787240	46	5/8/2015	9:57 PM

Quality Control Summary

SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Project:

Collection Date: 4/28/2015

Analysis Date: 5/8/2015

Instrument ID: IC-13

Sample Numbers: L762537-01

Matrix: Water - mg/L

EPA ID: TN00003

Analytic Batch: WG787240

Analyst: 183

Method Blank

Analyte	CAS	RDL	Qualifier
Hexavalent Chromium	18540-29-9	< 0.000500	

Laboratory Control Sample (LCS)

Analyte	Dil	True Value	Found	% Rec	Control Limits	Qual
Hexavalent Chromium	1	0.002	0.0018	91.5	90 - 110	

Laboratory Control Sample Duplicate (LCSD)

Analyte	Dil	True Value	Found	% Rec	Control Limits	Qual
Hexavalent Chromium	1	0.002	0.0019	95	90 - 110	

Laboratory Control Sample / Laboratory Control Sample Duplicate

Analyte	Dil	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	% Rec	Control RPD	% RPD	Control Limits	Qual
Hexavalent Chromium	1	0.002	0.0018	91.5	0.0019	95	90 - 110	3.75	20			



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Quality Control Summary SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Matrix: Water - mg/L

Project:

EPA ID: TN00003

Collection Date: 4/28/2015

Analytic Batch: WG787240

Analysis Date: 5/8/2015

Analyst: 183

Instrument ID: IC-13

Sample Numbers: L762537-01

Sample Duplicate

L762055-02

Analyte	Dil	Sample Result	DUP Result	% RPD	Limit	Qualifier
Hexavalent Chromium	1	<0.0005	<0.0005		20	

Sample Duplicate

L762910-04

Analyte	Dil	Sample Result	DUP Result	% RPD	Limit	Qualifier
Hexavalent Chromium	1	0.0008	0.0007	6.8	20	

Matrix Spike / Matrix Spike Duplicate

L762372-02

nalyte	Dil	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qual	RPD	Control Limits	RPD Qual
Hexavalent Chromium	1	0.05	0.001	0.0509	99.8	0.0508	99.6	90 - 110		0.2	20	



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Quality Control Summary SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Matrix: Water - mg/L

Project:

EPA ID: TN00003

Collection Date: 4/28/2015

Analytic Batch: WG787240

Analysis Date: 5/8/2015

Analyst: 183

Instrument ID: IC-13

Sample Numbers: L762537-01

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 3:56 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.049	98.5	90 - 110

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 6:09 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.049	98.1	90 - 110



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Quality Control Summary SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Matrix: Water - mg/L

Project:

EPA ID: TN00003

Collection Date: 4/28/2015

Analytic Batch: WG787240

Analysis Date: 5/8/2015

Analyst: 183

Instrument ID: IC-13

Sample Numbers: L762537-01

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 6:34 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.050	99.2	90 - 110

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 7:05 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.050	101	90 - 110



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Quality Control Summary SDG: L762537

Hall Environmental Analysis Laboratory

Test: Anions by Method 3500Cr C-2011

Project No:

Matrix: Water - mg/L

Project:

EPA ID: TN00003

Collection Date: 4/28/2015

Analytic Batch: **WG787240**

Analysis Date: 5/8/2015

Analyst: 183

Instrument ID: IC-13

Sample Numbers: L762537-01

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 8:59 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.051	101	90 - 110

Continuing Calibration Verification Standard (CCV)

File ID: WG787240IC-13

Date Analyzed: 5/8/2015

Time Analyzed: 10:05 PM

Analyte	True Value	Found	Recovery %	Limits
Hexavalent Chromium	0.050	0.051	102	90 - 110

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R25881	RunNo:	25881					
Prep Date:		Analysis Date:	4/30/2015	SeqNo:	767038	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	0.0023	0.0050								J
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	R25881	RunNo:	25881					
Prep Date:		Analysis Date:	4/30/2015	SeqNo:	767039	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.3	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.0	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Chromium	0.49	0.0060	0.5000	0	98.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.7	85	115			
Iron	0.51	0.020	0.5000	0	102	85	115			
Manganese	0.47	0.0020	0.5000	0	93.3	85	115			
Nickel	0.48	0.010	0.5000	0	96.8	85	115			
Silver	0.089	0.0050	0.1000	0	89.3	85	115			
Vanadium	0.50	0.050	0.5000	0	99.3	85	115			
Zinc	0.48	0.010	0.5000	0	97.0	85	115			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R25943	RunNo:	25943					
Prep Date:		Analysis Date:	5/4/2015	SeqNo:	768973	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA Method 200.7: Metals							
Client ID: PBW	Batch ID: R25943		RunNo: 25943							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 768973		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 200.7: Metals							
Client ID: LCSW	Batch ID: R25943		RunNo: 25943							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 768974		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	95.3	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.1	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.6	85	115			
Chromium	0.48	0.0060	0.5000	0	96.2	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.4	85	115			
Iron	0.47	0.020	0.5000	0	94.4	85	115			
Manganese	0.47	0.0020	0.5000	0	93.7	85	115			
Nickel	0.47	0.010	0.5000	0	93.6	85	115			
Silver	0.090	0.0050	0.1000	0	90.4	85	115			
Vanadium	0.50	0.050	0.5000	0	99.4	85	115			
Zinc	0.47	0.010	0.5000	0	93.5	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	R25881	RunNo:	25881					
Prep Date:		Analysis Date:	4/30/2015	SeqNo:	767040	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	0.0015	0.0050								J
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	R25881	RunNo:	25881					
Prep Date:		Analysis Date:	4/30/2015	SeqNo:	767041	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.49	0.0020	0.5000	0	97.2	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.2	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Chromium	0.48	0.0060	0.5000	0	96.4	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.5	85	115			
Iron	0.51	0.020	0.5000	0	101	85	115			
Manganese	0.47	0.0020	0.5000	0	93.4	85	115			
Nickel	0.48	0.010	0.5000	0	96.0	85	115			
Silver	0.088	0.0050	0.1000	0	87.9	85	115			
Vanadium	0.50	0.050	0.5000	0	99.4	85	115			
Zinc	0.48	0.010	0.5000	0	96.1	85	115			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	R25943	RunNo:	25943					
Prep Date:		Analysis Date:	5/4/2015	SeqNo:	768975	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: R25943		RunNo: 25943							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 768975		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: R25943		RunNo: 25943							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 768976		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.50	0.0020	0.5000	0	99.0	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.3	85	115			
Chromium	0.48	0.0060	0.5000	0	96.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.7	85	115			
Iron	0.48	0.020	0.5000	0	95.1	85	115			
Manganese	0.47	0.0020	0.5000	0	93.5	85	115			
Nickel	0.47	0.010	0.5000	0	93.8	85	115			
Silver	0.090	0.0050	0.1000	0	90.4	85	115			
Vanadium	0.50	0.050	0.5000	0	99.6	85	115			
Zinc	0.48	0.010	0.5000	0	96.7	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS			SampType: LCS		TestCode: EPA 200.8: Metals				
Client ID:	LCSW			Batch ID: R26119		RunNo: 26119				
Prep Date:				Analysis Date: 5/11/2015		SeqNo: 774818		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.9	85	115			
Arsenic	0.024	0.0010	0.02500	0	96.0	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			
Selenium	0.024	0.0010	0.02500	0	95.3	85	115			

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774819		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.2	85	115			
Arsenic	0.024	0.0010	0.02500	0	96.1	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			
Selenium	0.024	0.0010	0.02500	0	94.4	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID:	PBW	Batch ID: R26119			RunNo: 26119					
Prep Date:		Analysis Date: 5/11/2015			SeqNo: 774821		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID:	PBW	Batch ID: R26119			RunNo: 26119					
Prep Date:		Analysis Date: 5/11/2015			SeqNo: 774822		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS			SampType:	LCS			TestCode:	EPA 200.8: Dissolved Metals		
Client ID:	LCSW			Batch ID:	R26119			RunNo:	26119		
Prep Date:				Analysis Date:	5/11/2015			SeqNo:	774863		
								Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	0.024	0.0010	0.02500	0	96.9	85	115				
Arsenic	0.024	0.0010	0.02500	0	96.0	85	115				
Lead	0.025	0.00050	0.02500	0	99.5	85	115				
Selenium	0.024	0.0010	0.02500	0	95.3	85	115				

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	LCSW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774864		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.2	85	115			
Arsenic	0.024	0.0010	0.02500	0	96.1	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			
Selenium	0.024	0.0010	0.02500	0	94.4	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: R26119			RunNo: 26119					
Prep Date:		Analysis Date: 5/11/2015			SeqNo: 774865		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: R26119			RunNo: 26119					
Prep Date:		Analysis Date: 5/11/2015			SeqNo: 774866		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19047		SampType:	MBLK		TestCode:	EPA Method 245.1: Mercury				
Client ID:	PBW		Batch ID:	19047		RunNo:	25969				
Prep Date:	5/5/2015		Analysis Date:	5/5/2015		SeqNo:	769643		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.00020									

Sample ID	LCS-19047			SampType:	LCS		TestCode:	EPA Method 245.1: Mercury			
Client ID:	LCSW			Batch ID:	19047		RunNo:	25969			
Prep Date:	5/5/2015			Analysis Date:	5/5/2015		SeqNo:	769644		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.0050	0.00020	0.005000	0	101	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R25896		RunNo: 25896							
Prep Date:	Analysis Date: 4/30/2015		SeqNo: 767580		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R25896		RunNo: 25896							
Prep Date:	Analysis Date: 4/30/2015		SeqNo: 767581		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	95.3	90	110			
Chloride	4.8	0.50	5.000	0	96.2	90	110			
Sulfate	9.7	0.50	10.00	0	96.8	90	110			

Sample ID 1504C86-001EMS	SampType: MS		TestCode: EPA Method 300.0: Anions							
Client ID: SWMU 10 EB01	Batch ID: R25896		RunNo: 25896							
Prep Date:	Analysis Date: 4/30/2015		SeqNo: 767603		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	66.1	113			
Chloride	4.8	0.50	5.000	0	95.1	81.8	112			
Sulfate	9.6	0.50	10.00	0	95.7	88.3	114			

Sample ID 1504C86-001EMSD	SampType: MSD		TestCode: EPA Method 300.0: Anions							
Client ID: SWMU 10 EB01	Batch ID: R25896		RunNo: 25896							
Prep Date:	Analysis Date: 4/30/2015		SeqNo: 767604		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	66.1	113	2.46	20	
Chloride	4.8	0.50	5.000	0	96.1	81.8	112	1.00	20	
Sulfate	9.7	0.50	10.00	0	96.6	88.3	114	0.907	20	

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R25896		RunNo: 25896							
Prep Date:	Analysis Date: 4/30/2015		SeqNo: 767632		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS		SampType: LCS		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSW		Batch ID: R25896		RunNo: 25896					
Prep Date:			Analysis Date: 4/30/2015		SeqNo: 767633		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.7	90	110			
Chloride	4.7	0.50	5.000	0	94.3	90	110			
Sulfate	9.5	0.50	10.00	0	94.9	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-18985		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767854		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		101	76.5	150			

Sample ID	LCS-18985		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767970		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1.0	5.000	0	104	60.1	156			
Surr: DNOP	0.52		0.5000		105	76.5	150			

Sample ID	1504C86-001CMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	SWMU 10 EB01		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767980		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	115	75.9	164			
Surr: DNOP	0.60		0.5000		119	76.5	150			

Sample ID	1504C86-001CMSD		SampType:	MSD		TestCode:	EPA Method 8015M/D: Diesel Range				
Client ID:	SWMU 10 EB01		Batch ID:	18985		RunNo:	25902				
Prep Date:	4/30/2015		Analysis Date:	5/1/2015		SeqNo:	767994		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	5.6	1.0	5.000	0	112	75.9	164	2.68	22.1		
Surr: DNOP	0.59		0.5000		117	76.5	150	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768862		Units: %REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	18		20.00		88.4	80	120			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768863		Units: %REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	18		20.00		91.1	80	120			

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R25979		RunNo: 25979					
Prep Date:			Analysis Date: 5/5/2015		SeqNo: 769934		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		93.8	80	120			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R25979		RunNo: 25979					
Prep Date:			Analysis Date: 5/5/2015		SeqNo: 769935		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0	90.7	80	120			
Surr: BFB	20		20.00		99.1	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771281	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771281	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		116	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.0	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771283	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	19	1.0	20.00	0	97.1	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R26017			RunNo: 26017					
Prep Date:		Analysis Date: 5/6/2015			SeqNo: 771283		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	25	1.0	20.00	0	123	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	170		200.0		86.6	14.9	111			
Surr: Phenol-d5	170		200.0		85.6	11.3	108			
Surr: 2,4,6-Tribromophenol	170		200.0		83.0	15.7	154			
Surr: Nitrobenzene-d5	86		100.0		86.0	47.8	106			
Surr: 2-Fluorobiphenyl	86		100.0		86.3	21.3	123			
Surr: 4-Terphenyl-d14	76		100.0		75.5	14.3	135			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	lcs-18996		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770337		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	78	10	100.0	0	77.9	47.8	99.7			
4-Chloro-3-methylphenol	180	10	200.0	0	88.1	58.1	103			
2-Chlorophenol	150	10	200.0	0	73.7	49.5	96.8			
1,4-Dichlorobenzene	75	10	100.0	0	75.1	40.4	89.4			
2,4-Dinitrotoluene	71	10	100.0	0	71.0	38.6	91.3			
N-Nitrosodi-n-propylamine	81	10	100.0	0	81.3	53.9	95.6			
4-Nitrophenol	160	10	200.0	0	80.1	26.4	108			
Pentachlorophenol	140	20	200.0	0	72.3	36.5	86.6			
Phenol	160	10	200.0	0	81.8	29.3	108			
Pyrene	77	10	100.0	0	77.1	45.7	100			
1,2,4-Trichlorobenzene	77	10	100.0	0	77.0	39.3	94.5			
Surr: 2-Fluorophenol	160		200.0		80.1	14.9	111			
Surr: Phenol-d5	180		200.0		88.0	11.3	108			
Surr: 2,4,6-Tribromophenol	210		200.0		105	15.7	154			
Surr: Nitrobenzene-d5	82		100.0		82.0	47.8	106			
Surr: 2-Fluorobiphenyl	85		100.0		84.9	21.3	123			
Surr: 4-Terphenyl-d14	94		100.0		94.2	14.3	135			

Sample ID	lcsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	88	10	100.0	0	87.9	47.8	99.7	12.0	28.2	
4-Chloro-3-methylphenol	210	10	200.0	0	103	58.1	103	15.2	24.4	
2-Chlorophenol	150	10	200.0	0	74.5	49.5	96.8	1.08	28.1	
1,4-Dichlorobenzene	72	10	100.0	0	72.0	40.4	89.4	4.19	31.2	
2,4-Dinitrotoluene	84	10	100.0	0	83.9	38.6	91.3	16.6	44.4	
N-Nitrosodi-n-propylamine	90	10	100.0	0	89.6	53.9	95.6	9.67	24.2	
4-Nitrophenol	190	10	200.0	0	95.2	26.4	108	17.2	36.6	
Pentachlorophenol	170	20	200.0	0	85.2	36.5	86.6	16.3	29.5	
Phenol	170	10	200.0	0	82.7	29.3	108	1.08	30	
Pyrene	89	10	100.0	0	89.0	45.7	100	14.3	31	
1,2,4-Trichlorobenzene	80	10	100.0	0	80.4	39.3	94.5	4.35	24	
Surr: 2-Fluorophenol	160		200.0		78.4	14.9	111	0	0	
Surr: Phenol-d5	180		200.0		88.9	11.3	108	0	0	
Surr: 2,4,6-Tribromophenol	220		200.0		112	15.7	154	0	0	
Surr: Nitrobenzene-d5	89		100.0		88.8	47.8	106	0	0	
Surr: 2-Fluorobiphenyl	89		100.0		89.1	21.3	123	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C86

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Icsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	97		100.0		96.6	14.3	135	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Sample Log-In Check List

Client Name: **Western Refining Gallup**

Work Order Number: **1504C86**

RcptNo: **1**

Received by/date:

Am

04/29/15

Logged By: **Ashley Gallegos**

4/29/2015 4:00:00 PM

Ag

Completed By: **Ashley Gallegos**

4/30/2015 11:21:25 AM

Ag

Reviewed By:

Ag

04/30/15

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: *21*

Adjusted? *NO*

Checked by: *Ag*

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Yes			

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10

METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES TOTAL
METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

WESTERN REFINING SOUTHWEST, INC.

GALLUP REFINERY - SWMU 10

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0



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

October 05, 2015

Thurman B. Larsen
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0258
FAX (505) 722-0210

RE: SWMU 10

OrderNo.: 1504C87

Dear Thurman B. Larsen:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/29/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 04, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 1:53:00 PM

Lab ID: 1504C87-001

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	93	5.4	9.8		mg/Kg-dr	1	5/1/2015 12:54:24 PM	18983
Motor Oil Range Organics (MRO)	53	49	49		mg/Kg-dr	1	5/1/2015 12:54:24 PM	18983
Surr: DNOP	105	0	57.9-140		%REC	1	5/1/2015 12:54:24 PM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.0	3.5		mg/Kg-dr	1	5/1/2015 11:11:48 AM	R25904
Surr: BFB	90.1	0	80-120		%REC	1	5/1/2015 11:11:48 AM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	19	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0066	0.0038	0.043	J	mg/Kg-dr	1	5/6/2015 3:17:02 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.6	3.0		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Arsenic	0.97	0.35	3.0	J	mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Barium	200	0.036	0.12		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Beryllium	1.1	0.0089	0.18		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Cadmium	ND	0.033	0.12		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Chromium	10	0.072	0.36		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Cobalt	5.2	0.045	0.36		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Iron	16000	72	300		mg/Kg-dr	100	5/7/2015 10:48:49 AM	19080
Lead	3.2	0.13	0.30		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Manganese	300	0.070	0.12		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Nickel	9.1	0.15	0.60		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Selenium	ND	1.8	3.0		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Silver	ND	0.036	0.30		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Vanadium	20	0.040	3.0		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
Zinc	17	0.77	3.0		mg/Kg-dr	1	5/7/2015 12:51:48 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Acenaphthylene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Aniline	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Anthracene	ND	0.10	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Azobenzene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benz(a)anthracene	ND	0.097	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benzo(a)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benzo(b)fluoranthene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benzo(g,h,i)perylene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benzo(k)fluoranthene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-1 (2-4')**Project:** SWMU 10**Collection Date:** 4/28/2015 1:53:00 PM**Lab ID:** 1504C87-001**Matrix:** SOIL**Received Date:** 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.070	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Benzyl alcohol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Bis(2-chloroethoxy)methane	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Bis(2-chloroethyl)ether	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.094	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.14	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Bromophenyl phenyl ether	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Butyl benzyl phthalate	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Carbazole	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Chloro-3-methylphenol	ND	0.12	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Chloroaniline	ND	0.11	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Chloronaphthalene	ND	0.13	0.31		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Chlorophenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Chlorophenyl phenyl ether	ND	0.18	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Chrysene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Di-n-butyl phthalate	ND	0.14	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Di-n-octyl phthalate	ND	0.14	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Dibenz(a,h)anthracene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Dibenzofuran	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
1,2-Dichlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
1,3-Dichlorobenzene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
1,4-Dichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
3,3'-Dichlorobenzidine	ND	0.095	0.31		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Diethyl phthalate	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Dimethyl phthalate	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4-Dichlorophenol	ND	0.12	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4-Dimethylphenol	ND	0.097	0.37		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.067	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4-Dinitrophenol	ND	0.051	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4-Dinitrotoluene	ND	0.11	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,6-Dinitrotoluene	ND	0.14	0.62		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Fluoranthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Fluorene	ND	0.17	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Hexachlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Hexachlorobutadiene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Hexachlorocyclopentadiene	ND	0.085	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Hexachloroethane	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Isophorone	ND	0.13	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 1:53:00 PM

Lab ID: 1504C87-001

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Methylnaphthalene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Methylphenol	ND	0.12	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
3+4-Methylphenol	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
N-Nitrosodi-n-propylamine	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
N-Nitrosodiphenylamine	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Naphthalene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Nitroaniline	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
3-Nitroaniline	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Nitroaniline	ND	0.11	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Nitrobenzene	ND	0.13	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2-Nitrophenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
4-Nitrophenol	ND	0.11	0.31		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Pentachlorophenol	ND	0.077	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Phenanthrene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Phenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Pyrene	ND	0.16	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Pyridine	ND	0.10	0.49		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
1,2,4-Trichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4,5-Trichlorophenol	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
2,4,6-Trichlorophenol	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 4:00:49 PM	19026
Surr: 2-Fluorophenol	80.2		26.4-129		%REC	1	5/7/2015 4:00:49 PM	19026
Surr: Phenol-d5	80.8		34.8-118		%REC	1	5/7/2015 4:00:49 PM	19026
Surr: 2,4,6-Tribromophenol	86.9		26.8-128		%REC	1	5/7/2015 4:00:49 PM	19026
Surr: Nitrobenzene-d5	77.7		35.8-124		%REC	1	5/7/2015 4:00:49 PM	19026
Surr: 2-Fluorobiphenyl	82.7		24.5-139		%REC	1	5/7/2015 4:00:49 PM	19026
Surr: 4-Terphenyl-d14	80.5		29.4-129		%REC	1	5/7/2015 4:00:49 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	ND	0.0051	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Toluene	ND	0.0041	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Ethylbenzene	ND	0.0032	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Methyl tert-butyl ether (MTBE)	ND	0.0049	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2,4-Trimethylbenzene	0.0061	0.0017	0.035	J	mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,3,5-Trimethylbenzene	ND	0.0023	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2-Dichloroethane (EDC)	ND	0.014	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2-Dibromoethane (EDB)	ND	0.0027	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Naphthalene	ND	0.0082	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1-Methylnaphthalene	ND	0.021	0.14		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
2-Methylnaphthalene	ND	0.023	0.14		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-1 (2-4')**Project:** SWMU 10**Collection Date:** 4/28/2015 1:53:00 PM**Lab ID:** 1504C87-001**Matrix:** SOIL**Received Date:** 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Acetone	0.043	0.026	0.52	J	mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Bromobenzene	ND	0.0026	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Bromodichloromethane	ND	0.0028	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Bromoform	ND	0.0028	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Bromomethane	ND	0.0067	0.10		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
2-Butanone	ND	0.022	0.35		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Carbon disulfide	ND	0.025	0.35		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Carbon tetrachloride	ND	0.0034	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Chlorobenzene	ND	0.0027	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Chloroethane	ND	0.027	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Chloroform	ND	0.0036	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Chloromethane	ND	0.0040	0.10		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
2-Chlorotoluene	ND	0.0039	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
4-Chlorotoluene	ND	0.0026	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
cis-1,2-DCE	ND	0.0044	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
cis-1,3-Dichloropropene	ND	0.0024	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2-Dibromo-3-chloropropane	ND	0.0059	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Dibromochloromethane	ND	0.0026	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Dibromomethane	ND	0.0036	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2-Dichlorobenzene	ND	0.0021	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,3-Dichlorobenzene	ND	0.0041	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,4-Dichlorobenzene	ND	0.0043	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Dichlorodifluoromethane	ND	0.0087	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1-Dichloroethane	ND	0.014	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1-Dichloroethene	ND	0.0024	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2-Dichloropropane	ND	0.0019	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,3-Dichloropropane	ND	0.0048	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
2,2-Dichloropropane	ND	0.0050	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1-Dichloropropene	ND	0.0051	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Hexachlorobutadiene	ND	0.0048	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
2-Hexanone	ND	0.0085	0.35		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Isopropylbenzene	ND	0.0029	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
4-Isopropyltoluene	ND	0.0025	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
4-Methyl-2-pentanone	ND	0.0060	0.35		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Methylene chloride	ND	0.014	0.10		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
n-Butylbenzene	ND	0.0030	0.10		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
n-Propylbenzene	ND	0.0026	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
sec-Butylbenzene	ND	0.0049	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Styrene	ND	0.0063	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 1:53:00 PM

Lab ID: 1504C87-001

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
tert-Butylbenzene	ND	0.0040	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1,1,2-Tetrachloroethane	ND	0.0028	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1,2,2-Tetrachloroethane	ND	0.0042	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Tetrachloroethene (PCE)	ND	0.0030	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
trans-1,2-DCE	ND	0.0022	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
trans-1,3-Dichloropropene	ND	0.0062	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2,3-Trichlorobenzene	ND	0.0074	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2,4-Trichlorobenzene	ND	0.0064	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1,1-Trichloroethane	ND	0.0052	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,1,2-Trichloroethane	ND	0.0041	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Trichloroethene (TCE)	ND	0.0034	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Trichlorofluoromethane	ND	0.010	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
1,2,3-Trichloropropane	ND	0.0058	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Vinyl chloride	ND	0.014	0.035		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Xylenes, Total	ND	0.0096	0.069		mg/Kg-dr	1	5/5/2015 4:19:40 PM	R25982
Surr: Dibromofluoromethane	100		70-130		%REC	1	5/5/2015 4:19:40 PM	R25982
Surr: 1,2-Dichloroethane-d4	92.1		70-130		%REC	1	5/5/2015 4:19:40 PM	R25982
Surr: Toluene-d8	92.1		70-130		%REC	1	5/5/2015 4:19:40 PM	R25982
Surr: 4-Bromofluorobenzene	93.6		70-130		%REC	1	5/5/2015 4:19:40 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (4-6')

Project: SWMU 10

Collection Date: 4/28/2015 2:04:00 PM

Lab ID: 1504C87-002

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.4	9.8		mg/Kg-dr	1	5/1/2015 10:39:47 AM	18983
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg-dr	1	5/1/2015 10:39:47 AM	18983
Surr: DNOP	104	0	57.9-140		%REC	1	5/1/2015 10:39:47 AM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.99	3.3		mg/Kg-dr	1	5/1/2015 11:40:34 AM	R25904
Surr: BFB	89.9	0	80-120		%REC	1	5/1/2015 11:40:34 AM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	21	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0063	0.0036	0.041	J	mg/Kg-dr	1	5/6/2015 3:18:49 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	1.9	1.7	3.2	J	mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Arsenic	1.7	0.37	3.2	J	mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Barium	130	0.038	0.13		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Beryllium	1.1	0.0094	0.19		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Cadmium	ND	0.035	0.13		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Chromium	10	0.077	0.38		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Cobalt	5.4	0.048	0.38		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Iron	17000	77	320		mg/Kg-dr	100	5/7/2015 10:51:53 AM	19080
Lead	3.2	0.14	0.32		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Manganese	290	0.075	0.13		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Nickel	9.6	0.16	0.64		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Selenium	ND	1.9	3.2		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Silver	ND	0.038	0.32		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Vanadium	18	0.042	3.2		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
Zinc	16	0.82	3.2		mg/Kg-dr	1	5/7/2015 12:59:02 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Acenaphthylene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Aniline	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Anthracene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Azobenzene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benz(a)anthracene	ND	0.099	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benzo(a)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benzo(b)fluoranthene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benzo(g,h,i)perylene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benzo(k)fluoranthene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (4-6')

Project: SWMU 10

Collection Date: 4/28/2015 2:04:00 PM

Lab ID: 1504C87-002

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.072	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Benzyl alcohol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Bis(2-chloroethoxy)methane	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Bis(2-chloroethyl)ether	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.096	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.14	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Bromophenyl phenyl ether	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Butyl benzyl phthalate	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Carbazole	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Chloro-3-methylphenol	ND	0.13	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Chloroaniline	ND	0.12	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Chloronaphthalene	ND	0.13	0.32		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Chlorophenol	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Chlorophenyl phenyl ether	ND	0.19	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Chrysene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Di-n-butyl phthalate	ND	0.14	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Di-n-octyl phthalate	ND	0.14	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Dibenz(a,h)anthracene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Dibenzofuran	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
1,2-Dichlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
1,3-Dichlorobenzene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
1,4-Dichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
3,3'-Dichlorobenzidine	ND	0.097	0.32		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Diethyl phthalate	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Dimethyl phthalate	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4-Dichlorophenol	ND	0.13	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4-Dimethylphenol	ND	0.099	0.38		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.068	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4-Dinitrophenol	ND	0.052	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4-Dinitrotoluene	ND	0.11	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,6-Dinitrotoluene	ND	0.14	0.63		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Fluoranthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Fluorene	ND	0.17	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Hexachlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Hexachlorobutadiene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Hexachlorocyclopentadiene	ND	0.087	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Hexachloroethane	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Isophorone	ND	0.13	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (4-6')

Project: SWMU 10

Collection Date: 4/28/2015 2:04:00 PM

Lab ID: 1504C87-002

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Methylnaphthalene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Methylphenol	ND	0.13	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
3+4-Methylphenol	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
N-Nitrosodi-n-propylamine	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
N-Nitrosodiphenylamine	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Naphthalene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Nitroaniline	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
3-Nitroaniline	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Nitroaniline	ND	0.11	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Nitrobenzene	ND	0.13	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2-Nitrophenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
4-Nitrophenol	ND	0.11	0.32		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Pentachlorophenol	ND	0.079	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Phenanthrene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Phenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Pyrene	ND	0.16	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Pyridine	ND	0.11	0.50		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
1,2,4-Trichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4,5-Trichlorophenol	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
2,4,6-Trichlorophenol	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 5:25:11 PM	19026
Surr: 2-Fluorophenol	68.1		26.4-129		%REC	1	5/7/2015 5:25:11 PM	19026
Surr: Phenol-d5	70.1		34.8-118		%REC	1	5/7/2015 5:25:11 PM	19026
Surr: 2,4,6-Tribromophenol	65.1		26.8-128		%REC	1	5/7/2015 5:25:11 PM	19026
Surr: Nitrobenzene-d5	65.6		35.8-124		%REC	1	5/7/2015 5:25:11 PM	19026
Surr: 2-Fluorobiphenyl	65.1		24.5-139		%REC	1	5/7/2015 5:25:11 PM	19026
Surr: 4-Terphenyl-d14	71.5		29.4-129		%REC	1	5/7/2015 5:25:11 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.00211	0.000387	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Toluene	0.00253	0.000179	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Ethylbenzene	0.0318	0.000289	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Xylenes, Total	0.197	0.00103	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Methyl tert-butyl ether (MTBE)	0.00669	0.000721	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2,4-Trimethylbenzene	0.000619	0.000449	0.00172	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,3,5-Trimethylbenzene	0.000318	0.000302	0.00172	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000461	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000206	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Naphthalene	0.000877	0.000562	0.00172	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1-Methylnaphthalene	ND	0.000675	0.00344		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (4-6')

Project: SWMU 10

Collection Date: 4/28/2015 2:04:00 PM

Lab ID: 1504C87-002

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
2-Methylnaphthalene	ND	0.000672	0.00344		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Acetone	0.00926	0.00107	0.00860		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Bromobenzene	ND	0.000478	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Bromodichloromethane	ND	0.000232	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Bromoform	ND	0.000445	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Bromomethane	ND	0.00102	0.00258		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
2-Butanone	0.00257	0.000550	0.00860	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Carbon tetrachloride	ND	0.000311	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Chlorobenzene	ND	0.000174	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Chloroethane	ND	0.00172	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Chloroform	ND	0.000354	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Chloromethane	ND	0.000203	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
2-Chlorotoluene	ND	0.000336	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Carbon disulfide	ND	0.000778	0.00860		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
4-Chlorotoluene	ND	0.000331	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
cis-1,2-DCE	ND	0.000455	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
cis-1,3-Dichloropropene	ND	0.00172	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000505	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Dibromochloromethane	ND	0.000193	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Dibromomethane	ND	0.000976	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2-Dichlorobenzene	ND	0.000382	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,3-Dichlorobenzene	ND	0.000291	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,4-Dichlorobenzene	ND	0.000270	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Dichlorodifluoromethane	ND	0.000702	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1-Dichloroethane	ND	0.000402	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1-Dichloroethene	ND	0.000287	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2-Dichloropropane	ND	0.000367	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,3-Dichloropropane	ND	0.000268	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
2,2-Dichloropropane	ND	0.000299	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1-Dichloropropene	ND	0.000315	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Hexachlorobutadiene	ND	0.000347	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Isopropylbenzene	ND	0.000399	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
4-Isopropyltoluene	ND	0.000667	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Methylene chloride	0.000619	0.000425	0.00172	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
n-Butylbenzene	ND	0.000706	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
2-Hexanone	ND	0.000358	0.00860		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
n-Propylbenzene	ND	0.000322	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
sec-Butylbenzene	0.000593	0.000434	0.00172	J	mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Styrene	ND	0.000285	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (4-6')

Project: SWMU 10

Collection Date: 4/28/2015 2:04:00 PM

Lab ID: 1504C87-002

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
4-Methyl-2-pentanone	ND	0.000726	0.00860		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
tert-Butylbenzene	ND	0.000263	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000280	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1,2,2-Tetrachloroethane	ND	0.000378	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Tetrachloroethene (PCE)	ND	0.000341	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
trans-1,2-DCE	ND	0.000278	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
trans-1,3-Dichloropropene	ND	0.000225	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2,3-Trichlorobenzene	ND	0.000629	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2,4-Trichlorobenzene	ND	0.000644	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1,1-Trichloroethane	ND	0.000245	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,1,2-Trichloroethane	ND	0.00172	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Trichloroethene (TCE)	ND	0.000342	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Trichlorofluoromethane	ND	0.000347	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
1,2,3-Trichloropropane	ND	0.000604	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Vinyl chloride	ND	0.000196	0.00172		mg/Kg-dr	1	5/6/2015 3:04:38 PM	19032
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%REC	1	5/6/2015 3:04:38 PM	19032
Surr: 4-Bromofluorobenzene	113	0	70-130		%REC	1	5/6/2015 3:04:38 PM	19032
Surr: Dibromofluoromethane	105	0	70-130		%REC	1	5/6/2015 3:04:38 PM	19032
Surr: Toluene-d8	95.7	0	70-130		%REC	1	5/6/2015 3:04:38 PM	19032

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 2:14:00 PM

Lab ID: 1504C87-003

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.5	10		mg/Kg-dr	1	5/1/2015 11:06:06 AM	18983
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg-dr	1	5/1/2015 11:06:06 AM	18983
Surr: DNOP	101	0	57.9-140		%REC	1	5/1/2015 11:06:06 AM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	3.6		mg/Kg-dr	1	5/1/2015 12:09:22 PM	R25904
Surr: BFB	89.0	0	80-120		%REC	1	5/1/2015 12:09:22 PM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	15	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0036	0.0034	0.039	J	mg/Kg-dr	1	5/6/2015 3:20:37 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	1.5	1.5	2.9	J	mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Arsenic	1.7	0.34	2.9	J	mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Barium	170	0.035	0.12		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Beryllium	1.1	0.0086	0.17		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Cadmium	ND	0.032	0.12		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Chromium	16	0.070	0.35		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Cobalt	7.0	0.044	0.35		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Iron	23000	70	290		mg/Kg-dr	100	5/7/2015 10:53:17 AM	19080
Lead	2.0	0.13	0.29		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Manganese	480	0.14	0.23		mg/Kg-dr	2	5/7/2015 1:03:16 PM	19080
Nickel	16	0.15	0.58		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Silver	ND	0.035	0.29		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Vanadium	17	0.039	2.9		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
Zinc	22	0.75	2.9		mg/Kg-dr	1	5/7/2015 1:01:49 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Acenaphthylene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Aniline	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Anthracene	ND	0.099	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Azobenzene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benz(a)anthracene	ND	0.092	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benzo(a)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 2:14:00 PM

Lab ID: 1504C87-003

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.067	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Benzyl alcohol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Bis(2-chloroethyl)ether	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.089	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Butyl benzyl phthalate	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Carbazole	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Chloro-3-methylphenol	ND	0.12	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Chloroaniline	ND	0.11	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Chloronaphthalene	ND	0.13	0.29		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Chlorophenol	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Chrysene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Di-n-butyl phthalate	ND	0.13	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Di-n-octyl phthalate	ND	0.13	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Dibenz(a,h)anthracene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Dibenzofuran	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
1,3-Dichlorobenzene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
3,3'-Dichlorobenzidine	ND	0.090	0.29		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Diethyl phthalate	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Dimethyl phthalate	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4-Dichlorophenol	ND	0.12	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4-Dimethylphenol	ND	0.092	0.35		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.064	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4-Dinitrophenol	ND	0.049	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,6-Dinitrotoluene	ND	0.13	0.59		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Fluoranthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Fluorene	ND	0.16	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Hexachlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Hexachlorobutadiene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Hexachlorocyclopentadiene	ND	0.081	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Hexachloroethane	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Isophorone	ND	0.12	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 2:14:00 PM

Lab ID: 1504C87-003

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Methylphenol	ND	0.12	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
3+4-Methylphenol	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Nitroaniline	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
3-Nitroaniline	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Nitroaniline	ND	0.11	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Nitrobenzene	ND	0.12	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2-Nitrophenol	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
4-Nitrophenol	ND	0.10	0.29		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Pentachlorophenol	ND	0.073	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Phenanthrene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Phenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Pyrene	ND	0.15	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Pyridine	ND	0.098	0.47		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4,5-Trichlorophenol	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
2,4,6-Trichlorophenol	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 5:53:16 PM	19026
Surr: 2-Fluorophenol	62.8		26.4-129		%REC	1	5/7/2015 5:53:16 PM	19026
Surr: Phenol-d5	62.6		34.8-118		%REC	1	5/7/2015 5:53:16 PM	19026
Surr: 2,4,6-Tribromophenol	58.1		26.8-128		%REC	1	5/7/2015 5:53:16 PM	19026
Surr: Nitrobenzene-d5	60.8		35.8-124		%REC	1	5/7/2015 5:53:16 PM	19026
Surr: 2-Fluorobiphenyl	62.6		24.5-139		%REC	1	5/7/2015 5:53:16 PM	19026
Surr: 4-Terphenyl-d14	62.5		29.4-129		%REC	1	5/7/2015 5:53:16 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.0146	0.000447	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Toluene	0.00836	0.000206	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Ethylbenzene	0.00192	0.000334	0.00199	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Xylenes, Total	0.00647	0.00118	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000832	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2,4-Trimethylbenzene	0.00162	0.000519	0.00199	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,3,5-Trimethylbenzene	0.000993	0.000348	0.00199	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000532	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000237	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Naphthalene	ND	0.000649	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1-Methylnaphthalene	ND	0.000780	0.00397		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 2:14:00 PM

Lab ID: 1504C87-003

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
2-Methylnaphthalene	ND	0.000776	0.00397		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Acetone	0.00324	0.00124	0.00993	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Bromobenzene	ND	0.000552	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Bromodichloromethane	ND	0.000268	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Bromoform	ND	0.000514	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Bromomethane	ND	0.00117	0.00298		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
2-Butanone	0.00156	0.000636	0.00993	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Carbon tetrachloride	ND	0.000359	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Chlorobenzene	ND	0.000201	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Chloroethane	ND	0.00199	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Chloroform	ND	0.000409	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Chloromethane	ND	0.000234	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
2-Chlorotoluene	ND	0.000387	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Carbon disulfide	ND	0.000898	0.00993		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
4-Chlorotoluene	ND	0.000382	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
cis-1,2-DCE	ND	0.000525	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
cis-1,3-Dichloropropene	ND	0.00199	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000583	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Dibromochloromethane	ND	0.000223	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Dibromomethane	ND	0.00113	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2-Dichlorobenzene	ND	0.000441	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,3-Dichlorobenzene	ND	0.000336	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,4-Dichlorobenzene	ND	0.000312	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Dichlorodifluoromethane	ND	0.000811	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1-Dichloroethane	ND	0.000464	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1-Dichloroethene	ND	0.000331	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2-Dichloropropane	ND	0.000424	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,3-Dichloropropane	ND	0.000309	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
2,2-Dichloropropane	ND	0.000345	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1-Dichloropropene	ND	0.000364	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Hexachlorobutadiene	ND	0.000401	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Isopropylbenzene	ND	0.000461	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
4-Isopropyltoluene	ND	0.000770	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Methylene chloride	0.000566	0.000491	0.00199	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
n-Butylbenzene	ND	0.000815	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
2-Hexanone	ND	0.000413	0.00993		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
n-Propylbenzene	ND	0.000372	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
sec-Butylbenzene	0.000715	0.000501	0.00199	J	mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Styrene	ND	0.000329	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 2:14:00 PM

Lab ID: 1504C87-003

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
4-Methyl-2-pentanone	ND	0.000838	0.00993		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
tert-Butylbenzene	ND	0.000304	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000323	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1,2,2-Tetrachloroethane	ND	0.000437	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Tetrachloroethene (PCE)	ND	0.000394	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
trans-1,2-DCE	ND	0.000321	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
trans-1,3-Dichloropropene	ND	0.000260	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2,3-Trichlorobenzene	ND	0.000726	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2,4-Trichlorobenzene	ND	0.000744	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1,1-Trichloroethane	ND	0.000282	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,1,2-Trichloroethane	ND	0.00199	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Trichloroethene (TCE)	ND	0.000394	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Trichlorofluoromethane	ND	0.000401	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
1,2,3-Trichloropropane	ND	0.000697	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Vinyl chloride	ND	0.000227	0.00199		mg/Kg-dr	1	5/6/2015 3:54:54 PM	19032
Surr: 1,2-Dichloroethane-d4	94.3	0	70-130		%REC	1	5/6/2015 3:54:54 PM	19032
Surr: 4-Bromofluorobenzene	99.4	0	70-130		%REC	1	5/6/2015 3:54:54 PM	19032
Surr: Dibromofluoromethane	101	0	70-130		%REC	1	5/6/2015 3:54:54 PM	19032
Surr: Toluene-d8	87.0	0	70-130		%REC	1	5/6/2015 3:54:54 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 3:46:00 PM

Lab ID: 1504C87-004

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	84	5.5	9.9		mg/Kg-dr	1	5/1/2015 2:20:08 PM	18983
Motor Oil Range Organics (MRO)	90	49	49		mg/Kg-dr	1	5/1/2015 2:20:08 PM	18983
Surr: DNOP	110	0	57.9-140		%REC	1	5/1/2015 2:20:08 PM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	3.5		mg/Kg-dr	1	5/1/2015 12:38:08 PM	R25904
Surr: BFB	89.7	0	80-120		%REC	1	5/1/2015 12:38:08 PM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	16	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.10	0.0036	0.040		mg/Kg-dr	1	5/6/2015 3:22:25 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.9		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Arsenic	2.3	0.34	2.9	J	mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Barium	280	0.035	0.12		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Beryllium	0.88	0.0086	0.17		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Cadmium	ND	0.032	0.12		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Chromium	17	0.070	0.35		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Cobalt	5.0	0.044	0.35		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Iron	15000	70	290		mg/Kg-dr	100	5/7/2015 10:54:40 AM	19080
Lead	3.6	0.13	0.29		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Manganese	820	0.34	0.58		mg/Kg-dr	5	5/8/2015 2:25:29 PM	19080
Nickel	8.9	0.15	0.58		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Silver	ND	0.035	0.29		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Vanadium	22	0.039	2.9		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
Zinc	25	0.75	2.9		mg/Kg-dr	1	5/7/2015 1:04:42 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.29	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Acenaphthylene	ND	0.24	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Aniline	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Anthracene	ND	0.20	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Azobenzene	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benz(a)anthracene	ND	0.19	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benzo(a)pyrene	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benzo(b)fluoranthene	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benzo(g,h,i)perylene	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benzo(k)fluoranthene	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 3:46:00 PM

Lab ID: 1504C87-004

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.14	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Benzyl alcohol	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Bis(2-chloroethoxy)methane	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Bis(2-chloroethyl)ether	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.18	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Bis(2-ethylhexyl)phthalate	0.29	0.27	1.2	J	mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Bromophenyl phenyl ether	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Butyl benzyl phthalate	ND	0.29	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Carbazole	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Chloro-3-methylphenol	ND	0.24	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Chloroaniline	ND	0.22	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Chloronaphthalene	ND	0.25	0.59		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Chlorophenol	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Chlorophenyl phenyl ether	ND	0.35	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Chrysene	ND	0.24	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Di-n-butyl phthalate	ND	0.27	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Di-n-octyl phthalate	ND	0.26	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Dibenz(a,h)anthracene	ND	0.26	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Dibenzofuran	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
1,2-Dichlorobenzene	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
1,3-Dichlorobenzene	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
1,4-Dichlorobenzene	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
3,3'-Dichlorobenzidine	ND	0.18	0.59		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Diethyl phthalate	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Dimethyl phthalate	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4-Dichlorophenol	ND	0.24	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4-Dimethylphenol	ND	0.19	0.71		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.13	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4-Dinitrophenol	ND	0.098	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4-Dinitrotoluene	ND	0.21	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,6-Dinitrotoluene	ND	0.26	1.2		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Fluoranthene	ND	0.29	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Fluorene	ND	0.32	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Hexachlorobenzene	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Hexachlorobutadiene	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Hexachlorocyclopentadiene	ND	0.16	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Hexachloroethane	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Isophorone	ND	0.25	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 3:46:00 PM

Lab ID: 1504C87-004

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Methylnaphthalene	ND	0.22	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Methylphenol	ND	0.24	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
3+4-Methylphenol	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
N-Nitrosodi-n-propylamine	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
N-Nitrosodiphenylamine	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Naphthalene	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Nitroaniline	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
3-Nitroaniline	ND	0.23	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Nitroaniline	ND	0.21	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Nitrobenzene	ND	0.24	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2-Nitrophenol	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
4-Nitrophenol	ND	0.20	0.59		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Pentachlorophenol	ND	0.15	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Phenanthrene	ND	0.25	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Phenol	ND	0.21	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Pyrene	ND	0.31	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Pyridine	ND	0.20	0.95		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
1,2,4-Trichlorobenzene	ND	0.24	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4,5-Trichlorophenol	ND	0.28	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
2,4,6-Trichlorophenol	ND	0.27	0.47		mg/Kg-dr	1	5/7/2015 6:21:19 PM	19026
Surr: 2-Fluorophenol	52.2		26.4-129		%REC	1	5/7/2015 6:21:19 PM	19026
Surr: Phenol-d5	52.1		34.8-118		%REC	1	5/7/2015 6:21:19 PM	19026
Surr: 2,4,6-Tribromophenol	52.8		26.8-128		%REC	1	5/7/2015 6:21:19 PM	19026
Surr: Nitrobenzene-d5	49.1		35.8-124		%REC	1	5/7/2015 6:21:19 PM	19026
Surr: 2-Fluorobiphenyl	52.1		24.5-139		%REC	1	5/7/2015 6:21:19 PM	19026
Surr: 4-Terphenyl-d14	56.7		29.4-129		%REC	1	5/7/2015 6:21:19 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.000872	0.000336	0.00149	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Toluene	0.00116	0.000155	0.00149	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Ethylbenzene	0.000313	0.000251	0.00149	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Xylenes, Total	0.00108	0.000889	0.00149	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000625	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2,4-Trimethylbenzene	ND	0.000389	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,3,5-Trimethylbenzene	ND	0.000261	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000399	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000178	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Naphthalene	ND	0.000487	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1-Methylnaphthalene	ND	0.000585	0.00298		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 3:46:00 PM

Lab ID: 1504C87-004

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
2-Methylnaphthalene	ND	0.000582	0.00298		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Acetone	0.0201	0.000931	0.00745		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Bromobenzene	ND	0.000415	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Bromodichloromethane	ND	0.000201	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Bromoform	ND	0.000386	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Bromomethane	ND	0.000881	0.00224		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
2-Butanone	0.00273	0.000477	0.00745	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Carbon tetrachloride	ND	0.000270	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Chlorobenzene	ND	0.000151	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Chloroethane	ND	0.00149	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Chloroform	ND	0.000307	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Chloromethane	ND	0.000176	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
2-Chlorotoluene	ND	0.000291	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Carbon disulfide	ND	0.000674	0.00745		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
4-Chlorotoluene	ND	0.000287	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
cis-1,2-DCE	ND	0.000394	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
cis-1,3-Dichloropropene	ND	0.00149	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000438	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Dibromochloromethane	ND	0.000167	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Dibromomethane	ND	0.000846	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2-Dichlorobenzene	ND	0.000331	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,3-Dichlorobenzene	ND	0.000253	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,4-Dichlorobenzene	ND	0.000234	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Dichlorodifluoromethane	ND	0.000608	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1-Dichloroethane	ND	0.000348	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1-Dichloroethene	ND	0.000249	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2-Dichloropropane	ND	0.000318	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,3-Dichloropropane	ND	0.000232	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
2,2-Dichloropropane	ND	0.000259	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1-Dichloropropene	ND	0.000273	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Hexachlorobutadiene	ND	0.000301	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Isopropylbenzene	ND	0.000346	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
4-Isopropyltoluene	ND	0.000578	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Methylene chloride	0.000387	0.000368	0.00149	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
n-Butylbenzene	ND	0.000612	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
2-Hexanone	0.000656	0.000310	0.00745	J	mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
n-Propylbenzene	ND	0.000279	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
sec-Butylbenzene	ND	0.000376	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Styrene	ND	0.000247	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (2-4')

Project: SWMU 10

Collection Date: 4/28/2015 3:46:00 PM

Lab ID: 1504C87-004

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
4-Methyl-2-pentanone	ND	0.000629	0.00745		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
tert-Butylbenzene	ND	0.000228	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000242	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1,2,2-Tetrachloroethane	ND	0.000328	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Tetrachloroethene (PCE)	ND	0.000295	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
trans-1,2-DCE	ND	0.000241	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
trans-1,3-Dichloropropene	ND	0.000195	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2,3-Trichlorobenzene	ND	0.000545	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2,4-Trichlorobenzene	ND	0.000558	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1,1-Trichloroethane	ND	0.000212	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,1,2-Trichloroethane	ND	0.00149	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Trichloroethene (TCE)	ND	0.000296	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Trichlorofluoromethane	ND	0.000301	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
1,2,3-Trichloropropane	ND	0.000523	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Vinyl chloride	ND	0.000170	0.00149		mg/Kg-dr	1	5/6/2015 5:22:51 PM	19032
Surr: 1,2-Dichloroethane-d4	96.2	0	70-130		%REC	1	5/6/2015 5:22:51 PM	19032
Surr: 4-Bromofluorobenzene	106	0	70-130		%REC	1	5/6/2015 5:22:51 PM	19032
Surr: Dibromofluoromethane	99.4	0	70-130		%REC	1	5/6/2015 5:22:51 PM	19032
Surr: Toluene-d8	89.8	0	70-130		%REC	1	5/6/2015 5:22:51 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (6-8')

Project: SWMU 10

Collection Date: 4/28/2015 3:57:00 PM

Lab ID: 1504C87-005

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	42	5.5	9.9		mg/Kg-dr	1	5/1/2015 2:47:10 PM	18983
Motor Oil Range Organics (MRO)	69	50	50		mg/Kg-dr	1	5/1/2015 2:47:10 PM	18983
Surr: DNOP	113	0	57.9-140		%REC	1	5/1/2015 2:47:10 PM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.98	3.3		mg/Kg-dr	1	5/1/2015 1:06:50 PM	R25904
Surr: BFB	91.6	0	80-120		%REC	1	5/1/2015 1:06:50 PM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	19	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.087	0.0037	0.042		mg/Kg-dr	1	5/6/2015 3:24:12 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	3.1	5.9		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Arsenic	2.6	0.69	5.9	J	mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Barium	2900	0.35	1.2		mg/Kg-dr	10	5/8/2015 2:27:08 PM	19080
Beryllium	0.92	0.017	0.35		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Cadmium	ND	0.066	0.24		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Chromium	29	0.14	0.71		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Cobalt	6.4	0.089	0.71		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Iron	13000	71	300		mg/Kg-dr	100	5/7/2015 10:56:03 AM	19080
Lead	5.6	0.26	0.59		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Manganese	1000	0.69	1.2		mg/Kg-dr	10	5/8/2015 2:27:08 PM	19080
Nickel	10	0.30	1.2		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Selenium	ND	3.6	5.9		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Silver	ND	0.070	0.59		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Vanadium	23	0.079	5.9		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
Zinc	35	1.5	5.9		mg/Kg-dr	2	5/7/2015 1:09:15 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Acenaphthylene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Aniline	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Anthracene	ND	0.10	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Azobenzene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benz(a)anthracene	ND	0.097	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benzo(a)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benzo(b)fluoranthene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benzo(g,h,i)perylene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benzo(k)fluoranthene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-3 (6-8')**Project:** SWMU 10**Collection Date:** 4/28/2015 3:57:00 PM**Lab ID:** 1504C87-005**Matrix:** SOIL**Received Date:** 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.070	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Benzyl alcohol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Bis(2-chloroethoxy)methane	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Bis(2-chloroethyl)ether	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.094	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.14	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Bromophenyl phenyl ether	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Butyl benzyl phthalate	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Carbazole	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Chloro-3-methylphenol	ND	0.12	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Chloroaniline	ND	0.11	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Chloronaphthalene	ND	0.13	0.31		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Chlorophenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Chlorophenyl phenyl ether	ND	0.18	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Chrysene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Di-n-butyl phthalate	ND	0.14	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Di-n-octyl phthalate	ND	0.14	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Dibenz(a,h)anthracene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Dibenzofuran	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
1,2-Dichlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
1,3-Dichlorobenzene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
1,4-Dichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
3,3'-Dichlorobenzidine	ND	0.095	0.31		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Diethyl phthalate	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Dimethyl phthalate	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4-Dichlorophenol	ND	0.12	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4-Dimethylphenol	ND	0.097	0.37		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.067	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4-Dinitrophenol	ND	0.051	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4-Dinitrotoluene	ND	0.11	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,6-Dinitrotoluene	ND	0.14	0.62		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Fluoranthene	ND	0.15	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Fluorene	ND	0.17	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Hexachlorobenzene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Hexachlorobutadiene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Hexachlorocyclopentadiene	ND	0.085	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Hexachloroethane	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Isophorone	ND	0.13	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (6-8')

Project: SWMU 10

Collection Date: 4/28/2015 3:57:00 PM

Lab ID: 1504C87-005

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Methylnaphthalene	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Methylphenol	ND	0.12	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
3+4-Methylphenol	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
N-Nitrosodi-n-propylamine	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
N-Nitrosodiphenylamine	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Naphthalene	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Nitroaniline	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
3-Nitroaniline	ND	0.12	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Nitroaniline	ND	0.11	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Nitrobenzene	ND	0.13	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2-Nitrophenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
4-Nitrophenol	ND	0.11	0.31		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Pentachlorophenol	ND	0.077	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Phenanthrene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Phenol	ND	0.11	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Pyrene	ND	0.16	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Pyridine	ND	0.10	0.49		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
1,2,4-Trichlorobenzene	ND	0.13	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4,5-Trichlorophenol	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
2,4,6-Trichlorophenol	ND	0.14	0.25		mg/Kg-dr	1	5/7/2015 6:49:18 PM	19026
Surr: 2-Fluorophenol	68.7		26.4-129		%REC	1	5/7/2015 6:49:18 PM	19026
Surr: Phenol-d5	72.7		34.8-118		%REC	1	5/7/2015 6:49:18 PM	19026
Surr: 2,4,6-Tribromophenol	68.5		26.8-128		%REC	1	5/7/2015 6:49:18 PM	19026
Surr: Nitrobenzene-d5	62.6		35.8-124		%REC	1	5/7/2015 6:49:18 PM	19026
Surr: 2-Fluorobiphenyl	64.8		24.5-139		%REC	1	5/7/2015 6:49:18 PM	19026
Surr: 4-Terphenyl-d14	64.6		29.4-129		%REC	1	5/7/2015 6:49:18 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.00319	0.000368	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Toluene	0.00301	0.000170	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Ethylbenzene	0.000800	0.000275	0.00163	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Xylenes, Total	0.00181	0.000974	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000685	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2,4-Trimethylbenzene	0.000564	0.000427	0.00163	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,3,5-Trimethylbenzene	0.000351	0.000287	0.00163	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000438	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000195	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Naphthalene	ND	0.000534	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1-Methylnaphthalene	ND	0.000641	0.00327		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (6-8')

Project: SWMU 10

Collection Date: 4/28/2015 3:57:00 PM

Lab ID: 1504C87-005

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
2-Methylnaphthalene	ND	0.000638	0.00327		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Acetone	0.00534	0.00102	0.00817	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Bromobenzene	ND	0.000454	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Bromodichloromethane	ND	0.000221	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Bromoform	ND	0.000423	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Bromomethane	ND	0.000966	0.00245		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
2-Butanone	0.00136	0.000523	0.00817	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Carbon tetrachloride	ND	0.000296	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Chlorobenzene	ND	0.000166	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Chloroethane	ND	0.00163	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Chloroform	ND	0.000336	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Chloromethane	ND	0.000193	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
2-Chlorotoluene	ND	0.000319	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Carbon disulfide	ND	0.000739	0.00817		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
4-Chlorotoluene	ND	0.000315	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
cis-1,2-DCE	ND	0.000432	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
cis-1,3-Dichloropropene	ND	0.00163	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000480	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Dibromochloromethane	ND	0.000183	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Dibromomethane	ND	0.000927	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2-Dichlorobenzene	ND	0.000362	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,3-Dichlorobenzene	ND	0.000277	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,4-Dichlorobenzene	ND	0.000256	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Dichlorodifluoromethane	ND	0.000667	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1-Dichloroethane	ND	0.000382	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1-Dichloroethene	ND	0.000273	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2-Dichloropropane	ND	0.000349	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,3-Dichloropropane	ND	0.000254	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
2,2-Dichloropropane	ND	0.000284	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1-Dichloropropene	ND	0.000299	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Hexachlorobutadiene	ND	0.000330	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Isopropylbenzene	ND	0.000379	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
4-Isopropyltoluene	ND	0.000634	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Methylene chloride	0.000547	0.000404	0.00163	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
n-Butylbenzene	ND	0.000671	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
2-Hexanone	0.000588	0.000340	0.00817	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
n-Propylbenzene	ND	0.000306	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
sec-Butylbenzene	0.000555	0.000413	0.00163	J	mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Styrene	ND	0.000271	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (6-8')

Project: SWMU 10

Collection Date: 4/28/2015 3:57:00 PM

Lab ID: 1504C87-005

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
4-Methyl-2-pentanone	ND	0.000690	0.00817		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
tert-Butylbenzene	ND	0.000250	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000266	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1,2,2-Tetrachloroethane	ND	0.000359	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Tetrachloroethene (PCE)	ND	0.000324	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
trans-1,2-DCE	ND	0.000264	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
trans-1,3-Dichloropropene	ND	0.000214	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2,3-Trichlorobenzene	ND	0.000598	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2,4-Trichlorobenzene	ND	0.000612	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1,1-Trichloroethane	ND	0.000232	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,1,2-Trichloroethane	ND	0.00163	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Trichloroethene (TCE)	ND	0.000325	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Trichlorofluoromethane	ND	0.000330	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
1,2,3-Trichloropropane	ND	0.000573	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Vinyl chloride	ND	0.000187	0.00163		mg/Kg-dr	1	5/6/2015 4:53:34 PM	19032
Surr: 1,2-Dichloroethane-d4	99.3	0	70-130		%REC	1	5/6/2015 4:53:34 PM	19032
Surr: 4-Bromofluorobenzene	89.3	0	70-130		%REC	1	5/6/2015 4:53:34 PM	19032
Surr: Dibromofluoromethane	99.0	0	70-130		%REC	1	5/6/2015 4:53:34 PM	19032
Surr: Toluene-d8	92.0	0	70-130		%REC	1	5/6/2015 4:53:34 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 4:07:00 PM

Lab ID: 1504C87-006

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.4	9.9		mg/Kg-dr	1	5/1/2015 12:27:28 PM	18983
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg-dr	1	5/1/2015 12:27:28 PM	18983
Surr: DNOP	107	0	57.9-140		%REC	1	5/1/2015 12:27:28 PM	18983
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	3.6		mg/Kg-dr	1	5/1/2015 1:35:34 PM	R25904
Surr: BFB	90.2	0	80-120		%REC	1	5/1/2015 1:35:34 PM	R25904
PERCENT MOISTURE							Analyst: cadg	
Percent Moisture	17	1.0	1.0		wt%	1	4/30/2015 2:28:00 PM	R25911
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0049	0.0032	0.037	J	mg/Kg-dr	1	5/6/2015 3:26:01 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.6	3.0		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Arsenic	2.1	0.35	3.0	J	mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Barium	750	0.18	0.60		mg/Kg-dr	5	5/8/2015 2:28:47 PM	19080
Beryllium	1.1	0.0089	0.18		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Cadmium	ND	0.033	0.12		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Chromium	14	0.072	0.36		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Cobalt	8.8	0.045	0.36		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Iron	22000	72	300		mg/Kg-dr	100	5/7/2015 11:02:21 AM	19080
Lead	1.9	0.13	0.30		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Manganese	1200	0.35	0.60		mg/Kg-dr	5	5/8/2015 2:28:47 PM	19080
Nickel	16	0.15	0.60		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Selenium	ND	1.8	3.0		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Silver	ND	0.036	0.30		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Vanadium	16	0.040	3.0		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
Zinc	27	0.77	3.0		mg/Kg-dr	1	5/7/2015 1:10:45 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.15	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Acenaphthylene	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Aniline	ND	0.10	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Anthracene	ND	0.10	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Azobenzene	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benz(a)anthracene	ND	0.095	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benzo(a)pyrene	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benzo(g,h,i)perylene	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benzo(k)fluoranthene	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 4:07:00 PM

Lab ID: 1504C87-006

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Benzoic acid	ND	0.069	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Benzyl alcohol	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Bis(2-chloroethyl)ether	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.092	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.14	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Bromophenyl phenyl ether	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Butyl benzyl phthalate	ND	0.15	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Carbazole	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Chloro-3-methylphenol	ND	0.12	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Chloroaniline	ND	0.11	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Chloronaphthalene	ND	0.13	0.30		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Chlorophenol	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Chlorophenyl phenyl ether	ND	0.18	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Chrysene	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Di-n-butyl phthalate	ND	0.14	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Di-n-octyl phthalate	ND	0.13	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Dibenz(a,h)anthracene	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Dibenzofuran	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
1,2-Dichlorobenzene	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
1,3-Dichlorobenzene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
1,4-Dichlorobenzene	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
3,3'-Dichlorobenzidine	ND	0.093	0.30		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Diethyl phthalate	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Dimethyl phthalate	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4-Dichlorophenol	ND	0.12	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4-Dimethylphenol	ND	0.095	0.36		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.065	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4-Dinitrophenol	ND	0.050	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4-Dinitrotoluene	ND	0.11	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,6-Dinitrotoluene	ND	0.13	0.60		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Fluoranthene	ND	0.15	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Fluorene	ND	0.16	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Hexachlorobenzene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Hexachlorobutadiene	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Hexachlorocyclopentadiene	ND	0.083	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Hexachloroethane	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Isophorone	ND	0.13	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C87

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 4:07:00 PM

Lab ID: 1504C87-006

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
1-Methylnaphthalene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Methylnaphthalene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Methylphenol	ND	0.12	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
3+4-Methylphenol	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
N-Nitrosodiphenylamine	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Naphthalene	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Nitroaniline	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
3-Nitroaniline	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Nitroaniline	ND	0.11	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Nitrobenzene	ND	0.12	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2-Nitrophenol	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
4-Nitrophenol	ND	0.10	0.30		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Pentachlorophenol	ND	0.075	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Phenanthrene	ND	0.13	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Phenol	ND	0.11	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Pyrene	ND	0.16	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Pyridine	ND	0.10	0.48		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4,5-Trichlorophenol	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
2,4,6-Trichlorophenol	ND	0.14	0.24		mg/Kg-dr	1	5/7/2015 7:17:20 PM	19026
Surr: 2-Fluorophenol	72.6		26.4-129		%REC	1	5/7/2015 7:17:20 PM	19026
Surr: Phenol-d5	71.3		34.8-118		%REC	1	5/7/2015 7:17:20 PM	19026
Surr: 2,4,6-Tribromophenol	69.6		26.8-128		%REC	1	5/7/2015 7:17:20 PM	19026
Surr: Nitrobenzene-d5	65.6		35.8-124		%REC	1	5/7/2015 7:17:20 PM	19026
Surr: 2-Fluorobiphenyl	67.9		24.5-139		%REC	1	5/7/2015 7:17:20 PM	19026
Surr: 4-Terphenyl-d14	68.3		29.4-129		%REC	1	5/7/2015 7:17:20 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.0141	0.000489	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Toluene	0.0100	0.000226	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Ethylbenzene	0.00231	0.000365	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Xylenes, Total	0.00707	0.00129	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000909	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2,4-Trimethylbenzene	0.00184	0.000567	0.00217	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,3,5-Trimethylbenzene	0.00123	0.000380	0.00217	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000581	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000259	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Naphthalene	ND	0.000709	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1-Methylnaphthalene	ND	0.000852	0.00434		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-3 (18-20')

Project: SWMU 10

Collection Date: 4/28/2015 4:07:00 PM

Lab ID: 1504C87-006

Matrix: SOIL

Received Date: 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
2-Methylnaphthalene	ND	0.000848	0.00434		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Acetone	0.00158	0.00135	0.0108	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Bromobenzene	ND	0.000603	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Bromodichloromethane	ND	0.000293	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Bromoform	ND	0.000562	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Bromomethane	ND	0.00128	0.00325		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
2-Butanone	0.00151	0.000695	0.0108	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Carbon tetrachloride	ND	0.000393	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Chlorobenzene	ND	0.000220	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Chloroethane	ND	0.00217	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Chloroform	ND	0.000447	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Chloromethane	ND	0.000256	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
2-Chlorotoluene	ND	0.000423	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Carbon disulfide	ND	0.000982	0.0108		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
4-Chlorotoluene	ND	0.000418	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
cis-1,2-DCE	ND	0.000574	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
cis-1,3-Dichloropropene	ND	0.00217	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000637	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Dibromochloromethane	ND	0.000243	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Dibromomethane	ND	0.00123	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2-Dichlorobenzene	ND	0.000481	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,3-Dichlorobenzene	ND	0.000368	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,4-Dichlorobenzene	ND	0.000341	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Dichlorodifluoromethane	ND	0.000886	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1-Dichloroethane	ND	0.000507	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1-Dichloroethene	ND	0.000362	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2-Dichloropropane	ND	0.000463	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,3-Dichloropropane	ND	0.000338	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
2,2-Dichloropropane	ND	0.000377	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1-Dichloropropene	ND	0.000397	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Hexachlorobutadiene	ND	0.000438	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Isopropylbenzene	ND	0.000503	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
4-Isopropyltoluene	ND	0.000842	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Methylene chloride	0.000770	0.000536	0.00217	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
n-Butylbenzene	ND	0.000890	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
2-Hexanone	0.000748	0.000451	0.0108	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
n-Propylbenzene	ND	0.000406	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
sec-Butylbenzene	0.000781	0.000548	0.00217	J	mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Styrene	ND	0.000359	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-3 (18-20')**Project:** SWMU 10**Collection Date:** 4/28/2015 4:07:00 PM**Lab ID:** 1504C87-006**Matrix:** SOIL**Received Date:** 4/29/2015 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
4-Methyl-2-pentanone	ND	0.000916	0.0108		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
tert-Butylbenzene	ND	0.000332	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000353	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1,2,2-Tetrachloroethane	ND	0.000477	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Tetrachloroethene (PCE)	ND	0.000430	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
trans-1,2-DCE	ND	0.000351	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
trans-1,3-Dichloropropene	ND	0.000284	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2,3-Trichlorobenzene	ND	0.000794	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2,4-Trichlorobenzene	ND	0.000813	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1,1-Trichloroethane	ND	0.000309	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,1,2-Trichloroethane	ND	0.00217	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Trichloroethene (TCE)	ND	0.000431	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Trichlorofluoromethane	ND	0.000438	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
1,2,3-Trichloropropane	ND	0.000762	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Vinyl chloride	ND	0.000248	0.00217		mg/Kg-dr	1	5/6/2015 5:52:11 PM	19032
Surr: 1,2-Dichloroethane-d4	87.0	0	70-130		%REC	1	5/6/2015 5:52:11 PM	19032
Surr: 4-Bromofluorobenzene	98.1	0	70-130		%REC	1	5/6/2015 5:52:11 PM	19032
Surr: Dibromofluoromethane	92.3	0	70-130		%REC	1	5/6/2015 5:52:11 PM	19032
Surr: Toluene-d8	94.3	0	70-130		%REC	1	5/6/2015 5:52:11 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		



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REPORT OF ANALYSIS

May 14, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-001D SWMU 10-1 2-4FT
Collected By :
Collection Date : 04/28/15 13:53

ESC Sample # : L762539-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/03/15	1
ORP	60.		mV	2580 B-2011	05/06/15	1
pH	7.8	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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L762539-01 (PH) - 7.8 at 21.2c



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REPORT OF ANALYSIS

May 14, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-002D SWMU 10-1 4-6FT
Collected By :
Collection Date : 04/28/15 14:04

ESC Sample # : L762539-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/03/15	1
ORP	40.		mV	2580 B-2011	05/06/15	1
pH	8.3	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762539-02 (PH) - 8.3 at 20.7c



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REPORT OF ANALYSIS

May 14, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-003D SWMU 10-1 18-20FT
Collected By :
Collection Date : 04/28/15 14:14

ESC Sample # : L762539-03
Site ID :
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/03/15	1
ORP	10.		mV	2580 B-2011	05/06/15	1
pH	8.9	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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L762539-03 (PH) - 8.9 at 20.8c



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REPORT OF ANALYSIS

May 14, 2015

Hall Environmental Analysis Laborat
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Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-004D SWMU 10-3 2-4FT
Collected By :
Collection Date : 04/28/15 15:46

ESC Sample # : L762539-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/04/15	1
ORP	60.		mV	2580 B-2011	05/06/15	1
pH	7.6	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762539-04 (PH) - 7.6 at 21.0c



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May 14, 2015

Hall Environmental Analysis Laborat
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Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-005D SWMU 10-3 6-8FT
Collected By :
Collection Date : 04/28/15 15:57

ESC Sample # : L762539-05
Site ID :
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/04/15	1
ORP	100		mV	2580 B-2011	05/07/15	1
pH	7.6	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762539-05 (PH) - 7.6 at 21.8c



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REPORT OF ANALYSIS

May 14, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 01, 2015
Description :
Sample ID : 1504C87-006D SWMU 10-3 18-20FT
Collected By :
Collection Date : 04/28/15 16:07

ESC Sample # : L762539-06
Site ID :
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/04/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/04/15	1
ORP	70.		mV	2580 B-2011	05/07/15	1
pH	9.1	0.10	su	9045D	05/05/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 05/14/15 09:40 Printed: 05/14/15 09:40
L762539-06 (PH) - 9.1 at 21.5c



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Analyte	Result	Laboratory Blank Units % Rec	Limit	Batch	Date Analyzed
Chromium, Hexavalent	< 2	mg/kg		WG786207	05/03/15 07:48
Chromium, Hexavalent	< 2	mg/kg		WG786350	05/04/15 11:50
Cyanide	< .25	mg/kg		WG786337	05/04/15 15:52

Analyte	Units	Result	Duplicate Duplicate	RPD	Limit	Ref Samp	Batch
Chromium, Hexavalent	mg/kg	0.0	0.0	0.0	20	L762539-03	WG786207
Chromium, Hexavalent	mg/kg	110.	110.	0.0	20	L762612-07	WG786350
Cyanide	mg/kg	0.0	0.0	0.0	20	L762539-02	WG786337
Cyanide	mg/kg	0.0	0.0	0.0	20	L762653-05	WG786337
pH	su	7.70	7.70	0.389	1	L762509-58	WG786356
pH	su	8.20	8.20	0.367	1	L762612-03	WG786356
ORP	mV	100.	100.	0.0	20	L762171-02	WG786855
ORP	mV	60.0	60.0	0.0	20	L762539-04	WG786855
ORP	mV	100.	100.	0.0	20	L762539-05	WG787164
ORP	mV	150.	150.	0.0	20	L762970-01	WG787164

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Chromium, Hexavalent	mg/kg	59.8	67.0	112.	80-120	WG786207
Chromium, Hexavalent	mg/kg	59.8	57.4	96.0	80-120	WG786350
Cyanide	mg/kg	101	108.	107.	50-150	WG786337
pH	su	7.84	7.79	99.4	98.3-101.7	WG786356
ORP	mV	100	108.	108.	90-110	WG786855
ORP	mV	100	105.	105.	90-110	WG787164

Analyte	Units	Laboratory Control Sample Duplicate Result Ref %Rec	Limit	RPD	Limit	Batch
Chromium, Hexavalent	mg/kg	67.0 67.0 112.	80-120	0.0	20	WG786207
Chromium, Hexavalent	mg/kg	57.2 57.4 96.0	80-120	0.349	20	WG786350

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Laboratory Control		Sample Duplicate		Limit	RPD	Limit	Batch
		Result	Ref	%Rec					
Cyanide	mg/kg	108.	108.	107.		50-150	0.0	20	WG786337
pH	su	7.79	7.79	99.0		98.3-101.7	0.0	20	WG786356
ORP	mV	108.	108.	108.		90-110	0.0	20	WG786855
ORP	mV	105.	105.	105.		90-110	0.0	20	WG787164

Analyte	Units	Matrix Spike		TV	% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res					
Chromium, Hexavalent	mg/kg	21.8	0.0	20	110.	75-125	L762539-03	WG786207
Chromium, Hexavalent	mg/kg	155.	110.	20	110.	75-125	L762612-07	WG786350
Cyanide	mg/kg	3.07	0.0	3.33	92.0	80-120	L762539-06	WG786337

Analyte	Units	MSD	Matrix Spike	Duplicate	Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Chromium, Hexavalent	mg/kg	22.1	21.8	110.	75-125	1.37	20	L762539-03	WG786207
Chromium, Hexavalent	mg/kg	155.	155.	112.	75-125	0.0	20	L762612-07	WG786350
Cyanide	mg/kg	3.20	3.07	96.1	80-120	4.15	20	L762539-06	WG786337

Batch number / Run number / Sample number cross reference

WG786207: R3034617: L762539-01 02 03
WG786350: R3034796: L762539-04 05 06
WG786337: R3034851: L762539-01 02 03 04 05 06
WG786356: R3035082: L762539-01 02 03 04 05 06
WG786855: R3035486: L762539-01 02 03 04
WG787164: R3035850: L762539-05 06

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-18983		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 18983		RunNo: 25903					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767810		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		131	57.9	140			

Sample ID	LCS-18983		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 18983		RunNo: 25903					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767811		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	62	10	50.00	0	124	67.8	130			
Surr: DNOP	6.2		5.000		125	57.9	140			

Sample ID	1504C87-001CMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	SWMU 10-1 (2-4')		Batch ID: 18983		RunNo: 25903					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767969		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	120	9.7	48.69	92.77	60.1	42.3	146			
Surr: DNOP	5.2		4.869		107	57.9	140			

Sample ID	1504C87-001CMSD		SampType:	MSD		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	SWMU 10-1 (2-4')		Batch ID:	18983		RunNo:	25903				
Prep Date:	4/30/2015		Analysis Date:	5/1/2015		SeqNo:	767979		Units: mg/Kg-dry		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	130	9.7	48.59	92.77	73.6	42.3	146	5.17	28.9		
Surr: DNOP	5.2		4.859		107	57.9	140	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: R25904		RunNo: 25904					
Prep Date:			Analysis Date: 5/1/2015		SeqNo: 768086		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.3	80	120			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: R25904		RunNo: 25904					
Prep Date:			Analysis Date: 5/1/2015		SeqNo: 768087		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	101	64	130			
Surr: BFB	980		1000		98.2	80	120			

Sample ID	1504C87-001BMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	SWMU 10-1 (2-4')		Batch ID: R25904		RunNo: 25904					
Prep Date:			Analysis Date: 5/1/2015		SeqNo: 768089		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	3.5	17.25	0	99.3	47.9	144			
Surr: BFB	680		690.0		98.5	80	120			

Sample ID	1504C87-001BMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	SWMU 10-1 (2-4')		Batch ID:	R25904		RunNo:	25904				
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768090		Units:	mg/Kg-dry	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	17	3.5	17.25	0	97.7	47.9	144	1.62	29.9		
Surr: BFB	680		690.0		99.2	80	120	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5mL rb	SampType: MBLK			TestCode: EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID: R25982			RunNo: 25982					
Prep Date:		Analysis Date: 5/5/2015			SeqNo: 770974		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	0.0083	0.050								J
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5mL rb	SampType: MBLK				TestCode: EPA Method 8260B: Volatiles				
Client ID:	PBS	Batch ID: R25982				RunNo: 25982				
Prep Date:		Analysis Date: 5/5/2015				SeqNo: 770974 Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		98.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.0	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		100	70	130			

Sample ID	100ng lcs	SampType: LCS				TestCode: EPA Method 8260B: Volatiles				
Client ID:	LCSS	Batch ID: R25982				RunNo: 25982				
Prep Date:		Analysis Date: 5/5/2015				SeqNo: 770975 Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	101	70	130			
Toluene	1.1	0.050	1.000	0	105	70	130			
Chlorobenzene	1.0	0.050	1.000	0	102	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: R25982		RunNo: 25982							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 770975		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.2	0.050	1.000	0	116	60.6	134			
Trichloroethene (TCE)	0.92	0.050	1.000	0	92.4	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		99.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.1	70	130			
Surr: Toluene-d8	0.51		0.5000		103	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.2	70	130			

Sample ID 1504c87-001a ms	SampType: MS		TestCode: EPA Method 8260B: Volatiles							
Client ID: SWMU 10-1 (2-4')	Batch ID: R25982		RunNo: 25982							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 770977		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.71	0.035	0.6900	0	103	57.8	132			
Toluene	0.65	0.035	0.6900	0	93.6	54.8	139			
Chlorobenzene	0.72	0.035	0.6900	0	104	63.5	134			
1,1-Dichloroethene	0.89	0.035	0.6900	0	128	26.4	145			
Trichloroethene (TCE)	0.66	0.035	0.6900	0	96.3	54.9	125			
Surr: Dibromofluoromethane	0.36		0.3450		104	70	130			
Surr: 1,2-Dichloroethane-d4	0.31		0.3450		90.8	70	130			
Surr: Toluene-d8	0.31		0.3450		90.6	70	130			
Surr: 4-Bromofluorobenzene	0.31		0.3450		89.6	70	130			

Sample ID 1504c87-001a msd	SampType: MSD		TestCode: EPA Method 8260B: Volatiles							
Client ID: SWMU 10-1 (2-4')	Batch ID: R25982		RunNo: 25982							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 770978		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.69	0.035	0.6900	0	100	57.8	132	2.81	20	
Toluene	0.65	0.035	0.6900	0	93.6	54.8	139	0.0192	20	
Chlorobenzene	0.68	0.035	0.6900	0	98.0	63.5	134	6.11	20	
1,1-Dichloroethene	0.81	0.035	0.6900	0	117	26.4	145	9.25	20	
Trichloroethene (TCE)	0.60	0.035	0.6900	0	87.6	54.9	125	9.54	20	
Surr: Dibromofluoromethane	0.35		0.3450		102	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.31		0.3450		90.4	70	130	0	0	
Surr: Toluene-d8	0.32		0.3450		91.9	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.32		0.3450		92.6	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-19032		SampType: LCS		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	LCSS		Batch ID: 19032		RunNo: 26013					
Prep Date:	5/4/2015		Analysis Date: 5/6/2015		SeqNo: 771128		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0108	0.00200	0.01000	0	108	70	130			
Toluene	0.00992	0.00200	0.01000	0	99.2	70	130			
Chlorobenzene	0.00872	0.00200	0.01000	0	87.2	70	130			
1,1-Dichloroethene	0.0112	0.00200	0.01000	0	112	70	130			
Trichloroethene (TCE)	0.0105	0.00200	0.01000	0	105	61.6	131			
Surr: 1,2-Dichloroethane-d4	0.0266		0.02500		106	70	130			
Surr: 4-Bromofluorobenzene	0.0221		0.02500		88.5	70	130			
Surr: Dibromofluoromethane	0.0266		0.02500		107	70	130			
Surr: Toluene-d8	0.0248		0.02500		99.4	70	130			

Sample ID	MB-19032		SampType: MBLK		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	PBS		Batch ID: 19032		RunNo: 26013					
Prep Date:	5/4/2015		Analysis Date: 5/6/2015		SeqNo: 771129		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.00200								
Toluene	0.000210	0.00200								J
Ethylbenzene	ND	0.00200								
Xylenes, Total	ND	0.00200								
Methyl tert-butyl ether (MTBE)	ND	0.00200								
1,2,4-Trimethylbenzene	ND	0.00200								
1,3,5-Trimethylbenzene	ND	0.00200								
1,2-Dichloroethane (EDC)	ND	0.00200								
1,2-Dibromoethane (EDB)	ND	0.00200								
Naphthalene	ND	0.00200								
1-Methylnaphthalene	ND	0.00400								
2-Methylnaphthalene	ND	0.00400								
Acetone	ND	0.0100								
Bromobenzene	ND	0.00200								
Bromodichloromethane	ND	0.00200								
Bromoform	ND	0.00200								
Bromomethane	ND	0.00300								
2-Butanone	0.000830	0.0100								J
Carbon tetrachloride	ND	0.00200								
Chlorobenzene	ND	0.00200								
Chloroethane	ND	0.00200								
Chloroform	ND	0.00200								
Chloromethane	ND	0.00200								
2-Chlorotoluene	ND	0.00200								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19032		SampType:	MBLK		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	PBS		Batch ID:	19032		RunNo:	26013			
Prep Date:	5/4/2015		Analysis Date:	5/6/2015		SeqNo:	771129		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbon disulfide	ND	0.0100								
4-Chlorotoluene	ND	0.00200								
cis-1,2-DCE	ND	0.00200								
cis-1,3-Dichloropropene	ND	0.00200								
1,2-Dibromo-3-chloropropane	ND	0.00200								
Dibromochloromethane	ND	0.00200								
Dibromomethane	ND	0.00200								
1,2-Dichlorobenzene	ND	0.00200								
1,3-Dichlorobenzene	ND	0.00200								
1,4-Dichlorobenzene	ND	0.00200								
Dichlorodifluoromethane	ND	0.00200								
1,1-Dichloroethane	ND	0.00200								
1,1-Dichloroethene	ND	0.00200								
1,2-Dichloropropane	ND	0.00200								
1,3-Dichloropropane	ND	0.00200								
2,2-Dichloropropane	ND	0.00200								
1,1-Dichloropropene	ND	0.00200								
Hexachlorobutadiene	ND	0.00200								
Isopropylbenzene	ND	0.00200								
4-Isopropyltoluene	ND	0.00200								
Methylene chloride	ND	0.00200								
n-Butylbenzene	ND	0.00200								
2-Hexanone	ND	0.0100								
n-Propylbenzene	ND	0.00200								
sec-Butylbenzene	ND	0.00200								
Styrene	ND	0.00200								
4-Methyl-2-pentanone	ND	0.0100								
tert-Butylbenzene	ND	0.00200								
1,1,1,2-Tetrachloroethane	ND	0.00200								
1,1,2,2-Tetrachloroethane	ND	0.00200								
Tetrachloroethene (PCE)	ND	0.00200								
trans-1,2-DCE	ND	0.00200								
trans-1,3-Dichloropropene	ND	0.00200								
1,2,3-Trichlorobenzene	ND	0.00200								
1,2,4-Trichlorobenzene	ND	0.00200								
1,1,1-Trichloroethane	ND	0.00200								
1,1,2-Trichloroethane	ND	0.00200								
Trichloroethene (TCE)	ND	0.00200								
Trichlorofluoromethane	ND	0.00200								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19032		SampType:	MBLK		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	PBS		Batch ID:	19032		RunNo:	26013			
Prep Date:	5/4/2015		Analysis Date:	5/6/2015		SeqNo:	771129		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,3-Trichloropropane	ND	0.00200								
Vinyl chloride	ND	0.00200								
Surr: 1,2-Dichloroethane-d4	0.0275		0.02500		110	70	130			
Surr: 4-Bromofluorobenzene	0.0232		0.02500		93.0	70	130			
Surr: Dibromofluoromethane	0.0276		0.02500		110	70	130			
Surr: Toluene-d8	0.0239		0.02500		95.4	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19026	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772520	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19026	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772520	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		79.4	26.4	129			
Surr: Phenol-d5	2.7		3.330		80.7	34.8	118			
Surr: 2,4,6-Tribromophenol	2.5		3.330		75.6	26.8	128			
Surr: Nitrobenzene-d5	1.3		1.670		76.1	35.8	124			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.2	24.5	139			
Surr: 4-Terphenyl-d14	1.5		1.670		88.4	29.4	129			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-19026		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 19026		RunNo: 26053					
Prep Date:	5/4/2015		Analysis Date: 5/7/2015		SeqNo: 772521		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.20	1.670	0	88.6	45.8	114			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	86.8	52.3	122			
2-Chlorophenol	2.6	0.20	3.330	0	77.2	49.9	115			
1,4-Dichlorobenzene	1.4	0.20	1.670	0	84.4	43.7	107			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	77.6	36	106			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	81.3	39.5	110			
4-Nitrophenol	3.0	0.25	3.330	0	90.2	45.1	121			
Pentachlorophenol	2.5	0.40	3.330	0	73.7	23.7	111			
Phenol	2.9	0.20	3.330	0	86.4	52.7	119			
Pyrene	1.3	0.20	1.670	0	76.9	50.4	116			
1,2,4-Trichlorobenzene	1.6	0.20	1.670	0	98.3	40.1	114			
Surr: 2-Fluorophenol	2.6		3.330		78.7	26.4	129			
Surr: Phenol-d5	2.7		3.330		81.5	34.8	118			
Surr: 2,4,6-Tribromophenol	3.0		3.330		91.3	26.8	128			
Surr: Nitrobenzene-d5	1.4		1.670		83.7	35.8	124			
Surr: 2-Fluorobiphenyl	1.5		1.670		90.8	24.5	139			
Surr: 4-Terphenyl-d14	1.5		1.670		87.3	29.4	129			

Sample ID	1504C87-001Cms	SampType: MS			TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-1 (2-4')	Batch ID: 19026			RunNo: 26053					
Prep Date:	5/4/2015	Analysis Date: 5/7/2015			SeqNo: 772523		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.25	2.061	0	72.9	36.3	121			
4-Chloro-3-methylphenol	3.4	0.62	4.110	0	81.7	48.2	119			
2-Chlorophenol	2.8	0.25	4.110	0	68.4	37.2	114			
1,4-Dichlorobenzene	1.3	0.25	2.061	0	65.5	28.8	106			
2,4-Dinitrotoluene	1.4	0.62	2.061	0	66.5	34.6	111			
N-Nitrosodi-n-propylamine	1.7	0.25	2.061	0	80.6	32.7	117			
4-Nitrophenol	3.2	0.31	4.110	0	77.1	30.1	134			
Pentachlorophenol	3.1	0.49	4.110	0.1602	70.7	24	120			
Phenol	3.3	0.25	4.110	0	79.2	38.3	118			
Pyrene	1.6	0.25	2.061	0	79.6	38.3	134			
1,2,4-Trichlorobenzene	1.6	0.25	2.061	0	79.0	31.8	110			
Surr: 2-Fluorophenol	3.2		4.110		77.9	26.4	129			
Surr: Phenol-d5	3.3		4.110		79.4	34.8	118			
Surr: 2,4,6-Tribromophenol	3.9		4.110		95.3	26.8	128			
Surr: Nitrobenzene-d5	1.5		2.061		75.2	35.8	124			
Surr: 2-Fluorobiphenyl	1.6		2.061		75.6	24.5	139			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	1504C87-001Cms	SampType:	MS	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-1 (2-4')	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772523	Units:	mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	1.9		2.061		94.6	29.4	129			

Sample ID	1504C87-001Cmsd	SampType:	MSD	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-1 (2-4')	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772524	Units:	mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.4	0.25	2.067	0	69.4	36.3	121	4.64	25.4	
4-Chloro-3-methylphenol	3.3	0.62	4.122	0	80.2	48.2	119	1.57	30.4	
2-Chlorophenol	2.6	0.25	4.122	0	63.2	37.2	114	7.60	33.4	
1,4-Dichlorobenzene	1.3	0.25	2.067	0	62.8	28.8	106	3.81	20.9	
2,4-Dinitrotoluene	1.3	0.62	2.067	0	62.8	34.6	111	5.41	27.9	
N-Nitrosodi-n-propylamine	1.5	0.25	2.067	0	72.4	32.7	117	10.5	27.5	
4-Nitrophenol	3.2	0.31	4.122	0	76.9	30.1	134	0.104	33.7	
Pentachlorophenol	3.1	0.50	4.122	0.1602	71.0	24	120	0.688	39.7	
Phenol	3.0	0.25	4.122	0	72.4	38.3	118	8.63	30.1	
Pyrene	1.5	0.25	2.067	0	72.0	38.3	134	9.71	22.7	
1,2,4-Trichlorobenzene	1.5	0.25	2.067	0	74.1	31.8	110	6.12	27.8	
Surr: 2-Fluorophenol	2.8		4.122		68.8	26.4	129	0	0	
Surr: Phenol-d5	3.0		4.122		73.5	34.8	118	0	0	
Surr: 2,4,6-Tribromophenol	4.0		4.122		97.8	26.8	128	0	0	
Surr: Nitrobenzene-d5	1.5		2.067		72.1	35.8	124	0	0	
Surr: 2-Fluorobiphenyl	1.5		2.067		71.2	24.5	139	0	0	
Surr: 4-Terphenyl-d14	1.8		2.067		85.2	29.4	129	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19078		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 19078		RunNo: 26010					
Prep Date:	5/6/2015		Analysis Date: 5/6/2015		SeqNo: 771069		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID	LCS-19078			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	19078		RunNo:	26010			
Prep Date:	5/6/2015			Analysis Date:	5/6/2015		SeqNo:	771070		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1667	0	103	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C87

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19080		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	19080		RunNo:	26050			
Prep Date:	5/6/2015		Analysis Date:	5/7/2015		SeqNo:	772227		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	1.1	2.5								J
Lead	0.13	0.25								J
Manganese	ND	0.10								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.74	2.5								J

Sample ID	LCS-19080		SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	LCSS		Batch ID:	19080		RunNo:	26050			
Prep Date:	5/6/2015		Analysis Date:	5/7/2015		SeqNo:	772228		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	26	2.5	25.00	0	103	80	120			
Arsenic	25	2.5	25.00	0	101	80	120			
Barium	25	0.10	25.00	0	100	80	120			
Beryllium	27	0.15	25.00	0	107	80	120			
Cadmium	25	0.10	25.00	0	101	80	120			
Chromium	25	0.30	25.00	0	102	80	120			
Cobalt	25	0.30	25.00	0	99.2	80	120			
Iron	26	2.5	25.00	0	103	80	120			
Lead	25	0.25	25.00	0	101	80	120			
Manganese	25	0.10	25.00	0	101	80	120			
Nickel	25	0.50	25.00	0	99.2	80	120			
Selenium	25	2.5	25.00	0	99.4	80	120			
Silver	5.4	0.25	5.000	0	107	80	120			
Vanadium	26	2.5	25.00	0	105	80	120			
Zinc	26	2.5	25.00	0	103	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit



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

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1504C87

RcptNo: 1

Received by/date

Logged By: Ashley Gallegos

4/29/2015 4:00:00 PM

Completed By: Ashley Gallegos

4/30/2015 11:48:30 AM

Reviewed By:

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified:

Date

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Yes			

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10
METALS AND CYANIDE ANALYSES FOR SOIL SAMPLES

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020



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

October 19, 2016

Ed Riege

Western Refining Company

Rt. 3 Box 7

Gallup, NM 87301

TEL: (505) 722-0231

FAX

RE: SWMU 10

OrderNo.: 1609B57

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/20/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 06, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 11:40:00 AM

Lab ID: 1609B57-001

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	ND	2.1	11		mg/Kg-dr	1	9/27/2016 12:55:29 PM	27685
Motor Oil Range Organics (MRO)	ND	56	56		mg/Kg-dr	1	9/27/2016 12:55:29 PM	27685
Surr: DNOP	76.0	0	70-130		%Rec	1	9/27/2016 12:55:29 PM	27685
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	11	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0072	0.00063	0.037	J	mg/Kg-dr	1	9/27/2016 10:33:45 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	2.2	5.5		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Arsenic	ND	2.0	5.5		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Barium	220	0.16	0.22		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Beryllium	1.1	0.076	0.33		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Cadmium	ND	0.14	0.22		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Chromium	14	0.21	0.66		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Cobalt	6.8	0.25	0.66		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Iron	19000	83	280		mg/Kg-dr	100	9/28/2016 10:24:34 PM	27709
Lead	2.6	0.38	0.55		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Manganese	450	0.12	0.22		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Nickel	12	0.33	1.1		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Selenium	ND	4.0	5.5		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Silver	ND	0.14	0.55		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Vanadium	23	0.39	5.5		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
Zinc	21	0.77	5.5		mg/Kg-dr	2	9/28/2016 10:07:29 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.095	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Acenaphthylene	ND	0.090	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Aniline	ND	0.10	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Anthracene	ND	0.074	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Azobenzene	ND	0.14	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benz(a)anthracene	ND	0.095	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzo(a)pyrene	ND	0.084	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzo(b)fluoranthene	ND	0.10	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzo(g,h,i)perylene	ND	0.098	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzo(k)fluoranthene	ND	0.098	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzoic acid	ND	0.092	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Benzyl alcohol	ND	0.087	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Bis(2-chloroethoxy)methane	ND	0.12	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 11:40:00 AM

Lab ID: 1609B57-001

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.081	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.099	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Bis(2-ethylhexyl)phthalate	0.15	0.090	0.55	J	mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Butyl benzyl phthalate	ND	0.098	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Carbazole	ND	0.075	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Chloro-3-methylphenol	ND	0.13	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Chloroaniline	ND	0.12	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Chloronaphthalene	ND	0.087	0.28		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Chlorophenol	ND	0.087	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Chrysene	ND	0.094	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Di-n-butyl phthalate	0.22	0.083	0.44	J	mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Di-n-octyl phthalate	ND	0.095	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Dibenz(a,h)anthracene	ND	0.090	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Dibenzofuran	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
1,2-Dichlorobenzene	ND	0.085	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
1,3-Dichlorobenzene	ND	0.086	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
1,4-Dichlorobenzene	ND	0.094	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
3,3'-Dichlorobenzidine	ND	0.082	0.28		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Diethyl phthalate	0.22	0.11	0.22	J	mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Dimethyl phthalate	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4-Dichlorophenol	ND	0.10	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4-Dimethylphenol	ND	0.12	0.33		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.067	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4-Dinitrophenol	ND	0.074	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4-Dinitrotoluene	ND	0.099	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.55		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Fluoranthene	ND	0.064	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Fluorene	ND	0.10	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Hexachlorobenzene	ND	0.087	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Hexachlorobutadiene	ND	0.12	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Hexachloroethane	ND	0.095	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.087	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Isophorone	ND	0.12	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
1-Methylnaphthalene	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Methylnaphthalene	ND	0.13	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Methylphenol	ND	0.093	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 11:40:00 AM

Lab ID: 1609B57-001

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.080	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
N-Nitrosodiphenylamine	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Naphthalene	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Nitroaniline	ND	0.12	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
3-Nitroaniline	ND	0.098	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Nitroaniline	ND	0.078	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Nitrobenzene	ND	0.11	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2-Nitrophenol	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
4-Nitrophenol	ND	0.084	0.28		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Pentachlorophenol	ND	0.071	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Phenanthrene	ND	0.075	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Phenol	ND	0.084	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Pyrene	ND	0.084	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Pyridine	ND	0.088	0.44		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
1,2,4-Trichlorobenzene	ND	0.12	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4,5-Trichlorophenol	ND	0.11	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
2,4,6-Trichlorophenol	ND	0.092	0.22		mg/Kg-dr	1	9/28/2016 5:43:44 PM	27700
Surr: 2-Fluorophenol	91.7	0	35-97.9		%Rec	1	9/28/2016 5:43:44 PM	27700
Surr: Phenol-d5	91.3	0	37.3-105		%Rec	1	9/28/2016 5:43:44 PM	27700
Surr: 2,4,6-Tribromophenol	91.3	0	35.6-118		%Rec	1	9/28/2016 5:43:44 PM	27700
Surr: Nitrobenzene-d5	78.3		41.2-107		%Rec	1	9/28/2016 5:43:44 PM	27700
Surr: 2-Fluorobiphenyl	80.2		41.9-119		%Rec	1	9/28/2016 5:43:44 PM	27700
Surr: 4-Terphenyl-d14	64.0		15-132		%Rec	1	9/28/2016 5:43:44 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Toluene	1.17	0.246	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Ethylbenzene	0.407	0.274	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Methyl tert-butyl ether (MTBE)	ND	0.342	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2,4-Trimethylbenzene	0.428	0.345	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,3,5-Trimethylbenzene	0.356	0.336	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2-Dichloroethane (EDC)	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2-Dibromoethane (EDB)	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Naphthalene	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1-Methylnaphthalene	ND	0.231	4.07		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
2-Methylnaphthalene	ND	0.536	4.07		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Acetone	7.10	0.603	10.2	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Bromobenzene	ND	0.207	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Bromodichloromethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 11:40:00 AM

Lab ID: 1609B57-001

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Bromomethane	ND	0.367	3.05		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
2-Butanone	ND	0.734	10.2		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Carbon disulfide	ND	0.753	10.2		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Carbon tetrachloride	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Chlorobenzene	ND	0.234	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Chloroethane	ND	0.376	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Chloroform	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Chloromethane	ND	0.516	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
2-Chlorotoluene	ND	0.346	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
4-Chlorotoluene	ND	0.339	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
cis-1,2-DCE	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
cis-1,3-Dichloropropene	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.217	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Dibromochloromethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Dibromomethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2-Dichlorobenzene	ND	0.297	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,3-Dichlorobenzene	ND	0.376	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,4-Dichlorobenzene	ND	0.381	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Dichlorodifluoromethane	ND	1.19	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1-Dichloroethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1-Dichloroethene	ND	0.333	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2-Dichloropropane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,3-Dichloropropane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
2,2-Dichloropropane	ND	0.257	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1-Dichloropropene	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Hexachlorobutadiene	ND	0.464	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
2-Hexanone	ND	0.507	10.2		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Isopropylbenzene	0.275	0.256	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
4-Isopropyltoluene	ND	0.382	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
4-Methyl-2-pentanone	ND	4.07	10.2		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Methylene chloride	ND	2.04	3.05		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
n-Butylbenzene	ND	0.496	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
n-Propylbenzene	0.377	0.365	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
sec-Butylbenzene	ND	0.362	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Styrene	ND	0.260	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
tert-Butylbenzene	ND	0.298	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-23 (2-2.5')**Project:** SWMU 10**Collection Date:** 9/19/2016 11:40:00 AM**Lab ID:** 1609B57-001**Matrix:** SOIL**Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.268	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
trans-1,2-DCE	ND	0.206	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
trans-1,3-Dichloropropene	ND	0.246	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.493	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.618	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1,1-Trichloroethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,1,2-Trichloroethane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Trichloroethene (TCE)	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Trichlorofluoromethane	ND	0.256	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
1,2,3-Trichloropropane	ND	2.04	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Vinyl chloride	ND	0.536	2.04		µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Xylenes, Total	1.42	0.812	2.04	J	µg/Kg-dry	1	9/21/2016 2:30:00 PM	27629
Surr: 1,2-Dichloroethane-d4	121	0	70-130		%Rec	1	9/21/2016 2:30:00 PM	27629
Surr: 4-Bromofluorobenzene	99.6	0	70-130		%Rec	1	9/21/2016 2:30:00 PM	27629
Surr: Dibromofluoromethane	111	0	70-130		%Rec	1	9/21/2016 2:30:00 PM	27629
Surr: Toluene-d8	97.8	0	70-130		%Rec	1	9/21/2016 2:30:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	ND	0.55	3.6		mg/Kg-dr	1	9/23/2016 11:19:22 AM	R37464
Surr: BFB	104	0	70-130		%Rec	1	9/23/2016 11:19:22 AM	R37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 11:55:00 AM

Lab ID: 1609B57-002

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	ND	2.0	11		mg/Kg-dr	1	9/23/2016 10:17:59 AM	27652
Motor Oil Range Organics (MRO)	ND	55	55		mg/Kg-dr	1	9/23/2016 10:17:59 AM	27652
Surr: DNOP	73.9	0	70-130		%Rec	1	9/23/2016 10:17:59 AM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	12	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0026	0.00065	0.038	J	mg/Kg-dr	1	9/27/2016 10:39:03 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	1.1	2.8		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Arsenic	1.0	1.0	2.8	J	mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Barium	730	0.41	0.57		mg/Kg-dr	5	9/28/2016 10:27:48 PM	27709
Beryllium	0.82	0.039	0.17		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Cadmium	ND	0.072	0.11		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Chromium	13	0.11	0.34		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Cobalt	8.0	0.13	0.34		mg/Kg-dr	1	9/28/2016 10:26:03 PM	27709
Iron	19000	86	280		mg/Kg-dr	100	9/28/2016 10:38:43 PM	27709
Lead	0.95	0.20	0.28		mg/Kg-dr	1	9/28/2016 10:26:03 PM	27709
Manganese	850	0.30	0.57		mg/Kg-dr	5	9/28/2016 10:27:48 PM	27709
Nickel	13	0.17	0.57		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Selenium	ND	2.1	2.8		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Silver	ND	0.071	0.28		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Vanadium	13	0.20	2.8		mg/Kg-dr	1	9/28/2016 4:15:47 PM	27709
Zinc	25	0.40	2.8		mg/Kg-dr	1	9/28/2016 10:26:03 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.098	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Acenaphthylene	ND	0.093	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Aniline	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Anthracene	ND	0.075	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Azobenzene	ND	0.14	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benz(a)anthracene	ND	0.098	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzo(a)pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzo(b)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzo(g,h,i)perylene	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzo(k)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzoic acid	ND	0.094	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Benzyl alcohol	ND	0.089	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Bis(2-chloroethoxy)methane	ND	0.12	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 11:55:00 AM

Lab ID: 1609B57-002

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.084	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Bis(2-ethylhexyl)phthalate	0.17	0.093	0.57	J	mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Butyl benzyl phthalate	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Carbazole	ND	0.077	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Chloro-3-methylphenol	ND	0.14	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Chloroaniline	ND	0.12	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Chloronaphthalene	ND	0.090	0.28		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Chlorophenol	ND	0.090	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Chrysene	ND	0.097	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Di-n-butyl phthalate	0.25	0.085	0.46	J	mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Di-n-octyl phthalate	ND	0.097	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Dibenz(a,h)anthracene	ND	0.092	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Dibenzofuran	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
1,2-Dichlorobenzene	ND	0.087	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
1,3-Dichlorobenzene	ND	0.088	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
1,4-Dichlorobenzene	ND	0.096	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
3,3'-Dichlorobenzidine	ND	0.084	0.28		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Diethyl phthalate	0.22	0.12	0.23	J	mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Dimethyl phthalate	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4-Dichlorophenol	ND	0.11	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4-Dimethylphenol	ND	0.12	0.34		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.069	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4-Dinitrophenol	ND	0.075	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4-Dinitrotoluene	ND	0.10	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.57		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Fluoranthene	ND	0.066	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Fluorene	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Hexachlorobenzene	ND	0.090	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Hexachlorobutadiene	ND	0.13	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Hexachloroethane	ND	0.098	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.089	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Isophorone	ND	0.13	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
1-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Methylnaphthalene	ND	0.13	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Methylphenol	ND	0.095	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 11:55:00 AM

Lab ID: 1609B57-002

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.082	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
N-Nitrosodiphenylamine	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Nitroaniline	ND	0.12	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
3-Nitroaniline	ND	0.10	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Nitroaniline	ND	0.080	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Nitrobenzene	ND	0.12	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2-Nitrophenol	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
4-Nitrophenol	ND	0.087	0.28		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Pentachlorophenol	ND	0.073	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Phenanthrene	ND	0.077	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Phenol	ND	0.086	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Pyridine	ND	0.090	0.46		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4,5-Trichlorophenol	ND	0.11	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
2,4,6-Trichlorophenol	ND	0.094	0.23		mg/Kg-dr	1	9/28/2016 6:11:39 PM	27700
Surr: 2-Fluorophenol	87.6	0	35-97.9		%Rec	1	9/28/2016 6:11:39 PM	27700
Surr: Phenol-d5	85.9	0	37.3-105		%Rec	1	9/28/2016 6:11:39 PM	27700
Surr: 2,4,6-Tribromophenol	97.2	0	35.6-118		%Rec	1	9/28/2016 6:11:39 PM	27700
Surr: Nitrobenzene-d5	81.5		41.2-107		%Rec	1	9/28/2016 6:11:39 PM	27700
Surr: 2-Fluorobiphenyl	83.2		41.9-119		%Rec	1	9/28/2016 6:11:39 PM	27700
Surr: 4-Terphenyl-d14	70.3		15-132		%Rec	1	9/28/2016 6:11:39 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	10.3	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Toluene	7.43	0.258	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Ethylbenzene	1.84	0.286	2.13	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Methyl tert-butyl ether (MTBE)	ND	0.358	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2,4-Trimethylbenzene	1.61	0.361	2.13	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,3,5-Trimethylbenzene	1.11	0.352	2.13	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2-Dichloroethane (EDC)	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2-Dibromoethane (EDB)	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Naphthalene	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1-Methylnaphthalene	0.448	0.242	4.26	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
2-Methylnaphthalene	0.575	0.561	4.26	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Acetone	4.45	0.631	10.7	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Bromobenzene	ND	0.217	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Bromodichloromethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-23 (15-16')**Project:** SWMU 10**Collection Date:** 9/19/2016 11:55:00 AM**Lab ID:** 1609B57-002**Matrix:** SOIL**Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Bromomethane	ND	0.384	3.20		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
2-Butanone	ND	0.768	10.7		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Carbon disulfide	ND	0.788	10.7		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Carbon tetrachloride	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Chlorobenzene	ND	0.244	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Chloroethane	ND	0.393	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Chloroform	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Chloromethane	ND	0.540	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
2-Chlorotoluene	ND	0.363	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
4-Chlorotoluene	ND	0.354	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
cis-1,2-DCE	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
cis-1,3-Dichloropropene	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.227	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Dibromochloromethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Dibromomethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2-Dichlorobenzene	ND	0.310	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,3-Dichlorobenzene	ND	0.394	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,4-Dichlorobenzene	ND	0.399	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Dichlorodifluoromethane	ND	1.24	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1-Dichloroethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1-Dichloroethene	ND	0.349	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2-Dichloropropane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,3-Dichloropropane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
2,2-Dichloropropane	ND	0.269	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1-Dichloropropene	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Hexachlorobutadiene	ND	0.486	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
2-Hexanone	ND	0.531	10.7		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Isopropylbenzene	0.458	0.268	2.13	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
4-Isopropyltoluene	ND	0.400	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
4-Methyl-2-pentanone	ND	4.26	10.7		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Methylene chloride	ND	2.13	3.20		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
n-Butylbenzene	ND	0.519	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
n-Propylbenzene	0.618	0.382	2.13	J	µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
sec-Butylbenzene	ND	0.378	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Styrene	ND	0.272	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
tert-Butylbenzene	ND	0.311	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-23 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 11:55:00 AM

Lab ID: 1609B57-002

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.280	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
trans-1,2-DCE	ND	0.215	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
trans-1,3-Dichloropropene	ND	0.258	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.516	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.646	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1,1-Trichloroethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,1,2-Trichloroethane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Trichloroethene (TCE)	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Trichlorofluoromethane	ND	0.268	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
1,2,3-Trichloropropane	ND	2.13	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Vinyl chloride	ND	0.561	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Xylenes, Total	5.54	0.850	2.13		µg/Kg-dry	1	9/21/2016 2:55:00 PM	27629
Surr: 1,2-Dichloroethane-d4	122	0	70-130		%Rec	1	9/21/2016 2:55:00 PM	27629
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	9/21/2016 2:55:00 PM	27629
Surr: Dibromofluoromethane	110	0	70-130		%Rec	1	9/21/2016 2:55:00 PM	27629
Surr: Toluene-d8	96.7	0	70-130		%Rec	1	9/21/2016 2:55:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	ND	0.51	3.4		mg/Kg-dr	1	9/23/2016 11:48:12 AM	R37464
Surr: BFB	105	0	70-130		%Rec	1	9/23/2016 11:48:12 AM	R37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 12:55:00 PM

Lab ID: 1609B57-003

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	ND	1.8	10		mg/Kg-dr	1	9/23/2016 11:01:26 AM	27652
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg-dr	1	9/23/2016 11:01:26 AM	27652
Surr: DNOP	83.0	0	70-130		%Rec	1	9/23/2016 11:01:26 AM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	2.6	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0041	0.00059	0.034	J	mg/Kg-dr	1	9/27/2016 10:40:50 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	1.1	1.0	2.6	J	mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Arsenic	ND	0.91	2.6		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Barium	190	0.073	0.10		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Beryllium	0.60	0.035	0.15		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Cadmium	ND	0.065	0.10		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Chromium	6.3	0.096	0.31		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Cobalt	3.6	0.11	0.31		mg/Kg-dr	1	9/28/2016 10:40:13 PM	27709
Iron	11000	39	130		mg/Kg-dr	50	9/28/2016 10:41:58 PM	27709
Lead	2.3	0.18	0.26		mg/Kg-dr	1	9/28/2016 10:40:13 PM	27709
Manganese	370	0.11	0.20		mg/Kg-dr	2	9/28/2016 5:28:54 PM	27709
Nickel	5.7	0.15	0.51		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Selenium	ND	1.9	2.6		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Silver	ND	0.064	0.26		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Vanadium	12	0.18	2.6		mg/Kg-dr	1	9/28/2016 4:17:16 PM	27709
Zinc	11	0.36	2.6		mg/Kg-dr	1	9/28/2016 10:40:13 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.087	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Acenaphthylene	ND	0.083	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Aniline	ND	0.096	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Anthracene	ND	0.067	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Azobenzene	ND	0.12	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benz(a)anthracene	ND	0.087	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzo(a)pyrene	ND	0.077	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzo(b)fluoranthene	ND	0.092	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzo(g,h,i)perylene	ND	0.090	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzoic acid	ND	0.084	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Benzyl alcohol	ND	0.079	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 12:55:00 PM

Lab ID: 1609B57-003

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.075	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.091	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Bis(2-ethylhexyl)phthalate	0.16	0.083	0.51	J	mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Bromophenyl phenyl ether	ND	0.097	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Butyl benzyl phthalate	ND	0.090	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Carbazole	ND	0.069	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Chloro-3-methylphenol	ND	0.12	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Chloroaniline	ND	0.11	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Chloronaphthalene	ND	0.080	0.25		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Chlorophenol	ND	0.080	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Chlorophenyl phenyl ether	ND	0.12	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Chrysene	ND	0.086	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Di-n-butyl phthalate	0.22	0.076	0.41	J	mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Di-n-octyl phthalate	ND	0.087	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Dibenz(a,h)anthracene	ND	0.082	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Dibenzofuran	ND	0.10	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
1,2-Dichlorobenzene	ND	0.078	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
1,3-Dichlorobenzene	ND	0.078	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
1,4-Dichlorobenzene	ND	0.086	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
3,3'-Dichlorobenzidine	ND	0.075	0.25		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Diethyl phthalate	0.20	0.10	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Dimethyl phthalate	ND	0.099	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4-Dichlorophenol	ND	0.095	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.061	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4-Dinitrophenol	ND	0.067	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4-Dinitrotoluene	ND	0.091	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,6-Dinitrotoluene	ND	0.11	0.51		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Fluoranthene	ND	0.058	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Fluorene	ND	0.093	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Hexachlorobenzene	ND	0.080	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Hexachlorocyclopentadiene	ND	0.12	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Hexachloroethane	ND	0.087	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.079	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Isophorone	ND	0.11	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
1-Methylnaphthalene	ND	0.10	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Methylphenol	ND	0.085	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 12:55:00 PM

Lab ID: 1609B57-003

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.074	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
N-Nitrosodi-n-propylamine	ND	0.098	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
N-Nitrosodiphenylamine	ND	0.099	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Naphthalene	ND	0.097	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Nitroaniline	ND	0.11	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
3-Nitroaniline	ND	0.090	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Nitroaniline	ND	0.072	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Nitrobenzene	ND	0.10	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2-Nitrophenol	ND	0.10	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
4-Nitrophenol	ND	0.077	0.25		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Pentachlorophenol	ND	0.065	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Phenanthrene	ND	0.069	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Phenol	ND	0.076	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Pyrene	ND	0.077	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Pyridine	ND	0.080	0.41		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg-dr	1	9/28/2016 6:39:40 PM	27700
Surr: 2-Fluorophenol	74.8	0	35-97.9		%Rec	1	9/28/2016 6:39:40 PM	27700
Surr: Phenol-d5	81.1	0	37.3-105		%Rec	1	9/28/2016 6:39:40 PM	27700
Surr: 2,4,6-Tribromophenol	87.7	0	35.6-118		%Rec	1	9/28/2016 6:39:40 PM	27700
Surr: Nitrobenzene-d5	66.4		41.2-107		%Rec	1	9/28/2016 6:39:40 PM	27700
Surr: 2-Fluorobiphenyl	75.2		41.9-119		%Rec	1	9/28/2016 6:39:40 PM	27700
Surr: 4-Terphenyl-d14	64.0		15-132		%Rec	1	9/28/2016 6:39:40 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Toluene	1.39	0.205	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Ethylbenzene	0.442	0.228	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Methyl tert-butyl ether (MTBE)	ND	0.286	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2,4-Trimethylbenzene	0.442	0.288	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,3,5-Trimethylbenzene	0.306	0.281	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2-Dichloroethane (EDC)	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2-Dibromoethane (EDB)	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Naphthalene	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1-Methylnaphthalene	ND	0.193	3.40		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
2-Methylnaphthalene	ND	0.448	3.40		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Acetone	19.2	0.503	8.50		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Bromobenzene	ND	0.173	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Bromodichloromethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 12:55:00 PM

Lab ID: 1609B57-003

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Bromomethane	0.544	0.306	2.55	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
2-Butanone	ND	0.613	8.50		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Carbon disulfide	ND	0.629	8.50		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Carbon tetrachloride	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Chlorobenzene	ND	0.195	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Chloroethane	ND	0.314	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Chloroform	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Chloromethane	ND	0.431	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
2-Chlorotoluene	ND	0.289	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
4-Chlorotoluene	ND	0.283	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
cis-1,2-DCE	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
cis-1,3-Dichloropropene	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.181	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Dibromochloromethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Dibromomethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2-Dichlorobenzene	ND	0.248	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,3-Dichlorobenzene	ND	0.314	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,4-Dichlorobenzene	ND	0.318	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Dichlorodifluoromethane	ND	0.993	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1-Dichloroethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1-Dichloroethene	ND	0.278	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2-Dichloropropane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,3-Dichloropropane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
2,2-Dichloropropane	ND	0.215	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1-Dichloropropene	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Hexachlorobutadiene	ND	0.388	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
2-Hexanone	ND	0.423	8.50		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Isopropylbenzene	0.238	0.214	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
4-Isopropyltoluene	ND	0.319	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
4-Methyl-2-pentanone	ND	3.40	8.50		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Methylene chloride	ND	1.70	2.55		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
n-Butylbenzene	ND	0.414	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
n-Propylbenzene	0.332	0.304	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
sec-Butylbenzene	ND	0.302	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Styrene	ND	0.217	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
tert-Butylbenzene	ND	0.248	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 12:55:00 PM

Lab ID: 1609B57-003

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.223	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
trans-1,2-DCE	ND	0.172	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
trans-1,3-Dichloropropene	ND	0.206	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.411	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.516	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1,1-Trichloroethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,1,2-Trichloroethane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Trichloroethene (TCE)	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Trichlorofluoromethane	ND	0.214	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
1,2,3-Trichloropropane	ND	1.70	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Vinyl chloride	ND	0.447	1.70		µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Xylenes, Total	1.31	0.678	1.70	J	µg/Kg-dry	1	9/21/2016 3:21:00 PM	27629
Surr: 1,2-Dichloroethane-d4	122	0	70-130		%Rec	1	9/21/2016 3:21:00 PM	27629
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	9/21/2016 3:21:00 PM	27629
Surr: Dibromofluoromethane	114	0	70-130		%Rec	1	9/21/2016 3:21:00 PM	27629
Surr: Toluene-d8	98.2	0	70-130		%Rec	1	9/21/2016 3:21:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	ND	0.47	3.1		mg/Kg-dr	1	9/23/2016 12:16:59 PM	R37464
Surr: BFB	102	0	70-130		%Rec	1	9/23/2016 12:16:59 PM	R37464

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (6-8')

Project: SWMU 10

Collection Date: 9/19/2016 1:10:00 PM

Lab ID: 1609B57-004

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	650	2.3	12		mg/Kg-dr	1	9/23/2016 11:23:07 AM	27652
Motor Oil Range Organics (MRO)	69	62	62		mg/Kg-dr	1	9/23/2016 11:23:07 AM	27652
Surr: DNOP	98.5	0	70-130		%Rec	1	9/23/2016 11:23:07 AM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	20	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0023	0.00072	0.042	J	mg/Kg-dr	1	9/27/2016 10:42:38 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	1.2	3.1		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Arsenic	ND	1.1	3.1		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Barium	120	0.087	0.12		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Beryllium	0.99	0.042	0.18		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Cadmium	ND	0.078	0.12		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Chromium	12	0.12	0.37		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Cobalt	5.5	0.14	0.37		mg/Kg-dr	1	9/28/2016 10:43:29 PM	27709
Iron	18000	93	310		mg/Kg-dr	100	9/28/2016 10:45:22 PM	27709
Lead	3.9	0.21	0.31		mg/Kg-dr	1	9/28/2016 10:43:29 PM	27709
Manganese	200	0.066	0.12		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Nickel	9.9	0.19	0.61		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Selenium	ND	2.2	3.1		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Silver	ND	0.077	0.31		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Vanadium	19	0.22	3.1		mg/Kg-dr	1	9/28/2016 4:18:46 PM	27709
Zinc	18	0.43	3.1		mg/Kg-dr	1	9/28/2016 10:43:29 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Acenaphthylene	ND	1.0	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Aniline	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Anthracene	ND	0.83	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Azobenzene	ND	1.5	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benz(a)anthracene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzo(a)pyrene	ND	0.94	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzo(b)fluoranthene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzo(g,h,i)perylene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzo(k)fluoranthene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzoic acid	1.6	1.0	6.2	JD	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Benzyl alcohol	ND	0.97	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Bis(2-chloroethoxy)methane	ND	1.4	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (6-8')

Project: SWMU 10

Collection Date: 9/19/2016 1:10:00 PM

Lab ID: 1609B57-004

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.91	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Bis(2-chloroisopropyl)ether	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Bis(2-ethylhexyl)phthalate	ND	1.0	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Bromophenyl phenyl ether	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Butyl benzyl phthalate	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Carbazole	ND	0.84	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Chloro-3-methylphenol	ND	1.5	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Chloroaniline	ND	1.4	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Chloronaphthalene	ND	0.98	3.1	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Chlorophenol	ND	0.98	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Chlorophenyl phenyl ether	ND	1.4	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Chrysene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Di-n-butyl phthalate	ND	0.93	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Di-n-octyl phthalate	ND	1.1	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Dibenz(a,h)anthracene	ND	1.0	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Dibenzofuran	ND	1.3	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
1,2-Dichlorobenzene	ND	0.95	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
1,3-Dichlorobenzene	ND	0.96	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
1,4-Dichlorobenzene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
3,3'-Dichlorobenzidine	ND	0.92	3.1	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Diethyl phthalate	ND	1.3	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Dimethyl phthalate	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4-Dichlorophenol	ND	1.2	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4-Dimethylphenol	1.5	1.4	3.7	JD	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.75	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4-Dinitrophenol	ND	0.83	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4-Dinitrotoluene	ND	1.1	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,6-Dinitrotoluene	ND	1.3	6.2	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Fluoranthene	ND	0.72	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Fluorene	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Hexachlorobenzene	ND	0.98	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Hexachlorobutadiene	ND	1.4	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Hexachlorocyclopentadiene	ND	1.4	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Hexachloroethane	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.97	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Isophorone	ND	1.4	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
1-Methylnaphthalene	5.0	1.3	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Methylnaphthalene	8.5	1.5	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Methylphenol	4.7	1.0	5.0	JD	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700

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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (6-8')

Project: SWMU 10

Collection Date: 9/19/2016 1:10:00 PM

Lab ID: 1609B57-004

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.90	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
N-Nitrosodi-n-propylamine	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
N-Nitrosodiphenylamine	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Naphthalene	1.9	1.2	2.5	JD	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Nitroaniline	ND	1.3	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
3-Nitroaniline	ND	1.1	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Nitroaniline	ND	0.88	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Nitrobenzene	ND	1.3	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2-Nitrophenol	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
4-Nitrophenol	ND	0.95	3.1	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Pentachlorophenol	ND	0.80	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Phenanthrene	1.4	0.85	2.5	JD	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Phenol	ND	0.94	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Pyrene	ND	0.94	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Pyridine	ND	0.99	5.0	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
1,2,4-Trichlorobenzene	ND	1.3	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4,5-Trichlorophenol	ND	1.2	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
2,4,6-Trichlorophenol	ND	1.0	2.5	D	mg/Kg-dr	1	9/29/2016 3:36:03 PM	27700
Surr: 2-Fluorophenol	0	0	35-97.9	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
Surr: Phenol-d5	0	0	37.3-105	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
Surr: 2,4,6-Tribromophenol	0	0	35.6-118	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
Surr: Nitrobenzene-d5	0		41.2-107	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
Surr: 2-Fluorobiphenyl	0		41.9-119	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
Surr: 4-Terphenyl-d14	0		15-132	SD	%Rec	1	9/29/2016 3:36:03 PM	27700
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.29	0.36		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Toluene	0.25	0.043	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Ethylbenzene	0.69	0.060	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Methyl tert-butyl ether (MTBE)	ND	0.23	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2,4-Trimethylbenzene	5.3	0.054	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,3,5-Trimethylbenzene	1.9	0.053	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2-Dichloroethane (EDC)	ND	0.19	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2-Dibromoethane (EDB)	ND	0.052	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Naphthalene	3.7	0.11	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1-Methylnaphthalene	8.1	0.16	2.9		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
2-Methylnaphthalene	14	0.16	2.9		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Acetone	ND	0.94	11		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Bromobenzene	ND	0.059	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Bromodichloromethane	ND	0.042	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464

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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Project: SWMU 10

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Lab ID: 1609B57-004

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Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Bromoform	ND	0.089	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Bromomethane	0.32	0.27	2.2	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
2-Butanone	ND	0.42	7.3		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Carbon disulfide	ND	0.24	7.3		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Carbon tetrachloride	ND	0.048	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Chlorobenzene	ND	0.059	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Chloroethane	ND	0.15	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Chloroform	ND	0.055	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Chloromethane	ND	0.065	2.2		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
2-Chlorotoluene	ND	0.054	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
4-Chlorotoluene	ND	0.064	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
cis-1,2-DCE	ND	0.042	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
cis-1,3-Dichloropropene	ND	0.067	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2-Dibromo-3-chloropropane	ND	0.22	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Dibromochloromethane	ND	0.066	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Dibromomethane	ND	0.063	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2-Dichlorobenzene	ND	0.064	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,3-Dichlorobenzene	ND	0.060	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,4-Dichlorobenzene	ND	0.090	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Dichlorodifluoromethane	ND	0.23	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1-Dichloroethane	ND	0.039	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1-Dichloroethene	ND	0.24	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2-Dichloropropane	ND	0.061	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,3-Dichloropropane	ND	0.083	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
2,2-Dichloropropane	ND	0.042	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1-Dichloropropene	ND	0.058	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Hexachlorobutadiene	ND	0.089	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
2-Hexanone	ND	0.40	7.3		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Isopropylbenzene	0.24	0.063	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
4-Isopropyltoluene	0.38	0.065	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
4-Methyl-2-pentanone	ND	0.21	7.3		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Methylene chloride	ND	0.21	2.2		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
n-Butylbenzene	0.50	0.065	2.2	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
n-Propylbenzene	0.39	0.056	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
sec-Butylbenzene	0.34	0.10	0.73	J	mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Styrene	ND	0.065	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
tert-Butylbenzene	ND	0.060	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1,1,2-Tetrachloroethane	ND	0.070	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1,2,2-Tetrachloroethane	ND	0.12	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (6-8')

Project: SWMU 10

Collection Date: 9/19/2016 1:10:00 PM

Lab ID: 1609B57-004

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Tetrachloroethene (PCE)	ND	0.060	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
trans-1,2-DCE	ND	0.20	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
trans-1,3-Dichloropropene	ND	0.11	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2,3-Trichlorobenzene	ND	0.11	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2,4-Trichlorobenzene	ND	0.078	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1,1-Trichloroethane	ND	0.045	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,1,2-Trichloroethane	ND	0.086	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Trichloroethene (TCE)	ND	0.078	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Trichlorofluoromethane	ND	0.055	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
1,2,3-Trichloropropane	ND	0.13	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Vinyl chloride	ND	0.060	0.73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Xylenes, Total	12	0.14	1.5		mg/Kg-dr	20	9/23/2016 4:36:05 PM	S37464
Surr: Dibromofluoromethane	93.9		70-130		%Rec	20	9/23/2016 4:36:05 PM	S37464
Surr: 1,2-Dichloroethane-d4	99.0		70-130		%Rec	20	9/23/2016 4:36:05 PM	S37464
Surr: Toluene-d8	94.8		70-130		%Rec	20	9/23/2016 4:36:05 PM	S37464
Surr: 4-Bromofluorobenzene	85.0		70-130		%Rec	20	9/23/2016 4:36:05 PM	S37464
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	360	11	73		mg/Kg-dr	20	9/23/2016 4:36:05 PM	R37464
Surr: BFB	103	0	70-130		%Rec	20	9/23/2016 4:36:05 PM	R37464

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (8-10')

Project: SWMU 10

Collection Date: 9/19/2016 1:25:00 PM

Lab ID: 1609B57-005

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	190	2.2	12		mg/Kg-dr	1	9/23/2016 11:44:45 AM	27652
Motor Oil Range Organics (MRO)	ND	60	60		mg/Kg-dr	1	9/23/2016 11:44:45 AM	27652
Surr: DNOP	96.6	0	70-130		%Rec	1	9/23/2016 11:44:45 AM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	16	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0028	0.00066	0.038	J	mg/Kg-dr	1	9/27/2016 10:44:25 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	2.4	6.0		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Arsenic	ND	2.1	6.0		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Barium	130	0.17	0.24		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Beryllium	1.3	0.083	0.36		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Cadmium	ND	0.15	0.24		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Chromium	15	0.23	0.72		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Cobalt	6.7	0.27	0.72		mg/Kg-dr	2	9/28/2016 10:46:52 PM	27709
Iron	20000	90	300		mg/Kg-dr	100	9/28/2016 10:48:45 PM	27709
Lead	1.5	0.42	0.60		mg/Kg-dr	2	9/28/2016 10:46:52 PM	27709
Manganese	290	0.13	0.24		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Nickel	12	0.36	1.2		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Selenium	ND	4.4	6.0		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Silver	ND	0.15	0.60		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Vanadium	23	0.42	6.0		mg/Kg-dr	2	9/28/2016 5:31:53 PM	27709
Zinc	22	0.83	6.0		mg/Kg-dr	2	9/28/2016 10:46:52 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Acenaphthylene	ND	0.096	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Aniline	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Anthracene	ND	0.078	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Azobenzene	ND	0.14	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benz(a)anthracene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzo(a)pyrene	ND	0.089	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzo(b)fluoranthene	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzo(g,h,i)perylene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzo(k)fluoranthene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzoic acid	0.23	0.098	0.59	J	mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Benzyl alcohol	ND	0.092	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Bis(2-chloroethoxy)methane	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (8-10')

Project: SWMU 10

Collection Date: 9/19/2016 1:25:00 PM

Lab ID: 1609B57-005

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.087	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Bis(2-ethylhexyl)phthalate	0.23	0.096	0.59	J	mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Butyl benzyl phthalate	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Carbazole	ND	0.080	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Chloro-3-methylphenol	ND	0.14	0.59		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Chloroaniline	ND	0.13	0.59		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Chloronaphthalene	ND	0.093	0.30		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Chlorophenol	ND	0.093	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Chrysene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Di-n-butyl phthalate	0.28	0.088	0.47	J	mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Di-n-octyl phthalate	ND	0.10	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Dibenz(a,h)anthracene	ND	0.095	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Dibenzofuran	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
1,2-Dichlorobenzene	ND	0.090	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
1,3-Dichlorobenzene	ND	0.091	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
1,4-Dichlorobenzene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
3,3'-Dichlorobenzidine	ND	0.087	0.30		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Diethyl phthalate	0.23	0.12	0.24	J	mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Dimethyl phthalate	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4-Dichlorophenol	ND	0.11	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4-Dimethylphenol	0.46	0.13	0.35		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.071	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4-Dinitrophenol	ND	0.078	0.59		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4-Dinitrotoluene	ND	0.11	0.59		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.59		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Fluoranthene	ND	0.068	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Fluorene	0.16	0.11	0.24	J	mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Hexachlorobenzene	ND	0.093	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Hexachlorobutadiene	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Hexachloroethane	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.092	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Isophorone	ND	0.13	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
1-Methylnaphthalene	1.1	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Methylnaphthalene	1.9	0.14	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Methylphenol	2.7	0.099	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (8-10')

Project: SWMU 10

Collection Date: 9/19/2016 1:25:00 PM

Lab ID: 1609B57-005

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	3.0	0.085	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
N-Nitrosodiphenylamine	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Naphthalene	0.39	0.11	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Nitroaniline	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
3-Nitroaniline	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Nitroaniline	ND	0.083	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Nitrobenzene	ND	0.12	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2-Nitrophenol	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
4-Nitrophenol	ND	0.090	0.30		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Pentachlorophenol	ND	0.076	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Phenanthrene	0.32	0.080	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Phenol	1.4	0.089	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Pyrene	ND	0.089	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Pyridine	ND	0.094	0.47		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
1,2,4-Trichlorobenzene	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4,5-Trichlorophenol	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
2,4,6-Trichlorophenol	ND	0.098	0.24		mg/Kg-dr	1	9/29/2016 4:04:08 PM	27700
Surr: 2-Fluorophenol	90.2	0	35-97.9		%Rec	1	9/29/2016 4:04:08 PM	27700
Surr: Phenol-d5	91.9	0	37.3-105		%Rec	1	9/29/2016 4:04:08 PM	27700
Surr: 2,4,6-Tribromophenol	89.0	0	35.6-118		%Rec	1	9/29/2016 4:04:08 PM	27700
Surr: Nitrobenzene-d5	76.5		41.2-107		%Rec	1	9/29/2016 4:04:08 PM	27700
Surr: 2-Fluorobiphenyl	79.2		41.9-119		%Rec	1	9/29/2016 4:04:08 PM	27700
Surr: 4-Terphenyl-d14	67.5		15-132		%Rec	1	9/29/2016 4:04:08 PM	27700
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	0.26	0.13	0.17		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Toluene	0.49	0.020	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Ethylbenzene	0.41	0.027	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Methyl tert-butyl ether (MTBE)	ND	0.10	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2,4-Trimethylbenzene	1.2	0.025	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,3,5-Trimethylbenzene	0.43	0.024	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2-Dichloroethane (EDC)	ND	0.087	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2-Dibromoethane (EDB)	ND	0.024	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Naphthalene	0.85	0.052	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1-Methylnaphthalene	1.6	0.074	1.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
2-Methylnaphthalene	2.8	0.071	1.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Acetone	ND	0.43	5.0		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Bromobenzene	ND	0.027	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Bromodichloromethane	ND	0.019	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (8-10')

Project: SWMU 10

Collection Date: 9/19/2016 1:25:00 PM

Lab ID: 1609B57-005

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Bromoform	ND	0.041	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Bromomethane	0.15	0.12	1.0	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
2-Butanone	ND	0.19	3.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Carbon disulfide	ND	0.11	3.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Carbon tetrachloride	ND	0.022	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Chlorobenzene	ND	0.027	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Chloroethane	ND	0.067	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Chloroform	ND	0.025	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Chloromethane	ND	0.030	1.0		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
2-Chlorotoluene	ND	0.025	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
4-Chlorotoluene	ND	0.030	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
cis-1,2-DCE	ND	0.019	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
cis-1,3-Dichloropropene	ND	0.031	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2-Dibromo-3-chloropropane	ND	0.10	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Dibromochloromethane	ND	0.030	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Dibromomethane	ND	0.029	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2-Dichlorobenzene	ND	0.029	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,3-Dichlorobenzene	ND	0.027	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,4-Dichlorobenzene	ND	0.041	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Dichlorodifluoromethane	ND	0.10	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1-Dichloroethane	ND	0.018	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1-Dichloroethene	ND	0.11	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2-Dichloropropane	ND	0.028	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,3-Dichloropropane	ND	0.038	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
2,2-Dichloropropane	ND	0.019	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1-Dichloropropene	ND	0.026	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Hexachlorobutadiene	ND	0.041	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
2-Hexanone	ND	0.18	3.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Isopropylbenzene	0.14	0.029	0.33	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
4-Isopropyltoluene	0.11	0.030	0.33	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
4-Methyl-2-pentanone	ND	0.097	3.3		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Methylene chloride	ND	0.096	1.0		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
n-Butylbenzene	0.18	0.030	1.0	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
n-Propylbenzene	0.24	0.026	0.33	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
sec-Butylbenzene	0.14	0.046	0.33	J	mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Styrene	ND	0.030	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
tert-Butylbenzene	ND	0.028	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1,1,2-Tetrachloroethane	ND	0.032	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1,2,2-Tetrachloroethane	ND	0.054	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (8-10')

Project: SWMU 10

Collection Date: 9/19/2016 1:25:00 PM

Lab ID: 1609B57-005

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Tetrachloroethene (PCE)	ND	0.028	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
trans-1,2-DCE	ND	0.093	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
trans-1,3-Dichloropropene	ND	0.049	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2,3-Trichlorobenzene	ND	0.050	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2,4-Trichlorobenzene	ND	0.036	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1,1-Trichloroethane	ND	0.020	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,1,2-Trichloroethane	ND	0.039	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Trichloroethene (TCE)	ND	0.036	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Trichlorofluoromethane	ND	0.025	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
1,2,3-Trichloropropane	ND	0.058	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Vinyl chloride	ND	0.027	0.33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Xylenes, Total	3.4	0.063	0.67		mg/Kg-dr	10	9/23/2016 5:04:54 PM	S37464
Surr: Dibromofluoromethane	99.5		70-130		%Rec	10	9/23/2016 5:04:54 PM	S37464
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	10	9/23/2016 5:04:54 PM	S37464
Surr: Toluene-d8	94.9		70-130		%Rec	10	9/23/2016 5:04:54 PM	S37464
Surr: 4-Bromofluorobenzene	86.7		70-130		%Rec	10	9/23/2016 5:04:54 PM	S37464
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	110	5.0	33		mg/Kg-dr	10	9/23/2016 5:04:54 PM	R37464
Surr: BFB	100	0	70-130		%Rec	10	9/23/2016 5:04:54 PM	R37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 1:40:00 PM

Lab ID: 1609B57-006

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	2.9	2.0	11	J	mg/Kg-dr	1	9/23/2016 12:06:21 PM	27652
Motor Oil Range Organics (MRO)	ND	53	53		mg/Kg-dr	1	9/23/2016 12:06:21 PM	27652
Surr: DNOP	82.4	0	70-130		%Rec	1	9/23/2016 12:06:21 PM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	12	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0011	0.00063	0.037	J	mg/Kg-dr	1	9/27/2016 10:46:13 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	2.1	1.2	2.9	J	mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Arsenic	ND	1.0	2.9		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Barium	510	0.16	0.23		mg/Kg-dr	2	9/28/2016 5:33:15 PM	27709
Beryllium	0.95	0.040	0.17		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Cadmium	ND	0.073	0.11		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Chromium	15	0.11	0.34		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Cobalt	9.1	0.13	0.34		mg/Kg-dr	1	9/28/2016 10:50:13 PM	27709
Iron	20000	86	290		mg/Kg-dr	100	9/28/2016 11:00:48 PM	27709
Lead	1.1	0.20	0.29		mg/Kg-dr	1	9/28/2016 10:50:13 PM	27709
Manganese	1400	0.61	1.1		mg/Kg-dr	10	9/28/2016 10:51:59 PM	27709
Nickel	16	0.17	0.57		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Selenium	ND	2.1	2.9		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Silver	ND	0.072	0.29		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Vanadium	21	0.20	2.9		mg/Kg-dr	1	9/28/2016 4:27:04 PM	27709
Zinc	26	0.40	2.9		mg/Kg-dr	1	9/28/2016 10:50:13 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.096	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Acenaphthylene	ND	0.091	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Aniline	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Anthracene	ND	0.075	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Azobenzene	ND	0.14	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benz(a)anthracene	ND	0.097	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzo(a)pyrene	ND	0.085	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzo(b)fluoranthene	ND	0.10	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzo(g,h,i)perylene	ND	0.099	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzo(k)fluoranthene	ND	0.099	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzoic acid	ND	0.093	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Benzyl alcohol	ND	0.088	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Bis(2-chloroethoxy)methane	ND	0.12	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 1:40:00 PM

Lab ID: 1609B57-006

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.083	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.10	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Bis(2-ethylhexyl)phthalate	0.16	0.092	0.56	J	mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Butyl benzyl phthalate	ND	0.099	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Carbazole	ND	0.076	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Chloro-3-methylphenol	ND	0.13	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Chloroaniline	ND	0.12	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Chloronaphthalene	ND	0.088	0.28		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Chlorophenol	ND	0.089	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Chrysene	ND	0.096	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Di-n-butyl phthalate	0.15	0.084	0.45	J	mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Di-n-octyl phthalate	ND	0.096	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Dibenz(a,h)anthracene	ND	0.091	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Dibenzofuran	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
1,2-Dichlorobenzene	ND	0.086	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
1,3-Dichlorobenzene	ND	0.087	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
1,4-Dichlorobenzene	ND	0.095	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
3,3'-Dichlorobenzidine	ND	0.083	0.28		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Diethyl phthalate	0.18	0.11	0.22	J	mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Dimethyl phthalate	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4-Dichlorophenol	ND	0.10	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4-Dimethylphenol	ND	0.12	0.34		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.068	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4-Dinitrophenol	ND	0.075	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4-Dinitrotoluene	ND	0.10	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.56		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Fluoranthene	ND	0.065	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Fluorene	ND	0.10	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Hexachlorobenzene	ND	0.089	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Hexachlorobutadiene	ND	0.13	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Hexachloroethane	ND	0.097	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.088	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Isophorone	ND	0.12	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
1-Methylnaphthalene	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Methylnaphthalene	ND	0.13	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Methylphenol	ND	0.094	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 1:40:00 PM

Lab ID: 1609B57-006

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.081	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
N-Nitrosodiphenylamine	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Naphthalene	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Nitroaniline	ND	0.12	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
3-Nitroaniline	ND	0.099	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Nitroaniline	ND	0.079	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Nitrobenzene	ND	0.12	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2-Nitrophenol	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
4-Nitrophenol	ND	0.086	0.28		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Pentachlorophenol	ND	0.072	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Phenanthrene	ND	0.076	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Phenol	ND	0.085	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Pyrene	ND	0.085	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Pyridine	ND	0.089	0.45		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
1,2,4-Trichlorobenzene	ND	0.12	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4,5-Trichlorophenol	ND	0.11	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
2,4,6-Trichlorophenol	ND	0.093	0.22		mg/Kg-dr	1	9/29/2016 4:32:05 PM	27700
Surr: 2-Fluorophenol	81.8	0	35-97.9		%Rec	1	9/29/2016 4:32:05 PM	27700
Surr: Phenol-d5	85.3	0	37.3-105		%Rec	1	9/29/2016 4:32:05 PM	27700
Surr: 2,4,6-Tribromophenol	80.6	0	35.6-118		%Rec	1	9/29/2016 4:32:05 PM	27700
Surr: Nitrobenzene-d5	69.7		41.2-107		%Rec	1	9/29/2016 4:32:05 PM	27700
Surr: 2-Fluorobiphenyl	71.9		41.9-119		%Rec	1	9/29/2016 4:32:05 PM	27700
Surr: 4-Terphenyl-d14	67.3		15-132		%Rec	1	9/29/2016 4:32:05 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	10.0	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Toluene	6.80	0.263	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Ethylbenzene	1.84	0.292	2.17	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Methyl tert-butyl ether (MTBE)	ND	0.365	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2,4-Trimethylbenzene	1.53	0.369	2.17	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,3,5-Trimethylbenzene	1.05	0.359	2.17	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2-Dichloroethane (EDC)	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2-Dibromoethane (EDB)	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Naphthalene	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1-Methylnaphthalene	0.772	0.247	4.35	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
2-Methylnaphthalene	1.05	0.572	4.35	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Acetone	4.62	0.643	10.9	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Bromobenzene	ND	0.221	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Bromodichloromethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-24 (15-16')**Project:** SWMU 10**Collection Date:** 9/19/2016 1:40:00 PM**Lab ID:** 1609B57-006**Matrix:** SOIL**Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Bromomethane	ND	0.391	3.26		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
2-Butanone	ND	0.784	10.9		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Carbon disulfide	ND	0.804	10.9		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Carbon tetrachloride	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Chlorobenzene	ND	0.249	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Chloroethane	ND	0.401	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Chloroform	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Chloromethane	ND	0.551	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
2-Chlorotoluene	ND	0.370	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
4-Chlorotoluene	ND	0.361	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
cis-1,2-DCE	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
cis-1,3-Dichloropropene	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.231	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Dibromochloromethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Dibromomethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2-Dichlorobenzene	ND	0.317	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,3-Dichlorobenzene	ND	0.402	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,4-Dichlorobenzene	ND	0.407	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Dichlorodifluoromethane	ND	1.27	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1-Dichloroethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1-Dichloroethene	ND	0.356	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2-Dichloropropane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,3-Dichloropropane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
2,2-Dichloropropane	ND	0.275	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1-Dichloropropene	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Hexachlorobutadiene	ND	0.496	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
2-Hexanone	ND	0.541	10.9		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Isopropylbenzene	0.478	0.274	2.17	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
4-Isopropyltoluene	ND	0.408	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
4-Methyl-2-pentanone	ND	4.35	10.9		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Methylene chloride	ND	2.17	3.26		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
n-Butylbenzene	ND	0.529	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
n-Propylbenzene	0.641	0.389	2.17	J	µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
sec-Butylbenzene	ND	0.386	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Styrene	ND	0.278	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
tert-Butylbenzene	ND	0.318	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-24 (15-16')

Project: SWMU 10

Collection Date: 9/19/2016 1:40:00 PM

Lab ID: 1609B57-006

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.286	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
trans-1,2-DCE	ND	0.220	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
trans-1,3-Dichloropropene	ND	0.263	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.526	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.659	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1,1-Trichloroethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,1,2-Trichloroethane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Trichloroethene (TCE)	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Trichlorofluoromethane	ND	0.273	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
1,2,3-Trichloropropane	ND	2.17	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Vinyl chloride	ND	0.572	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Xylenes, Total	5.28	0.867	2.17		µg/Kg-dry	1	9/21/2016 3:46:00 PM	27629
Surr: 1,2-Dichloroethane-d4	118	0	70-130		%Rec	1	9/21/2016 3:46:00 PM	27629
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	9/21/2016 3:46:00 PM	27629
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	9/21/2016 3:46:00 PM	27629
Surr: Toluene-d8	98.1	0	70-130		%Rec	1	9/21/2016 3:46:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	ND	0.57	3.8		mg/Kg-dr	1	9/23/2016 1:43:29 PM	R37464
Surr: BFB	101	0	70-130		%Rec	1	9/23/2016 1:43:29 PM	R37464

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 3:45:00 PM

Lab ID: 1609B57-007

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	790	2.1	11		mg/Kg-dr	1	9/23/2016 12:27:56 PM	27652
Motor Oil Range Organics (MRO)	100	56	56		mg/Kg-dr	1	9/23/2016 12:27:56 PM	27652
Surr: DNOP	99.6	0	70-130		%Rec	1	9/23/2016 12:27:56 PM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	13	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0031	0.00065	0.038	J	mg/Kg-dr	1	9/27/2016 10:51:45 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	1.2	2.9		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Arsenic	ND	1.0	2.9		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Barium	96	0.082	0.12		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Beryllium	0.58	0.040	0.17		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Cadmium	ND	0.073	0.12		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Chromium	7.2	0.11	0.35		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Cobalt	3.9	0.13	0.35		mg/Kg-dr	1	9/28/2016 11:02:19 PM	27709
Iron	12000	44	140		mg/Kg-dr	50	9/28/2016 11:04:18 PM	27709
Lead	2.1	0.20	0.29		mg/Kg-dr	1	9/28/2016 11:02:19 PM	27709
Manganese	500	0.12	0.23		mg/Kg-dr	2	9/28/2016 5:34:45 PM	27709
Nickel	5.7	0.17	0.58		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Selenium	ND	2.1	2.9		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Silver	ND	0.072	0.29		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Vanadium	15	0.20	2.9		mg/Kg-dr	1	9/28/2016 4:28:40 PM	27709
Zinc	11	0.40	2.9		mg/Kg-dr	1	9/28/2016 11:02:19 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Acenaphthylene	ND	0.093	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Aniline	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Anthracene	ND	0.076	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Azobenzene	ND	0.14	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benz(a)anthracene	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzo(a)pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzo(b)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzo(g,h,i)perylene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzo(k)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzoic acid	0.21	0.094	0.57	J	mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Benzyl alcohol	ND	0.089	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Bis(2-chloroethoxy)methane	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 3:45:00 PM

Lab ID: 1609B57-007

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.084	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Bis(2-ethylhexyl)phthalate	0.22	0.093	0.57	J	mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Butyl benzyl phthalate	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Carbazole	ND	0.077	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Chloro-3-methylphenol	ND	0.14	0.57		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Chloroaniline	ND	0.12	0.57		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Chloronaphthalene	ND	0.090	0.28		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Chlorophenol	ND	0.090	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Chrysene	ND	0.097	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Di-n-butyl phthalate	0.35	0.085	0.46	J	mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Di-n-octyl phthalate	ND	0.097	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Dibenz(a,h)anthracene	ND	0.092	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Dibenzofuran	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
1,2-Dichlorobenzene	ND	0.087	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
1,3-Dichlorobenzene	ND	0.088	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
1,4-Dichlorobenzene	ND	0.096	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
3,3'-Dichlorobenzidine	ND	0.084	0.28		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Diethyl phthalate	0.28	0.12	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Dimethyl phthalate	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4-Dichlorophenol	ND	0.11	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4-Dimethylphenol	0.17	0.12	0.34	J	mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.069	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4-Dinitrophenol	ND	0.076	0.57		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4-Dinitrotoluene	ND	0.10	0.57		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.57		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Fluoranthene	ND	0.066	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Fluorene	0.19	0.10	0.23	J	mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Hexachlorobenzene	ND	0.090	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Hexachlorobutadiene	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Hexachloroethane	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.089	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Isophorone	ND	0.13	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
1-Methylnaphthalene	0.82	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Methylnaphthalene	1.4	0.14	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Methylphenol	0.53	0.095	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 3:45:00 PM

Lab ID: 1609B57-007

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.082	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
N-Nitrosodiphenylamine	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Naphthalene	0.28	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Nitroaniline	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
3-Nitroaniline	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Nitroaniline	ND	0.080	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Nitrobenzene	ND	0.12	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2-Nitrophenol	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
4-Nitrophenol	ND	0.087	0.28		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Pentachlorophenol	ND	0.073	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Phenanthrene	0.39	0.077	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Phenol	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Pyridine	ND	0.090	0.46		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4,5-Trichlorophenol	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
2,4,6-Trichlorophenol	ND	0.095	0.23		mg/Kg-dr	1	9/29/2016 4:59:58 PM	27700
Surr: 2-Fluorophenol	75.1	0	35-97.9		%Rec	1	9/29/2016 4:59:58 PM	27700
Surr: Phenol-d5	80.1	0	37.3-105		%Rec	1	9/29/2016 4:59:58 PM	27700
Surr: 2,4,6-Tribromophenol	76.0	0	35.6-118		%Rec	1	9/29/2016 4:59:58 PM	27700
Surr: Nitrobenzene-d5	63.8		41.2-107		%Rec	1	9/29/2016 4:59:58 PM	27700
Surr: 2-Fluorobiphenyl	73.7		41.9-119		%Rec	1	9/29/2016 4:59:58 PM	27700
Surr: 4-Terphenyl-d14	66.6		15-132		%Rec	1	9/29/2016 4:59:58 PM	27700
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.85	1.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Toluene	0.29	0.13	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Ethylbenzene	1.0	0.17	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Methyl tert-butyl ether (MTBE)	ND	0.67	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2,4-Trimethylbenzene	5.8	0.16	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,3,5-Trimethylbenzene	2.6	0.15	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2-Dichloroethane (EDC)	ND	0.56	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2-Dibromoethane (EDB)	ND	0.15	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Naphthalene	3.8	0.33	4.3	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1-Methylnaphthalene	13	0.47	8.5		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
2-Methylnaphthalene	16	0.46	8.5		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Acetone	ND	2.8	32		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Bromobenzene	ND	0.17	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Bromodichloromethane	ND	0.12	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 3:45:00 PM

Lab ID: 1609B57-007

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Bromoform	ND	0.26	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Bromomethane	ND	0.79	6.4		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
2-Butanone	ND	1.2	21		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Carbon disulfide	ND	0.70	21		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Carbon tetrachloride	ND	0.14	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Chlorobenzene	ND	0.17	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Chloroethane	ND	0.43	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Chloroform	ND	0.16	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Chloromethane	ND	0.19	6.4		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
2-Chlorotoluene	ND	0.16	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
4-Chlorotoluene	ND	0.19	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
cis-1,2-DCE	ND	0.12	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
cis-1,3-Dichloropropene	ND	0.20	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2-Dibromo-3-chloropropane	ND	0.65	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Dibromochloromethane	ND	0.19	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Dibromomethane	ND	0.18	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2-Dichlorobenzene	ND	0.19	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,3-Dichlorobenzene	ND	0.17	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,4-Dichlorobenzene	ND	0.26	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Dichlorodifluoromethane	ND	0.66	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1-Dichloroethane	ND	0.12	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1-Dichloroethene	ND	0.70	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2-Dichloropropane	ND	0.18	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,3-Dichloropropane	ND	0.24	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
2,2-Dichloropropane	ND	0.12	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1-Dichloropropene	ND	0.17	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Hexachlorobutadiene	ND	0.26	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
2-Hexanone	ND	1.2	21		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Isopropylbenzene	0.54	0.18	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
4-Isopropyltoluene	0.61	0.19	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
4-Methyl-2-pentanone	ND	0.62	21		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Methylene chloride	ND	0.62	6.4		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
n-Butylbenzene	0.95	0.19	6.4	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
n-Propylbenzene	0.93	0.16	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
sec-Butylbenzene	0.74	0.30	2.1	J	mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Styrene	ND	0.19	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
tert-Butylbenzene	ND	0.18	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1,1,2-Tetrachloroethane	ND	0.20	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1,2,2-Tetrachloroethane	ND	0.35	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (2-2.5')

Project: SWMU 10

Collection Date: 9/19/2016 3:45:00 PM

Lab ID: 1609B57-007

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Tetrachloroethene (PCE)	ND	0.18	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
trans-1,2-DCE	ND	0.60	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
trans-1,3-Dichloropropene	ND	0.31	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2,3-Trichlorobenzene	ND	0.32	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2,4-Trichlorobenzene	ND	0.23	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1,1-Trichloroethane	ND	0.13	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,1,2-Trichloroethane	ND	0.25	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Trichloroethene (TCE)	ND	0.23	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Trichlorofluoromethane	ND	0.16	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
1,2,3-Trichloropropane	ND	0.37	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Vinyl chloride	ND	0.17	2.1		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Xylenes, Total	10	0.40	4.3		mg/Kg-dr	50	9/27/2016 9:09:50 PM	S37515
Surr: Dibromofluoromethane	104		70-130		%Rec	50	9/27/2016 9:09:50 PM	S37515
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	50	9/27/2016 9:09:50 PM	S37515
Surr: Toluene-d8	90.2		70-130		%Rec	50	9/27/2016 9:09:50 PM	S37515
Surr: 4-Bromofluorobenzene	83.5		70-130		%Rec	50	9/27/2016 9:09:50 PM	S37515
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	730	32	210		mg/Kg-dr	50	9/29/2016 11:03:07 AM	G37576
Surr: BFB	106	0	70-130		%Rec	50	9/29/2016 11:03:07 AM	G37576

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (10-12')

Project: SWMU 10

Collection Date: 9/19/2016 4:00:00 PM

Lab ID: 1609B57-008

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	96	2.1	11		mg/Kg-dr	1	9/23/2016 12:49:36 PM	27652
Motor Oil Range Organics (MRO)	ND	57	57		mg/Kg-dr	1	9/23/2016 12:49:36 PM	27652
Surr: DNOP	96.3	0	70-130		%Rec	1	9/23/2016 12:49:36 PM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	18	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0014	0.00069	0.040	J	mg/Kg-dr	1	9/27/2016 10:53:34 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	2.5	6.2		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Arsenic	ND	2.2	6.2		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Barium	190	0.18	0.25		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Beryllium	1.4	0.086	0.37		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Cadmium	ND	0.16	0.25		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Chromium	16	0.23	0.74		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Cobalt	7.6	0.28	0.74		mg/Kg-dr	2	9/28/2016 11:05:46 PM	27709
Iron	23000	93	310		mg/Kg-dr	100	9/28/2016 11:07:43 PM	27709
Lead	2.9	0.43	0.62		mg/Kg-dr	2	9/28/2016 11:05:46 PM	27709
Manganese	300	0.13	0.25		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Nickel	14	0.38	1.2		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Selenium	ND	4.5	6.2		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Silver	ND	0.16	0.62		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Vanadium	25	0.44	6.2		mg/Kg-dr	2	9/28/2016 5:36:13 PM	27709
Zinc	26	0.86	6.2		mg/Kg-dr	2	9/28/2016 11:05:46 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Acenaphthylene	ND	0.097	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Aniline	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Anthracene	ND	0.079	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Azobenzene	ND	0.15	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benz(a)anthracene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzo(a)pyrene	ND	0.091	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzo(b)fluoranthene	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzo(g,h,i)perylene	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzo(k)fluoranthene	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzoic acid	0.21	0.099	0.60	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Benzyl alcohol	ND	0.094	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Bis(2-chloroethoxy)methane	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (10-12')

Project: SWMU 10

Collection Date: 9/19/2016 4:00:00 PM

Lab ID: 1609B57-008

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.088	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Bis(2-ethylhexyl)phthalate	0.16	0.097	0.60	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Butyl benzyl phthalate	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Carbazole	ND	0.081	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Chloro-3-methylphenol	ND	0.14	0.60		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Chloroaniline	ND	0.13	0.60		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Chloronaphthalene	ND	0.094	0.30		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Chlorophenol	ND	0.094	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Chlorophenyl phenyl ether	ND	0.14	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Chrysene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Di-n-butyl phthalate	0.22	0.089	0.48	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Di-n-octyl phthalate	ND	0.10	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Dibenz(a,h)anthracene	ND	0.097	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Dibenzofuran	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
1,2-Dichlorobenzene	ND	0.092	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
1,3-Dichlorobenzene	ND	0.092	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
1,4-Dichlorobenzene	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
3,3'-Dichlorobenzidine	ND	0.088	0.30		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Diethyl phthalate	0.21	0.12	0.24	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Dimethyl phthalate	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4-Dichlorophenol	ND	0.11	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4-Dimethylphenol	ND	0.13	0.36		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.072	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4-Dinitrophenol	ND	0.079	0.60		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4-Dinitrotoluene	ND	0.11	0.60		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,6-Dinitrotoluene	ND	0.13	0.60		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Fluoranthene	ND	0.069	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Fluorene	0.15	0.11	0.24	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Hexachlorobenzene	ND	0.094	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Hexachlorobutadiene	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Hexachlorocyclopentadiene	ND	0.14	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Hexachloroethane	ND	0.10	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.093	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Isophorone	ND	0.13	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
1-Methylnaphthalene	0.76	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Methylnaphthalene	1.3	0.14	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Methylphenol	0.17	0.10	0.48	J	mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (10-12')

Project: SWMU 10

Collection Date: 9/19/2016 4:00:00 PM

Lab ID: 1609B57-008

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.087	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
N-Nitrosodiphenylamine	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Naphthalene	0.28	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Nitroaniline	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
3-Nitroaniline	ND	0.11	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Nitroaniline	ND	0.084	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Nitrobenzene	ND	0.12	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2-Nitrophenol	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
4-Nitrophenol	ND	0.091	0.30		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Pentachlorophenol	ND	0.077	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Phenanthrene	0.29	0.081	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Phenol	ND	0.090	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Pyrene	ND	0.090	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Pyridine	ND	0.095	0.48		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
1,2,4-Trichlorobenzene	ND	0.13	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4,5-Trichlorophenol	ND	0.12	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
2,4,6-Trichlorophenol	ND	0.099	0.24		mg/Kg-dr	1	9/29/2016 5:28:00 PM	27700
Surr: 2-Fluorophenol	52.2	0	35-97.9		%Rec	1	9/29/2016 5:28:00 PM	27700
Surr: Phenol-d5	58.6	0	37.3-105		%Rec	1	9/29/2016 5:28:00 PM	27700
Surr: 2,4,6-Tribromophenol	73.5	0	35.6-118		%Rec	1	9/29/2016 5:28:00 PM	27700
Surr: Nitrobenzene-d5	49.2		41.2-107		%Rec	1	9/29/2016 5:28:00 PM	27700
Surr: 2-Fluorobiphenyl	62.1		41.9-119		%Rec	1	9/29/2016 5:28:00 PM	27700
Surr: 4-Terphenyl-d14	58.3		15-132		%Rec	1	9/29/2016 5:28:00 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	26.6	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Toluene	3.13	0.195	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Ethylbenzene	14.1	0.217	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Methyl tert-butyl ether (MTBE)	0.944	0.271	1.61	J	µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2,4-Trimethylbenzene	14.6	0.274	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,3,5-Trimethylbenzene	4.60	0.266	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2-Dichloroethane (EDC)	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2-Dibromoethane (EDB)	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Naphthalene	6.28	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1-Methylnaphthalene	9.93	0.183	3.23		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
2-Methylnaphthalene	8.58	0.425	3.23		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Acetone	8.75	0.478	8.07		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Bromobenzene	ND	0.164	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Bromodichloromethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (10-12')

Project: SWMU 10

Collection Date: 9/19/2016 4:00:00 PM

Lab ID: 1609B57-008

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Bromomethane	ND	0.291	2.42		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
2-Butanone	3.33	0.582	8.07	J	µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Carbon disulfide	ND	0.597	8.07		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Carbon tetrachloride	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Chlorobenzene	ND	0.185	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Chloroethane	ND	0.298	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Chloroform	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Chloromethane	ND	0.409	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
2-Chlorotoluene	ND	0.275	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
4-Chlorotoluene	ND	0.268	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
cis-1,2-DCE	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
cis-1,3-Dichloropropene	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.172	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Dibromochloromethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Dibromomethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2-Dichlorobenzene	ND	0.235	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,3-Dichlorobenzene	ND	0.298	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,4-Dichlorobenzene	ND	0.302	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Dichlorodifluoromethane	ND	0.942	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1-Dichloroethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1-Dichloroethene	ND	0.264	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2-Dichloropropane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,3-Dichloropropane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
2,2-Dichloropropane	ND	0.204	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1-Dichloropropene	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Hexachlorobutadiene	ND	0.368	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
2-Hexanone	ND	0.402	8.07		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Isopropylbenzene	1.86	0.203	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
4-Isopropyltoluene	0.613	0.303	1.61	J	µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
4-Methyl-2-pentanone	ND	3.23	8.07		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Methylene chloride	ND	1.61	2.42		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
n-Butylbenzene	0.759	0.393	1.61	J	µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
n-Propylbenzene	2.87	0.289	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
sec-Butylbenzene	0.621	0.287	1.61	J	µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Styrene	ND	0.206	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
tert-Butylbenzene	ND	0.236	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (10-12')

Project: SWMU 10

Collection Date: 9/19/2016 4:00:00 PM

Lab ID: 1609B57-008

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.212	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
trans-1,2-DCE	ND	0.163	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
trans-1,3-Dichloropropene	ND	0.195	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.391	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.489	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1,1-Trichloroethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,1,2-Trichloroethane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Trichloroethene (TCE)	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Trichlorofluoromethane	ND	0.203	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
1,2,3-Trichloropropane	ND	1.61	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Vinyl chloride	ND	0.425	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Xylenes, Total	31.7	0.643	1.61		µg/Kg-dry	1	9/21/2016 4:11:00 PM	27629
Surr: 1,2-Dichloroethane-d4	118	0	70-130		%Rec	1	9/21/2016 4:11:00 PM	27629
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	9/21/2016 4:11:00 PM	27629
Surr: Dibromofluoromethane	110	0	70-130		%Rec	1	9/21/2016 4:11:00 PM	27629
Surr: Toluene-d8	99.6	0	70-130		%Rec	1	9/21/2016 4:11:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	15	0.50	3.3		mg/Kg-dr	1	9/23/2016 2:41:09 PM	R37464
Surr: BFB	101	0	70-130		%Rec	1	9/23/2016 2:41:09 PM	R37464

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (16.5-18')

Project: SWMU 10

Collection Date: 9/19/2016 4:15:00 PM

Lab ID: 1609B57-009

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	4.5	2.1	11	J	mg/Kg-dr	1	9/23/2016 1:11:16 PM	27652
Motor Oil Range Organics (MRO)	ND	56	56		mg/Kg-dr	1	9/23/2016 1:11:16 PM	27652
Surr: DNOP	85.0	0	70-130		%Rec	1	9/23/2016 1:11:16 PM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	12	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0014	0.00065	0.038	J	mg/Kg-dr	1	9/27/2016 10:55:24 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	1.6	1.2	2.9	J	mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Arsenic	ND	1.0	2.9		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Barium	460	0.16	0.23		mg/Kg-dr	2	9/28/2016 5:37:34 PM	27709
Beryllium	0.86	0.040	0.17		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Cadmium	ND	0.073	0.12		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Chromium	15	0.11	0.35		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Cobalt	9.5	0.13	0.35		mg/Kg-dr	1	9/28/2016 11:09:12 PM	27709
Iron	18000	87	290		mg/Kg-dr	100	9/28/2016 11:12:35 PM	27709
Lead	ND	0.20	0.29		mg/Kg-dr	1	9/28/2016 11:09:12 PM	27709
Manganese	1100	0.62	1.2		mg/Kg-dr	10	9/28/2016 11:10:58 PM	27709
Nickel	15	0.17	0.58		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Selenium	ND	2.1	2.9		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Silver	ND	0.072	0.29		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Vanadium	18	0.20	2.9		mg/Kg-dr	1	9/28/2016 4:31:38 PM	27709
Zinc	27	0.40	2.9		mg/Kg-dr	1	9/28/2016 11:09:12 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Acenaphthylene	ND	0.093	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Aniline	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Anthracene	ND	0.076	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Azobenzene	ND	0.14	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benz(a)anthracene	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzo(a)pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzo(b)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzo(g,h,i)perylene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzo(k)fluoranthene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzoic acid	ND	0.094	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Benzyl alcohol	ND	0.089	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Bis(2-chloroethoxy)methane	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700

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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (16.5-18')

Project: SWMU 10

Collection Date: 9/19/2016 4:15:00 PM

Lab ID: 1609B57-009

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.084	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Bis(2-ethylhexyl)phthalate	0.17	0.093	0.57	J	mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Bromophenyl phenyl ether	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Butyl benzyl phthalate	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Carbazole	ND	0.077	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Chloro-3-methylphenol	ND	0.14	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Chloroaniline	ND	0.12	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Chloronaphthalene	ND	0.090	0.28		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Chlorophenol	ND	0.090	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Chlorophenyl phenyl ether	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Chrysene	ND	0.097	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Di-n-butyl phthalate	0.35	0.085	0.46	J	mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Di-n-octyl phthalate	ND	0.097	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Dibenz(a,h)anthracene	ND	0.092	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Dibenzofuran	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
1,2-Dichlorobenzene	ND	0.087	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
1,3-Dichlorobenzene	ND	0.088	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
1,4-Dichlorobenzene	ND	0.096	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
3,3'-Dichlorobenzidine	ND	0.084	0.28		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Diethyl phthalate	0.24	0.12	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Dimethyl phthalate	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4-Dichlorophenol	ND	0.11	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4-Dimethylphenol	ND	0.12	0.34		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.069	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4-Dinitrophenol	ND	0.076	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4-Dinitrotoluene	ND	0.10	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,6-Dinitrotoluene	ND	0.12	0.57		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Fluoranthene	ND	0.066	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Fluorene	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Hexachlorobenzene	ND	0.090	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Hexachlorobutadiene	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Hexachlorocyclopentadiene	ND	0.13	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Hexachloroethane	ND	0.098	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.089	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Isophorone	ND	0.13	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
1-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Methylnaphthalene	ND	0.14	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Methylphenol	ND	0.095	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (16.5-18')

Project: SWMU 10

Collection Date: 9/19/2016 4:15:00 PM

Lab ID: 1609B57-009

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.082	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
N-Nitrosodi-n-propylamine	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
N-Nitrosodiphenylamine	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Nitroaniline	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
3-Nitroaniline	ND	0.10	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Nitroaniline	ND	0.080	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Nitrobenzene	ND	0.12	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2-Nitrophenol	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
4-Nitrophenol	ND	0.087	0.28		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Pentachlorophenol	ND	0.073	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Phenanthrene	ND	0.077	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Phenol	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Pyrene	ND	0.086	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Pyridine	ND	0.090	0.46		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4,5-Trichlorophenol	ND	0.11	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
2,4,6-Trichlorophenol	ND	0.094	0.23		mg/Kg-dr	1	9/29/2016 5:55:59 PM	27700
Surr: 2-Fluorophenol	74.9	0	35-97.9		%Rec	1	9/29/2016 5:55:59 PM	27700
Surr: Phenol-d5	74.2	0	37.3-105		%Rec	1	9/29/2016 5:55:59 PM	27700
Surr: 2,4,6-Tribromophenol	73.2	0	35.6-118		%Rec	1	9/29/2016 5:55:59 PM	27700
Surr: Nitrobenzene-d5	65.3		41.2-107		%Rec	1	9/29/2016 5:55:59 PM	27700
Surr: 2-Fluorobiphenyl	64.9		41.9-119		%Rec	1	9/29/2016 5:55:59 PM	27700
Surr: 4-Terphenyl-d14	63.1		15-132		%Rec	1	9/29/2016 5:55:59 PM	27700
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Benzene	9.53	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Toluene	6.89	0.230	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Ethylbenzene	1.80	0.256	1.90	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Methyl tert-butyl ether (MTBE)	ND	0.320	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2,4-Trimethylbenzene	1.50	0.323	1.90	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,3,5-Trimethylbenzene	1.06	0.314	1.90	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2-Dichloroethane (EDC)	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2-Dibromoethane (EDB)	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Naphthalene	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1-Methylnaphthalene	0.628	0.216	3.81	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
2-Methylnaphthalene	0.761	0.501	3.81	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Acetone	4.29	0.563	9.52	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Bromobenzene	ND	0.194	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Bromodichloromethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (16.5-18')

Project: SWMU 10

Collection Date: 9/19/2016 4:15:00 PM

Lab ID: 1609B57-009

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Bromoform	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Bromomethane	ND	0.343	2.85		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
2-Butanone	3.59	0.686	9.52	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Carbon disulfide	ND	0.704	9.52		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Carbon tetrachloride	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Chlorobenzene	ND	0.218	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Chloroethane	ND	0.351	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Chloroform	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Chloromethane	ND	0.482	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
2-Chlorotoluene	ND	0.324	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
4-Chlorotoluene	ND	0.316	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
cis-1,2-DCE	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
cis-1,3-Dichloropropene	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2-Dibromo-3-chloropropane	ND	0.203	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Dibromochloromethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Dibromomethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2-Dichlorobenzene	ND	0.277	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,3-Dichlorobenzene	ND	0.352	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,4-Dichlorobenzene	ND	0.356	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Dichlorodifluoromethane	ND	1.11	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1-Dichloroethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1-Dichloroethene	ND	0.312	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2-Dichloropropane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,3-Dichloropropane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
2,2-Dichloropropane	ND	0.240	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1-Dichloropropene	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Hexachlorobutadiene	ND	0.434	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
2-Hexanone	ND	0.474	9.52		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Isopropylbenzene	0.438	0.240	1.90	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
4-Isopropyltoluene	ND	0.357	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
4-Methyl-2-pentanone	ND	3.81	9.52		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Methylene chloride	ND	1.90	2.85		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
n-Butylbenzene	ND	0.463	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
n-Propylbenzene	0.581	0.341	1.90	J	µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
sec-Butylbenzene	ND	0.338	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Styrene	ND	0.243	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
tert-Butylbenzene	ND	0.278	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1,1,2-Tetrachloroethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1,2,2-Tetrachloroethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25 (16.5-18')

Project: SWMU 10

Collection Date: 9/19/2016 4:15:00 PM

Lab ID: 1609B57-009

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: BCN	
Tetrachloroethene (PCE)	ND	0.250	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
trans-1,2-DCE	ND	0.192	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
trans-1,3-Dichloropropene	ND	0.230	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2,3-Trichlorobenzene	ND	0.461	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2,4-Trichlorobenzene	ND	0.577	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1,1-Trichloroethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,1,2-Trichloroethane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Trichloroethene (TCE)	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Trichlorofluoromethane	ND	0.239	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
1,2,3-Trichloropropane	ND	1.90	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Vinyl chloride	ND	0.501	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Xylenes, Total	5.13	0.759	1.90		µg/Kg-dry	1	9/21/2016 4:36:00 PM	27629
Surr: 1,2-Dichloroethane-d4	120	0	70-130		%Rec	1	9/21/2016 4:36:00 PM	27629
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	9/21/2016 4:36:00 PM	27629
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	9/21/2016 4:36:00 PM	27629
Surr: Toluene-d8	97.3	0	70-130		%Rec	1	9/21/2016 4:36:00 PM	27629
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	1.5	0.57	3.8	J	mg/Kg-dr	1	9/23/2016 3:09:54 PM	R37464
Surr: BFB	105	0	70-130		%Rec	1	9/23/2016 3:09:54 PM	R37464

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 9/19/2016

Lab ID: 1609B57-010

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	3400	21	110		mg/Kg-dr	10	9/23/2016 10:39:42 AM	27652
Motor Oil Range Organics (MRO)	ND	560	560		mg/Kg-dr	10	9/23/2016 10:39:42 AM	27652
Surr: DNOP	0	0	70-130	S	%Rec	10	9/23/2016 10:39:42 AM	27652
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	10	1.0	1.0		wt%	1	9/27/2016	R37517
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.0053	0.00063	0.037	J	mg/Kg-dr	1	9/27/2016 10:57:15 AM	27711
EPA METHOD 6010B: SOIL METALS							Analyst: MED	
Antimony	ND	1.1	2.8		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Arsenic	ND	0.99	2.8		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Barium	130	0.080	0.11		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Beryllium	0.69	0.039	0.17		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Cadmium	ND	0.071	0.11		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Chromium	7.7	0.11	0.34		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Cobalt	6.1	0.62	1.7		mg/Kg-dr	5	9/28/2016 11:15:51 PM	27709
Iron	13000	42	140		mg/Kg-dr	50	9/28/2016 11:26:26 PM	27709
Lead	3.4	0.97	1.4		mg/Kg-dr	5	9/28/2016 11:15:51 PM	27709
Manganese	970	0.30	0.56		mg/Kg-dr	5	9/28/2016 11:15:51 PM	27709
Nickel	6.7	0.17	0.56		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Selenium	ND	2.0	2.8		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Silver	ND	0.070	0.28		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Vanadium	17	0.20	2.8		mg/Kg-dr	1	9/28/2016 4:33:17 PM	27709
Zinc	16	1.9	14		mg/Kg-dr	5	9/28/2016 11:15:51 PM	27709
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.93	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Acenaphthylene	ND	0.88	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Aniline	ND	1.0	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Anthracene	ND	0.72	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Azobenzene	ND	1.3	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benz(a)anthracene	ND	0.93	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzo(a)pyrene	ND	0.82	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzo(b)fluoranthene	ND	0.98	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzo(g,h,i)perylene	ND	0.96	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzo(k)fluoranthene	ND	0.96	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzoic acid	2.7	0.90	5.4	JD	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Benzyl alcohol	ND	0.85	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Bis(2-chloroethoxy)methane	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 9/19/2016

Lab ID: 1609B57-010

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Bis(2-chloroethyl)ether	ND	0.80	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Bis(2-chloroisopropyl)ether	ND	0.97	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Bis(2-ethylhexyl)phthalate	ND	0.88	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Bromophenyl phenyl ether	ND	1.0	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Butyl benzyl phthalate	ND	0.96	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Carbazole	ND	0.73	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Chloro-3-methylphenol	ND	1.3	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Chloroaniline	ND	1.2	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Chloronaphthalene	ND	0.85	2.7	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Chlorophenol	ND	0.86	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Chlorophenyl phenyl ether	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Chrysene	ND	0.92	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Di-n-butyl phthalate	ND	0.81	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Di-n-octyl phthalate	ND	0.93	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Dibenz(a,h)anthracene	ND	0.88	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Dibenzofuran	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
1,2-Dichlorobenzene	ND	0.83	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
1,3-Dichlorobenzene	ND	0.84	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
1,4-Dichlorobenzene	ND	0.92	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
3,3'-Dichlorobenzidine	ND	0.80	2.7	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Diethyl phthalate	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Dimethyl phthalate	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4-Dichlorophenol	ND	1.0	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4-Dimethylphenol	ND	1.2	3.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4,6-Dinitro-2-methylphenol	ND	0.66	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4-Dinitrophenol	ND	0.72	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4-Dinitrotoluene	ND	0.97	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,6-Dinitrotoluene	ND	1.1	5.4	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Fluoranthene	ND	0.63	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Fluorene	2.8	0.99	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Hexachlorobenzene	ND	0.86	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Hexachlorobutadiene	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Hexachlorocyclopentadiene	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Hexachloroethane	ND	0.93	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Indeno(1,2,3-cd)pyrene	ND	0.85	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Isophorone	ND	1.2	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
1-Methylnaphthalene	14	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Methylnaphthalene	24	1.3	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Methylphenol	ND	0.91	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 9/19/2016

Lab ID: 1609B57-010

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
3+4-Methylphenol	ND	0.79	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
N-Nitrosodi-n-propylamine	ND	1.0	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
N-Nitrosodiphenylamine	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Naphthalene	4.7	1.0	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Nitroaniline	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
3-Nitroaniline	ND	0.96	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Nitroaniline	ND	0.77	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Nitrobenzene	ND	1.1	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2-Nitrophenol	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
4-Nitrophenol	ND	0.83	2.7	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Pentachlorophenol	ND	0.70	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Phenanthrene	5.1	0.74	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Phenol	ND	0.82	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Pyrene	ND	0.82	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Pyridine	ND	0.86	4.3	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
1,2,4-Trichlorobenzene	ND	1.2	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4,5-Trichlorophenol	ND	1.1	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
2,4,6-Trichlorophenol	ND	0.90	2.2	D	mg/Kg-dr	1	9/29/2016 6:24:03 PM	27700
Surr: 2-Fluorophenol	0	0	35-97.9	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
Surr: Phenol-d5	0	0	37.3-105	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
Surr: 2,4,6-Tribromophenol	0	0	35.6-118	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
Surr: Nitrobenzene-d5	0		41.2-107	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
Surr: 2-Fluorobiphenyl	0		41.9-119	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
Surr: 4-Terphenyl-d14	0		15-132	SD	%Rec	1	9/29/2016 6:24:03 PM	27700
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.74	0.93	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Toluene	0.20	0.11	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Ethylbenzene	0.99	0.15	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Methyl tert-butyl ether (MTBE)	ND	0.58	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2,4-Trimethylbenzene	5.8	0.14	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,3,5-Trimethylbenzene	2.5	0.13	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2-Dichloroethane (EDC)	ND	0.48	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2-Dibromoethane (EDB)	ND	0.13	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Naphthalene	4.1	0.29	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1-Methylnaphthalene	13	0.41	7.4	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
2-Methylnaphthalene	18	0.40	7.4	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Acetone	ND	2.4	28	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Bromobenzene	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Bromodichloromethane	ND	0.11	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 9/19/2016

Lab ID: 1609B57-010

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Bromoform	ND	0.23	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Bromomethane	0.69	0.68	5.6	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
2-Butanone	ND	1.1	19	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Carbon disulfide	ND	0.61	19	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Carbon tetrachloride	ND	0.12	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Chlorobenzene	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Chloroethane	ND	0.37	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Chloroform	ND	0.14	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Chloromethane	ND	0.17	5.6	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
2-Chlorotoluene	ND	0.14	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
4-Chlorotoluene	ND	0.16	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
cis-1,2-DCE	ND	0.11	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
cis-1,3-Dichloropropene	ND	0.17	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2-Dibromo-3-chloropropane	ND	0.57	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Dibromochloromethane	ND	0.17	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Dibromomethane	ND	0.16	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2-Dichlorobenzene	ND	0.16	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,3-Dichlorobenzene	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,4-Dichlorobenzene	ND	0.23	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Dichlorodifluoromethane	ND	0.57	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1-Dichloroethane	ND	0.10	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1-Dichloroethene	ND	0.61	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2-Dichloropropane	ND	0.16	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,3-Dichloropropane	ND	0.21	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
2,2-Dichloropropane	ND	0.11	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1-Dichloropropene	ND	0.15	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Hexachlorobutadiene	ND	0.23	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
2-Hexanone	ND	1.0	19	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Isopropylbenzene	0.50	0.16	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
4-Isopropyltoluene	0.59	0.17	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
4-Methyl-2-pentanone	ND	0.54	19	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Methylene chloride	ND	0.54	5.6	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
n-Butylbenzene	0.87	0.16	5.6	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
n-Propylbenzene	0.98	0.14	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
sec-Butylbenzene	0.67	0.26	1.9	JD	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Styrene	ND	0.17	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
tert-Butylbenzene	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1,1,2-Tetrachloroethane	ND	0.18	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1,2,2-Tetrachloroethane	ND	0.30	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 9/19/2016

Lab ID: 1609B57-010

Matrix: SOIL

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Tetrachloroethene (PCE)	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
trans-1,2-DCE	ND	0.52	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
trans-1,3-Dichloropropene	ND	0.27	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2,3-Trichlorobenzene	ND	0.28	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2,4-Trichlorobenzene	ND	0.20	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1,1-Trichloroethane	ND	0.11	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,1,2-Trichloroethane	ND	0.22	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Trichloroethene (TCE)	ND	0.20	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Trichlorofluoromethane	ND	0.14	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
1,2,3-Trichloropropane	ND	0.32	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Vinyl chloride	ND	0.15	1.9	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Xylenes, Total	9.9	0.35	3.7	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	S37464
Surr: Dibromofluoromethane	102		70-130	D	%Rec	50	9/23/2016 3:38:43 PM	S37464
Surr: 1,2-Dichloroethane-d4	100		70-130	D	%Rec	50	9/23/2016 3:38:43 PM	S37464
Surr: Toluene-d8	97.0		70-130	D	%Rec	50	9/23/2016 3:38:43 PM	S37464
Surr: 4-Bromofluorobenzene	84.4		70-130	D	%Rec	50	9/23/2016 3:38:43 PM	S37464
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	510	28	190	D	mg/Kg-dr	50	9/23/2016 3:38:43 PM	R37464
Surr: BFB	103	0	70-130	D	%Rec	50	9/23/2016 3:38:43 PM	R37464

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: MeOH Blank

Project: SWMU 10

Collection Date:

Lab ID: 1609B57-011

Matrix: MEOH (SOIL) Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.020	0.025		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Toluene	ND	0.0030	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Ethylbenzene	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Methyl tert-butyl ether (MTBE)	ND	0.016	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2,4-Trimethylbenzene	ND	0.0037	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,3,5-Trimethylbenzene	ND	0.0036	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2-Dichloroethane (EDC)	ND	0.013	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2-Dibromoethane (EDB)	ND	0.0036	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Naphthalene	ND	0.0078	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
2-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Acetone	ND	0.065	0.75		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Bromodichloromethane	ND	0.0029	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Bromoform	ND	0.0061	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Bromomethane	0.054	0.018	0.15	J	mg/Kg	1	9/26/2016 1:23:30 PM	S37484
2-Butanone	ND	0.029	0.50		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Carbon tetrachloride	ND	0.0033	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Chlorobenzene	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Chloroethane	ND	0.010	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Chloroform	ND	0.0038	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Chloromethane	ND	0.0044	0.15		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
2-Chlorotoluene	ND	0.0037	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
4-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
cis-1,2-DCE	ND	0.0029	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
cis-1,3-Dichloropropene	ND	0.0046	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2-Dibromo-3-chloropropane	ND	0.015	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Dibromochloromethane	ND	0.0045	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Dibromomethane	ND	0.0043	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2-Dichlorobenzene	ND	0.0044	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,3-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,4-Dichlorobenzene	ND	0.0062	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1-Dichloroethane	ND	0.0027	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1-Dichloroethene	ND	0.016	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2-Dichloropropane	ND	0.0042	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,3-Dichloropropane	ND	0.0057	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
2,2-Dichloropropane	ND	0.0029	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** MeOH Blank**Project:** SWMU 10**Collection Date:****Lab ID:** 1609B57-011**Matrix:** MEOH (SOIL) **Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
1,1-Dichloropropene	ND	0.0040	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Hexachlorobutadiene	ND	0.0061	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
2-Hexanone	ND	0.027	0.50		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Isopropylbenzene	ND	0.0043	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
4-Isopropyltoluene	ND	0.0045	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
4-Methyl-2-pentanone	ND	0.015	0.50		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Methylene chloride	ND	0.014	0.15		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
n-Propylbenzene	ND	0.0038	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
sec-Butylbenzene	ND	0.0069	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Styrene	ND	0.0045	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
tert-Butylbenzene	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1,1,2-Tetrachloroethane	ND	0.0048	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1,2,2-Tetrachloroethane	ND	0.0081	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Tetrachloroethene (PCE)	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
trans-1,2-DCE	ND	0.014	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
trans-1,3-Dichloropropene	ND	0.0073	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2,3-Trichlorobenzene	ND	0.0075	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2,4-Trichlorobenzene	ND	0.0053	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1,1-Trichloroethane	ND	0.0031	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,1,2-Trichloroethane	ND	0.0059	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Trichloroethene (TCE)	ND	0.0054	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Trichlorofluoromethane	ND	0.0037	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
1,2,3-Trichloropropane	ND	0.0086	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Vinyl chloride	ND	0.0041	0.050		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Xylenes, Total	ND	0.0095	0.10		mg/Kg	1	9/26/2016 1:23:30 PM	S37484
Surr: Dibromofluoromethane	113		70-130		%Rec	1	9/26/2016 1:23:30 PM	S37484
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	9/26/2016 1:23:30 PM	S37484
Surr: Toluene-d8	92.3		70-130		%Rec	1	9/26/2016 1:23:30 PM	S37484
Surr: 4-Bromofluorobenzene	92.6		70-130		%Rec	1	9/26/2016 1:23:30 PM	S37484

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: EB091916

Project: SWMU 10

Collection Date: 9/19/2016 4:45:00 PM

Lab ID: 1609B57-012

Matrix: AQUEOUS

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM	
Diesel Range Organics (DRO)	ND	0.69	1.0		mg/L	1	9/26/2016 12:05:18 PM	27667
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	9/26/2016 12:05:18 PM	27667
Surr: DNOP	112	0	77.1-144		%Rec	1	9/26/2016 12:05:18 PM	27667
EPA METHOD 300.0: ANIONS							Analyst: MRA	
Fluoride	ND	0.050	0.10		mg/L	1	9/21/2016 7:36:29 PM	R37390
Chloride	0.11	0.051	0.50	J	mg/L	1	9/21/2016 7:36:29 PM	R37390
Sulfate	ND	0.14	0.50		mg/L	1	9/21/2016 7:36:29 PM	R37390
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	ND	0.0013	0.0020		mg/L	1	9/29/2016 9:56:42 AM	B37552
Beryllium	ND	0.00031	0.0020		mg/L	1	9/29/2016 9:56:42 AM	B37552
Cadmium	ND	0.00075	0.0020		mg/L	1	9/29/2016 9:56:42 AM	B37552
Chromium	ND	0.0018	0.0060		mg/L	1	9/29/2016 9:56:42 AM	B37552
Cobalt	0.0017	0.00074	0.0060	J	mg/L	1	9/29/2016 9:56:42 AM	B37552
Iron	ND	0.020	0.020		mg/L	1	9/29/2016 9:56:42 AM	B37552
Manganese	ND	0.00032	0.0020		mg/L	1	9/29/2016 9:56:42 AM	B37552
Nickel	ND	0.0024	0.010		mg/L	1	9/29/2016 9:56:42 AM	B37552
Silver	ND	0.0028	0.0050		mg/L	1	9/29/2016 9:56:42 AM	B37552
Vanadium	ND	0.0013	0.050		mg/L	1	9/29/2016 9:56:42 AM	B37552
Zinc	ND	0.0028	0.010		mg/L	1	9/29/2016 9:56:42 AM	B37552
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	ND	0.0013	0.0020		mg/L	1	9/29/2016 8:43:04 AM	C37552
Beryllium	ND	0.00036	0.0020		mg/L	1	9/29/2016 8:43:04 AM	C37552
Cadmium	ND	0.0015	0.0020		mg/L	1	9/29/2016 8:43:04 AM	C37552
Chromium	ND	0.0027	0.0060		mg/L	1	9/29/2016 8:43:04 AM	C37552
Cobalt	ND	0.0017	0.0060		mg/L	1	9/29/2016 8:43:04 AM	C37552
Iron	ND	0.020	0.020		mg/L	1	9/29/2016 8:43:04 AM	C37552
Manganese	ND	0.00032	0.0020		mg/L	1	9/29/2016 8:43:04 AM	C37552
Nickel	ND	0.0031	0.010		mg/L	1	9/29/2016 8:43:04 AM	C37552
Silver	ND	0.0028	0.0050		mg/L	1	9/29/2016 8:43:04 AM	C37552
Vanadium	ND	0.0013	0.050		mg/L	1	9/29/2016 8:43:04 AM	C37552
Zinc	ND	0.0027	0.010		mg/L	1	9/29/2016 8:43:04 AM	C37552
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Antimony	ND	0.00047	0.0010		mg/L	1	9/22/2016 10:18:05 PM	B37425
Arsenic	ND	0.00014	0.0010		mg/L	1	9/22/2016 10:18:05 PM	B37425
Lead	ND	0.00017	0.00050		mg/L	1	9/22/2016 10:18:05 PM	B37425
Selenium	ND	0.00021	0.0010		mg/L	1	9/22/2016 10:18:05 PM	B37425
EPA 200.8: METALS							Analyst: JLF	

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

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: EB091916

Project: SWMU 10

Collection Date: 9/19/2016 4:45:00 PM

Lab ID: 1609B57-012

Matrix: AQUEOUS

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: JLF	
Antimony	ND	0.00047	0.0010		mg/L	1	9/29/2016 5:36:46 PM	A37587
Arsenic	ND	0.00021	0.0010		mg/L	1	9/27/2016 5:41:52 PM	A37522
Lead	ND	0.00017	0.00050		mg/L	1	9/27/2016 5:41:52 PM	A37522
Selenium	ND	0.00021	0.0010		mg/L	1	9/27/2016 5:41:52 PM	A37522
EPA METHOD 245.1: MERCURY							Analyst: pmf	
Mercury	0.000069	0.000053	0.00020	J	mg/L	1	9/27/2016 12:47:13 PM	27692
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Acenaphthylene	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Aniline	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Anthracene	ND	2.5	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Azobenzene	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benz(a)anthracene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benzo(a)pyrene	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benzo(b)fluoranthene	ND	2.9	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benzo(g,h,i)perylene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benzo(k)fluoranthene	ND	3.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Benzoic acid	6.2	2.6	20	J	µg/L	1	9/28/2016 2:28:52 PM	27668
Benzyl alcohol	ND	3.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Bis(2-chloroethoxy)methane	ND	2.8	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Bis(2-chloroethyl)ether	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Bis(2-chloroisopropyl)ether	ND	1.9	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Bis(2-ethylhexyl)phthalate	2.7	2.6	10	J	µg/L	1	9/28/2016 2:28:52 PM	27668
4-Bromophenyl phenyl ether	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Butyl benzyl phthalate	ND	2.5	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Carbazole	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4-Chloro-3-methylphenol	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4-Chloroaniline	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Chloronaphthalene	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Chlorophenol	ND	2.2	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4-Chlorophenyl phenyl ether	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Chrysene	ND	2.8	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Di-n-butyl phthalate	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Di-n-octyl phthalate	ND	2.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Dibenz(a,h)anthracene	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Dibenzofuran	ND	2.5	10		µg/L	1	9/28/2016 2:28:52 PM	27668
1,2-Dichlorobenzene	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
1,3-Dichlorobenzene	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** EB091916**Project:** SWMU 10**Collection Date:** 9/19/2016 4:45:00 PM**Lab ID:** 1609B57-012**Matrix:** AQUEOUS**Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
1,4-Dichlorobenzene	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
3,3'-Dichlorobenzidine	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Diethyl phthalate	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Dimethyl phthalate	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2,4-Dichlorophenol	ND	2.3	20		µg/L	1	9/28/2016 2:28:52 PM	27668
2,4-Dimethylphenol	ND	3.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4,6-Dinitro-2-methylphenol	ND	1.8	20		µg/L	1	9/28/2016 2:28:52 PM	27668
2,4-Dinitrophenol	ND	2.8	20		µg/L	1	9/28/2016 2:28:52 PM	27668
2,4-Dinitrotoluene	ND	3.1	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2,6-Dinitrotoluene	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Fluoranthene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Fluorene	ND	2.7	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Hexachlorobenzene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Hexachlorobutadiene	ND	2.2	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Hexachlorocyclopentadiene	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Hexachloroethane	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Indeno(1,2,3-cd)pyrene	ND	3.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Isophorone	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
1-Methylnaphthalene	ND	2.9	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Methylnaphthalene	ND	2.9	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Methylphenol	ND	2.5	10		µg/L	1	9/28/2016 2:28:52 PM	27668
3+4-Methylphenol	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
N-Nitrosodi-n-propylamine	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
N-Nitrosodimethylamine	ND	2.2	10		µg/L	1	9/28/2016 2:28:52 PM	27668
N-Nitrosodiphenylamine	ND	2.3	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Naphthalene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Nitroaniline	ND	2.8	10		µg/L	1	9/28/2016 2:28:52 PM	27668
3-Nitroaniline	ND	2.9	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4-Nitroaniline	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Nitrobenzene	ND	2.8	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2-Nitrophenol	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
4-Nitrophenol	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Pentachlorophenol	ND	2.3	20		µg/L	1	9/28/2016 2:28:52 PM	27668
Phenanthrene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Phenol	ND	2.0	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Pyrene	ND	3.1	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Pyridine	ND	2.2	10		µg/L	1	9/28/2016 2:28:52 PM	27668
1,2,4-Trichlorobenzene	ND	2.6	10		µg/L	1	9/28/2016 2:28:52 PM	27668
2,4,5-Trichlorophenol	ND	2.2	10		µg/L	1	9/28/2016 2:28:52 PM	27668

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: EB091916

Project: SWMU 10

Collection Date: 9/19/2016 4:45:00 PM

Lab ID: 1609B57-012

Matrix: AQUEOUS

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4,6-Trichlorophenol	ND	2.4	10		µg/L	1	9/28/2016 2:28:52 PM	27668
Surr: 2-Fluorophenol	55.7	0	15-123		%Rec	1	9/28/2016 2:28:52 PM	27668
Surr: Phenol-d5	40.1	0	15-124		%Rec	1	9/28/2016 2:28:52 PM	27668
Surr: 2,4,6-Tribromophenol	73.0	0	18.4-134		%Rec	1	9/28/2016 2:28:52 PM	27668
Surr: Nitrobenzene-d5	61.9	0	28.8-134		%Rec	1	9/28/2016 2:28:52 PM	27668
Surr: 2-Fluorobiphenyl	53.6	0	35.9-125		%Rec	1	9/28/2016 2:28:52 PM	27668
Surr: 4-Terphenyl-d14	61.2	0	15-146		%Rec	1	9/28/2016 2:28:52 PM	27668
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.096	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Toluene	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Ethylbenzene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Methyl tert-butyl ether (MTBE)	ND	0.21	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,3,5-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2-Dichloroethane (EDC)	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2-Dibromoethane (EDB)	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Naphthalene	ND	0.093	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1-Methylnaphthalene	ND	0.20	4.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
2-Methylnaphthalene	0.52	0.16	4.0	J	µg/L	1	9/23/2016 4:07:23 PM	W37464
Acetone	ND	4.9	10		µg/L	1	9/23/2016 4:07:23 PM	W37464
Bromobenzene	ND	0.098	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Bromodichloromethane	ND	0.14	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Bromoform	ND	0.10	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Bromomethane	ND	0.78	3.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
2-Butanone	ND	0.74	10		µg/L	1	9/23/2016 4:07:23 PM	W37464
Carbon disulfide	ND	0.60	10		µg/L	1	9/23/2016 4:07:23 PM	W37464
Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Chlorobenzene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Chloroethane	ND	0.19	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Chloroform	ND	0.089	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Chloromethane	ND	0.21	3.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
2-Chlorotoluene	ND	0.40	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
4-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
cis-1,2-DCE	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
cis-1,3-Dichloropropene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2-Dibromo-3-chloropropane	ND	0.23	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Dibromochloromethane	ND	0.087	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Dibromomethane	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2-Dichlorobenzene	ND	0.40	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464

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

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

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** EB091916**Project:** SWMU 10**Collection Date:** 9/19/2016 4:45:00 PM**Lab ID:** 1609B57-012**Matrix:** AQUEOUS**Received Date:** 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
1,3-Dichlorobenzene	ND	0.14	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,4-Dichlorobenzene	ND	0.14	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Dichlorodifluoromethane	ND	0.36	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1-Dichloroethane	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1-Dichloroethene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2-Dichloropropane	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,3-Dichloropropane	ND	0.16	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
2,2-Dichloropropane	ND	0.17	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1-Dichloropropene	ND	0.13	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Hexachlorobutadiene	ND	0.20	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
2-Hexanone	ND	0.84	10		µg/L	1	9/23/2016 4:07:23 PM	W37464
Isopropylbenzene	ND	0.10	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
4-Isopropyltoluene	ND	0.14	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
4-Methyl-2-pentanone	ND	0.43	10		µg/L	1	9/23/2016 4:07:23 PM	W37464
Methylene Chloride	ND	0.19	3.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
n-Butylbenzene	ND	0.16	3.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
n-Propylbenzene	ND	0.13	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
sec-Butylbenzene	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Styrene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
tert-Butylbenzene	ND	0.12	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1,1,2-Tetrachloroethane	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1,2,2-Tetrachloroethane	ND	0.13	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
trans-1,2-DCE	ND	0.40	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
trans-1,3-Dichloropropene	ND	0.10	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2,3-Trichlorobenzene	ND	0.11	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2,4-Trichlorobenzene	ND	0.13	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1,1-Trichloroethane	ND	0.091	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,1,2-Trichloroethane	ND	0.13	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Trichloroethene (TCE)	ND	0.18	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Trichlorofluoromethane	ND	0.20	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
1,2,3-Trichloropropane	ND	0.20	2.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Vinyl chloride	ND	0.20	1.0		µg/L	1	9/23/2016 4:07:23 PM	W37464
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2016 4:07:23 PM	W37464
Surr: 1,2-Dichloroethane-d4	99.3	0	70-130		%Rec	1	9/23/2016 4:07:23 PM	W37464
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	9/23/2016 4:07:23 PM	W37464
Surr: Dibromofluoromethane	106	0	70-130		%Rec	1	9/23/2016 4:07:23 PM	W37464
Surr: Toluene-d8	95.9	0	70-130		%Rec	1	9/23/2016 4:07:23 PM	W37464

EPA METHOD 8015D: GASOLINE RANGEAnalyst: **AG**

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609B57

Date Reported: 10/19/2016

CLIENT: Western Refining Company

Client Sample ID: EB091916

Project: SWMU 10

Collection Date: 9/19/2016 4:45:00 PM

Lab ID: 1609B57-012

Matrix: AQUEOUS

Received Date: 9/20/2016 4:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: AG	
Gasoline Range Organics (GRO)	0.027	0.015	0.050	J	mg/L	1	9/23/2016 4:07:23 PM	G37464
Surr: BFB	101	0	70-130		%Rec	1	9/23/2016 4:07:23 PM	G37464

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Lab ID: B16091850-001

Client Sample ID: 1609B57-001C SWMU 10-23 (2-2.5 Feet)

Collection Date: 09/19/16 11:40

Project: Not Indicated

Date Received: 09/22/16

Matrix: Soil

Report Date: 10/03/16 Revised Date: 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.099	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	7	102988
CYANIDE												
Cyanide, Total	ND	mg/kg		0.25	0.047	SW9012	09/26/16 10:23 / jmg	09/23/16 11:00	SW9010	SFA-201-B_160926A	15	102985

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Lab ID: B16091850-002

Client Sample ID: 1609B57-002C SVMU 10-23 (15-16 Feet)

Collection Date: 09/19/16 11:55

Project: Not Indicated

Date Received: 09/22/16

Matrix: Soil

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	8	102868
CYANIDE												
Cyanide, Total	0.071	mg/kg	J	0.25	0.049	SW9012	09/26/16 10:31 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	18	102985

Report RL - Analyte reporting limit.

Definitions: J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-003C SWMU 10-24 (2-2.5 Feet)

Project: Not Indicated

Matrix: Soil

Lab ID: B16091850-003

Collection Date: 09/19/16 12:55

Date Received: 09/22/16

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	9	102988
CYANIDE												
Cyanide, Total	0.12	mg/kg	J	0.25	0.049	SW9012	09/26/16 10:34 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	19	102985

Report RL - Analyte reporting limit.

Definitions: J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-004C SWMU 10-24 (6-8 Feet)

Project: Not Indicated

Matrix: Soil

Lab ID: B16091850-004

Collection Date: 09/19/16 13:10

Date Received: 09/22/16

Report Date: 10/03/16 Revised Date: 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	10	102988
CYANIDE												
Cyanide, Total	0.19	mg/kg	J	0.25	0.048	SW9012	09/26/16 10:36 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	20	102985

Report RL - Analyte reporting limit.

Definitions: J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-005C SWMU 10-24 (8-10 Feet)

Project: Not Indicated

Matrix: Soil

Lab ID: B16091850-005

Collection Date: 09/19/16 13:25

Date Received: 09/22/16

Report Date: 10/03/16 Revised Date: 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.099	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	11	102988
CYANIDE												
Cyanide, Total	0.15	mg/kg	J	0.25	0.049	SW9012	09/26/16 10:39 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	21	102985

Report Definitions: RL - Analyte reporting limit.

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-006C SVMU 10-24)15-16 Feet)

Project: Not Indicated

Matrix: Soil

Lab ID: B16091850-006

Collection Date: 09/19/16 13:40

Date Received: 09/22/16

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	12	102988
CYANIDE												
Cyanide, Total	ND	mg/kg		0.25	0.049	SW9012	09/26/16 10:42 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	22	102985

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-007C SWMU 10-25 (2-2.5 Feet)

Project: Not Indicated

Matrix: Soil

Lab ID: B16091850-007

Collection Date: 09/19/16 15:45

Date Received: 09/22/16

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.099	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	13	102988
CYANIDE												
Cyanide, Total	0.12	mg/kg	J	0.25	0.048	SW9012	09/26/16 10:45 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	23	102985

Report RL - Analyte reporting limit.

Definitions: J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Lab ID: B16091850-008

Client Sample ID: 1609B57-008C SVMU 10-25 (10-12 Feet)

Collection Date: 09/19/16 16:00

Project: Not Indicated

Date Received: 09/22/16

Matrix: Soil

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	14	102988
CYANIDE												
Cyanide, Total	0.34	mg/kg		0.25	0.045	SW9012	09/26/16 10:47 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	24	102985

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Lab ID: B16091850-009

Client Sample ID: 1609B57-009C SWMU 10-25 (16.5-18 Feet)

Collection Date: 09/19/16 16:15

Project: Not Indicated

Date Received: 09/22/16

Matrix: Soil

Report Date: 10/03/16 Revised Date: 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	15	102988
CYANIDE												
Cyanide, Total	0.076	mg/kg	J	0.25	0.049	SW9012	09/26/16 10:50 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	25	102985

Report Definitions: RL - Analyte reporting limit.

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Client Sample ID: 1609B57-010C SWMU 10 DUP01
Project: Not Indicated
Matrix: Soil

Lab ID: B16091850-010
Collection Date: 09/19/16 16:15
Date Received: 09/22/16
Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE												
Chromium, Hexavalent - Soluble	ND	mg/kg		1.0	0.10	SW7196A	09/23/16 16:15 / ma	09/23/16 11:51	Water Extr	SPEC_160923B	18	102988
CYANIDE												
Cyanide, Total	0.063	mg/kg	J	0.25	0.049	SW9012	09/26/16 11:04 / jmg	09/23/16 11:01	SW9010	SFA-201-B_160926A	28	102985

Report RL - Analyte reporting limit.

Definitions: J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental

Client Sample ID: 1609B57-012H EBO91916

Project: Not Indicated

Matrix: Aqueous

Lab ID: B16091850-011

Collection Date: 09/19/16 16:45

Date Received: 09/22/16

Report Date: 10/03/16 **Revised Date:** 10/11/16

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Cyanide, Total	ND	mg/L		0.005	0.001	Kelada-01	09/23/16 13:42 / jmg			SFA-201-B_160923A : 71		R267573

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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DATES REPORT

Work Order: B16091850
Client: Hall Environmental
Project: Not Indicated
Revised Date: 10/11/16
Report Date: 10/03/16

Lab ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date Method Batch	Analysis Date
B16091850-001A	1609B57-001C SWMU 10-23 (2-2.5 Feet)	9/19/2016 11:40:00 AM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-001A	1609B57-001C SWMU 10-23 (2-2.5 Feet)	9/19/2016 11:40:00 AM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-002A	1609B57-002C SWMU 10-23 (15-16 Feet)	9/19/2016 11:55:00 AM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-002A	1609B57-002C SWMU 10-23 (15-16 Feet)	9/19/2016 11:55:00 AM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-003A	1609B57-003C SWMU 10-24 (2-2.5 Feet)	9/19/2016 12:55:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-003A	1609B57-003C SWMU 10-24 (2-2.5 Feet)	9/19/2016 12:55:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-004A	1609B57-004C SWMU 10-24 (6-8 Feet)	9/19/2016 1:10:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-004A	1609B57-004C SWMU 10-24 (6-8 Feet)	9/19/2016 1:10:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-005A	1609B57-005C SWMU 10-24 (8-10 Feet)	9/19/2016 1:25:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-005A	1609B57-005C SWMU 10-24 (8-10 Feet)	9/19/2016 1:25:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-006A	1609B57-006C SWMU 10-24 (15-16 Feet)	9/19/2016 1:40:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-006A	1609B57-006C SWMU 10-24 (15-16 Feet)	9/19/2016 1:40:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-007A	1609B57-007C SWMU 10-25 (2-2.5 Feet)	9/19/2016 3:45:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-007A	1609B57-007C SWMU 10-25 (2-2.5 Feet)	9/19/2016 3:45:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-008A	1609B57-008C SWMU 10-25 (10-12 Feet)	9/19/2016 4:00:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-008A	1609B57-008C SWMU 10-25 (10-12 Feet)	9/19/2016 4:00:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-009A	1609B57-009C SWMU 10-25 (16.5-18 Feet)	9/19/2016 4:15:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-009A	1609B57-009C SWMU 10-25 (16.5-18 Feet)	9/19/2016 4:15:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-010A	1609B57-010C SWMU 10 DUP01	9/19/2016 4:15:00 PM	Soil	Chromium, Hexavalent		09/23/2016 SW7196A [102988]	9/23/2016
B16091850-010A	1609B57-010C SWMU 10 DUP01	9/19/2016 4:15:00 PM	Soil	Total Cyanide		09/23/2016 SW9012 [102985]	9/26/2016
B16091850-011A	1609B57-012H EBO91916	9/19/2016 4:45:00 PM	Aqueous	Cyanide, Total		NA	9/23/2016



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Client: Hall Environmental
Work Order: B16091850
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT
Prepared by Billings, MT Branch
BatchID: R267573

Date: 03-Oct-16

Run ID :Run Order: SFA-201-B_160923A: 7	SampType: Initial Calibration Verification Standard				Lab ID: ICB		Method: Kelada-01				
Analysis Date: 09/23/16 10:11	Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0991	0.0050	0.1	0	99	90	110				
Associated samples: B16091850-011A											

Run ID :Run Order: SFA-201-B_160923A: 8		SampType: Method Blank		Lab ID: ICB		Method: Kelada-01					
Analysis Date: 09/23/16 10:14		Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	ND	0.001									
Associated samples: B16091850-011A											

Run ID :Run Order: SFA-201-B_160923A: 9		SampType: Laboratory Fortified Blank		Lab ID: LFB		Method: Kelada-01					
Analysis Date: 09/23/16 10:16		Units: mg/L		Prep Info: Prep Date: 4/23/2002		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.104	0.0050	0.1	0	104	90	110				
Associated samples: B16091850-011A											

Run ID :Run Order: SFA-201-B_160923A: 10		SampType: Laboratory Control Sample		Lab ID: LCS1-K4Fe(CN)6		Method: Kelada-01					
Analysis Date: 09/23/16 10:19		Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.197	0.0050	0.2	0	98	90	110				
Associated samples: B16091850-011A											

Run ID :Run Order: SFA-201-B_160923A: 69		SampType: Continuing Calibration Verification Standard			Lab ID: CCV		Method: Kelada-01				
Analysis Date: 09/23/16 13:31		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	103	90	110				
Associated samples: B16091850-011A											

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



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Client: Hall Environmental
Work Order: B16091850
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: R267573

Date: 03-Oct-16

Run ID :Run Order:	SFA-201-B_160923A: 70	SampType:	Continuing Calibration Blank	Lab ID:	CCB	Method:	Kelada-01
Analysis Date:	09/23/16 13:34	Units:	mg/L	Prep Info:	Prep Date:	Prep Method:	
Analyte		Result	0.000800	%REC	LowLimit	HighLimit	RPD Ref Val
		PQL	0.0050	SPK value	SPK Ref Val		
Cyanide, Total					0		
Associated samples: B16091850-011A							

Run ID :Run Order:	SFA-201-B_160923A: 72	SampType:	Sample Matrix Spike	Lab ID:	B16091850-011AMS	Method:	Kelada-01
Analysis Date:	09/23/16 13:45	Units:	mg/L	Prep Info:	Prep Date:	Prep Method:	
Analyte		Result	0.103	%REC	LowLimit	HighLimit	RPD Ref Val
		PQL	0.0050	SPK value	SPK Ref Val		
Cyanide, Total					0.1	0	103
Associated samples: B16091850-011A							

Run ID :Run Order:	SFA-201-B_160923A: 73	SampType:	Sample Matrix Spike Duplicate	Lab ID:	B16091850-011AMS	Method:	Kelada-01
Analysis Date:	09/23/16 13:47	Units:	mg/L	Prep Info:	Prep Date:	Prep Method:	
Analyte		Result	0.104	%REC	LowLimit	HighLimit	RPD Ref Val
		PQL	0.0050	SPK value	SPK Ref Val		
Cyanide, Total					0.1	0	104
Associated samples: B16091850-011A							

Run ID :Run Order:	SFA-201-B_160923A: 83	SampType:	Continuing Calibration Verification Standar	Lab ID:	CCV	Method:	Kelada-01
Analysis Date:	09/23/16 14:17	Units:	mg/L	Prep Info:	Prep Date:	Prep Method:	
Analyte		Result	0.101	%REC	LowLimit	HighLimit	RPD Ref Val
		PQL	0.0050	SPK value	SPK Ref Val		
Cyanide, Total					0.1	0	101
Associated samples: B16091850-011A							

Run ID :Run Order:	SFA-201-B_160923A: 84	SampType:	Continuing Calibration Blank	Lab ID:	CCB	Method:	Kelada-01
Analysis Date:	09/23/16 14:20	Units:	mg/L	Prep Info:	Prep Date:	Prep Method:	
Analyte		Result	0.00290	%REC	LowLimit	HighLimit	RPD Ref Val
		PQL	0.0050	SPK value	SPK Ref Val		
Cyanide, Total					0		
Associated samples: B16091850-011A							

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
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Client: Hall Environmental

Work Order: B16091850

Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: R267640

Date: 03-Oct-16

Run ID :Run Order: SFA-201-B_160926A: 7	SampType: Initial Calibration Verification Standard				Lab ID: ICV		Method: Kelada-01				
Analysis Date: 09/26/16 09:56	Units: mg/L		Prep Info: Prep Date:		Prep Method:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.102	0.0050	0.1	0	102	90	110				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 26		SampType: Continuing Calibration Verification Standard			Lab ID: CCV		Method: Kelada-01				
Analysis Date: 09/26/16 10:53		Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	103	90	110				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 27		SampType: Continuing Calibration Blank		Lab ID: CCB		Method: Kelada-01					
Analysis Date: 09/26/16 10:55		Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.00180	0.0050		0							
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 35		SampType: Continuing Calibration Verification Standard		Lab ID: CCV		Method: Kelada-01					
Analysis Date: 09/26/16 11:22		Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.100	0.0050	0.1	0	100	90	110				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



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Client: Hall Environmental

Work Order: B16091850

Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: 102985

Date: 03-Oct-16

Run ID :Run Order: SFA-201-B_160926A: 12	SampType: Method Blank	Lab ID: MB-102985	Method: SW9012								
Analysis Date: 09/26/16 10:15	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: SW9010								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.05										
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 13	SampType: Laboratory Control Sample	Lab ID: LCS-102985	Method: SW9012								
Analysis Date: 09/26/16 10:18	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: SW9010								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	4.64	0.25	4.998	0.05271	92	60	140				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 16	SampType: Sample Matrix Spike	Lab ID: B16091850-001AMS	Method: SW9012								
Analysis Date: 09/26/16 10:26	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: SW9010								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	4.25	0.25	4.784	0	89	50	150				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 17	SampType: Sample Matrix Spike Duplicate	Lab ID: B16091850-001AMSD	Method: SW9012								
Analysis Date: 09/26/16 10:28	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: SW9010								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	4.20	0.25	4.802	0	87	50	150	4.246	1.1	30	
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SFA-201-B_160926A: 29		SampType: Sample Matrix Spike		Lab ID: B16091850-010AMS		Method: SW9012					
Analysis Date: 09/26/16 11:06		Units: mg/kg		Prep Info: Prep Date: 9/23/2016		Prep Method: SW9010					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	4.76	0.25	5.04	0.06278	93	50	150				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



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Client: Hall Environmental
Work Order: B16091850
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: 102985

Date: 03-Oct-16

Run ID :Run Order: SFA-201-B_160926A: 30		SampType: Sample Matrix Spike Duplicate				Lab ID: B16091850-010AMSD		Method: SW9012			
Analysis Date: 09/26/16 11:09		Units: mg/kg		Prep Info: Prep Date: 9/23/2016		Prep Method: SW9010					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	4.75	0.25	4.972	0.06278	94	50	150	4.761	0.2	30	
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limit	N - Analyte concentration was not sufficiently high to calculate RPD
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	A - Analyte concentration greater than four times the spike amount



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Client: Hall Environmental
Work Order: B16091850
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: 102988

Date: 03-Oct-16

Run ID : Run Order: SPEC_160923B: 5	SampType: Method Blank	Lab ID: MB-102988	Method: SW7196A								
Analysis Date: 09/23/16 16:15	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: Water Extraction								
Analyte	Result	QOL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent - Soluble	ND	0.01									
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SPEC_160923B: 6	SampType: Laboratory Control Sample	Lab ID: LCS-102988	Method: SW7196A								
Analysis Date: 09/23/16 16:15	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: Water Extraction								
Analyte	Result	QOL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent - Soluble	0.643	1.0	1	0	64	50	150				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SPEC_160923B: 16		SampType: Sample Matrix Spike		Lab ID: B16091850-009AMS		Method: SW7196A					
Analysis Date: 09/23/16 16:15		Units: mg/kg		Prep Info: Prep Date:		Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent - Soluble	1.21	1.0	1	0.2042	100	70	130				
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SPEC_160923B: 17		SampType: Sample Matrix Spike Duplicate				Lab ID: B16091850-009AMSD		Method: SW7196A			
Analysis Date: 09/23/16 16:15		Units: mg/kg		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent - Soluble	1.17	1.0	1	0.2042	97	70	130	1.208	3.0	20	
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A											

Run ID :Run Order: SPEC_160923B: 19	SampType: Sample Duplicate	Lab ID: B16091850-010ADUP	Method: SW7196A					
Analysis Date: 09/23/16 16:15	Units: mg/kg	Prep Info: Prep Date: 9/23/2016	Prep Method: Water Extraction					
Analyte	Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent - Soluble	0.487				0		0.432	30
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A								

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limit	N - Analyte concentration was not sufficiently high to calculate RPD
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	A - Analyte concentration greater than four times the spike amount



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Client: Hall Environmental
Work Order: B16091850
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT

Prepared by Billings, MT Branch

BatchID: 102988

Date: 03-Oct-16

Run ID :Run Order: SPEC_160923B: 20	Sample Type: Sample Matrix Spike				Lab ID: B16091850-010APRESPIKEMS	Method: SW7196A
Analysis Date: 09/23/16 16:15	Units: mg/kg				Prep Info: Prep Date: 9/23/2016	Prep Method: Water Extraction
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Chromium, Hexavalent - Soluble	1.30	1.0	1	0.432	87 70 130	
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A						

Run ID :Run Order: SPEC_160923B: 21	Sample Type: Sample Matrix Spike Duplicate				Lab ID: B16091850-010APRESPIKEMSD	Method: SW7196A
Analysis Date: 09/23/16 16:15	Units: mg/kg				Prep Info: Prep Date: 9/23/2016	Prep Method: Water Extraction
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Chromium, Hexavalent - Soluble	1.04	1.0	1	0.432	60 70 130	23 20 SR
Associated samples: B16091850-001A, B16091850-002A, B16091850-003A, B16091850-004A, B16091850-005A, B16091850-006A, B16091850-007A, B16091850-008A, B16091850-009A, B16091850-010A						

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limit	N - Analyte concentration was not sufficiently high to calculate RPD
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	A - Analyte concentration greater than four times the spike amount

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-C	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	C37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168348	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS-C	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	C37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168350	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	101	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.7	85	115			
Cadmium	0.50	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	98.4	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.3	85	115			
Iron	0.49	0.020	0.5000	0	97.9	85	115			
Manganese	0.50	0.0020	0.5000	0	99.2	85	115			
Nickel	0.48	0.010	0.5000	0	96.3	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Vanadium	0.50	0.050	0.5000	0	100	85	115			
Zinc	0.48	0.010	0.5000	0	96.5	85	115			

Sample ID	LLCS-C	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	C37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168351	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0023	0.0020	0.002000	0	114	50	150			
Beryllium	0.0021	0.0020	0.002000	0	106	50	150			
Cadmium	0.0020	0.0020	0.002000	0	98.5	50	150			J
Chromium	0.0051	0.0060	0.006000	0	84.5	50	150			J
Cobalt	0.0068	0.0060	0.006000	0	112	50	150			
Iron	0.020	0.020	0.02000	0	102	50	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LLLCS-C		SampType: LCSLL		TestCode: EPA Method 200.7: Metals					
Client ID:	BatchQC		Batch ID: C37552		RunNo: 37552					
Prep Date:			Analysis Date: 9/29/2016		SeqNo: 1168351		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.0020	0.0020	0.002000	0	101	50	150			
Nickel	0.0048	0.010	0.005000	0	96.4	50	150			J
Silver	0.0053	0.0050	0.005000	0	107	50	150			
Vanadium	0.010	0.050	0.01000	0	101	50	150			J
Zinc	0.0051	0.010	0.005000	0	102	50	150			J

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-B	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	B37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168337	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS-B	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	B37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168344	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.50	0.0020	0.5000	0	101	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.7	85	115			
Cadmium	0.51	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	98.0	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.49	0.020	0.5000	0	97.4	85	115			
Manganese	0.49	0.0020	0.5000	0	98.8	85	115			
Nickel	0.48	0.010	0.5000	0	96.0	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.48	0.010	0.5000	0	96.2	85	115			

Sample ID	LLCS-B	SampType:	LCSLL	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	BatchQC	Batch ID:	B37552	RunNo:	37552					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1168346	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.0027	0.0020	0.002000	0	135	50	150			
Beryllium	0.0020	0.0020	0.002000	0	99.0	50	150			J
Cadmium	0.0022	0.0020	0.002000	0	110	50	150			
Chromium	0.0053	0.0060	0.006000	0	87.7	50	150			J
Cobalt	0.0063	0.0060	0.006000	0	104	50	150			
Iron	0.021	0.020	0.02000	0	105	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LLLCS-B		SampType: LCSLL			TestCode: EPA Method 200.7: Dissolved Metals				
Client ID:	BatchQC		Batch ID: B37552			RunNo: 37552				
Prep Date:			Analysis Date: 9/29/2016			SeqNo: 1168346		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Nickel	0.0052	0.010	0.005000	0	105	50	150			J
Silver	0.0051	0.0050	0.005000	0	102	50	150			
Vanadium	0.0097	0.050	0.01000	0	96.6	50	150			J
Zinc	0.0049	0.010	0.005000	0	98.2	50	150			J

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS			SampType:	LCS			TestCode:	EPA 200.8: Metals			
Client ID:	LCSW			Batch ID:	A37522			RunNo:	37522			
Prep Date:				Analysis Date:	9/27/2016			SeqNo:	1167021		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Arsenic	0.023	0.0010	0.02500	0	90.7	85	115					
Lead	0.012	0.00050	0.01250	0	92.4	85	115					
Selenium	0.023	0.0010	0.02500	0	91.1	85	115					

Sample ID	LLCS			SampType:	LCSLL			TestCode:	EPA 200.8: Metals			
Client ID:	BatchQC			Batch ID:	A37522			RunNo:	37522			
Prep Date:				Analysis Date:	9/27/2016			SeqNo:	1167023		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Arsenic	0.0010	0.0010	0.001000	0	100	50	150					
Lead	0.00049	0.00050	0.0005000	0	97.8	50	150			J		
Selenium	0.00097	0.0010	0.001000	0	97.4	50	150			J		

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID:	PBW	Batch ID: A37522			RunNo: 37522					
Prep Date:		Analysis Date: 9/27/2016			SeqNo: 1167024		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID	LCS		SampType:	LCS		TestCode:	EPA 200.8: Metals				
Client ID:	LCSW		Batch ID:	A37587		RunNo:	37587				
Prep Date:			Analysis Date:	9/29/2016		SeqNo:	1169883		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	0.024	0.0010	0.02500	0	95.4	85	115				

Sample ID	LCSLL		SampType: LCSLL		TestCode: EPA 200.8: Metals					
Client ID:	BatchQC		Batch ID: A37587		RunNo: 37587					
Prep Date:			Analysis Date: 9/29/2016		SeqNo: 1169884		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00076	0.0010	0.001000	0	75.5	50	150			J

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA 200.8: Metals					
Client ID:	PBW	Batch ID:	A37587	RunNo:	37587					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1169886	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	LCSW		Batch ID: B37425		RunNo: 37425					
Prep Date:			Analysis Date: 9/22/2016		SeqNo: 1163315		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.023	0.0010	0.02500	0	92.1	85	115			
Arsenic	0.023	0.0010	0.02500	0	90.1	85	115			
Lead	0.012	0.00050	0.01250	0	93.2	85	115			
Selenium	0.023	0.0010	0.02500	0	90.3	85	115			

Sample ID	LLCS		SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	BatchQC		Batch ID: B37425		RunNo: 37425					
Prep Date:			Analysis Date: 9/22/2016		SeqNo: 1163316		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00067	0.0010	0.001000	0	66.5	50	150			J
Arsenic	0.00091	0.0010	0.001000	0	91.5	50	150			J
Lead	0.00052	0.00050	0.0005000	0	104	50	150			
Selenium	0.00092	0.0010	0.001000	0	91.9	50	150			J

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: B37425			RunNo: 37425					
Prep Date:		Analysis Date: 9/22/2016			SeqNo: 1163317		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609B57-012FMS	SampType:	MS	TestCode:	EPA Method 245.1: Mercury					
Client ID:	EB091916	Batch ID:	27692	RunNo:	37503					
Prep Date:	9/26/2016	Analysis Date:	9/27/2016	SeqNo:	1166110	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0057	0.00020	0.005000	.00006867	112	75	125			

Sample ID	1609B57-012FMSD	SampType:	MSD	TestCode:	EPA Method 245.1: Mercury					
Client ID:	EB091916	Batch ID:	27692	RunNo:	37503					
Prep Date:	9/26/2016	Analysis Date:	9/27/2016	SeqNo:	1166111	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0058	0.00020	0.005000	.00006867	115	75	125	2.35	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType: mblk		TestCode: EPA Method 300.0: Anions						
Client ID:	PBW	Batch ID: R37390		RunNo: 37390						
Prep Date:		Analysis Date: 9/21/2016		SeqNo: 1162083		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID	LCS		SampType: lcs		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSW		Batch ID: R37390		RunNo: 37390					
Prep Date:			Analysis Date: 9/21/2016		SeqNo: 1162084		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Chloride	4.8	0.50	5.000	0	96.8	90	110			
Sulfate	9.9	0.50	10.00	0	98.7	90	110			

Sample ID	1609B57-012EMS		SampType: ms		TestCode: EPA Method 300.0: Anions					
Client ID:	EB091916		Batch ID: R37390		RunNo: 37390					
Prep Date:			Analysis Date: 9/21/2016		SeqNo: 1162126		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	109	74.5	121			
Chloride	4.8	0.50	5.000	0.1061	93.4	81.9	117			
Sulfate	9.7	0.50	10.00	0	96.8	83	118			

Sample ID	1609B57-012EMSD		SampType: msd		TestCode: EPA Method 300.0: Anions					
Client ID:	EB091916		Batch ID: R37390		RunNo: 37390					
Prep Date:			Analysis Date: 9/21/2016		SeqNo: 1162127		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	111	74.5	121	1.41	20	
Chloride	4.8	0.50	5.000	0.1061	94.3	81.9	117	0.932	20	
Sulfate	9.8	0.50	10.00	0	97.6	83	118	0.813	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS-27652		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 27652		RunNo: 37433					
Prep Date:	9/22/2016		Analysis Date: 9/23/2016		SeqNo: 1163639		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.4	62.6	124			
Surr: DNOP	4.0		5.000		79.7	70	130			

Sample ID	MB-27652	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 27652			RunNo: 37433					
Prep Date:	9/22/2016	Analysis Date: 9/23/2016			SeqNo: 1163640		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.4		10.00		94.0	70	130			

Sample ID	LCS-27685		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 27685		RunNo: 37494					
Prep Date:	9/26/2016		Analysis Date: 9/27/2016		SeqNo: 1166208		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.7	62.6	124			
Surr: DNOP	4.5		5.000		90.9	70	130			

Sample ID	MB-27685		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 27685		RunNo: 37494					
Prep Date:	9/26/2016		Analysis Date: 9/27/2016		SeqNo: 1166209		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.0		10.00		90.1	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609B57-012CMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	EB091916	Batch ID:	27667	RunNo:	37473					
Prep Date:	9/23/2016	Analysis Date:	9/26/2016	SeqNo:	1165386	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	115	79.6	148			
Surr: DNOP	0.55		0.5000		109	77.1	144			

Sample ID	1609B57-012CMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	EB091916	Batch ID:	27667	RunNo:	37473					
Prep Date:	9/23/2016	Analysis Date:	9/26/2016	SeqNo:	1165387	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	79.6	148	1.10	20	
Surr: DNOP	0.54		0.5000		107	77.1	144	0	0	

Sample ID	LCS-27667	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW	Batch ID:	27667	RunNo:	37473					
Prep Date:	9/23/2016	Analysis Date:	9/26/2016	SeqNo:	1165395	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	110	63.2	155			
Surr: DNOP	0.53		0.5000		107	77.1	144			

Sample ID	MB-27667	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range					
Client ID:	PBW	Batch ID:	27667	RunNo:	37473					
Prep Date:	9/23/2016	Analysis Date:	9/26/2016	SeqNo:	1165396	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		108	77.1	144			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	LCSS	Batch ID:	S37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164933	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	107	70	130			
Toluene	0.96	0.050	1.000	0	96.0	70	130			
Chlorobenzene	0.93	0.050	1.000	0	93.2	70	130			
1,1-Dichloroethene	0.92	0.050	1.000	0	92.2	70	130			
Trichloroethene (TCE)	0.86	0.050	1.000	0	86.2	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.9	70	130			
Surr: Toluene-d8	0.48		0.5000		97.0	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.6	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	S37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164934	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	0.0048	0.050								J
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	0.028	0.15								J
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	S37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164934	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID rb	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles							
Client ID: PBS	Batch ID: S37464		RunNo: 37464							
Prep Date:	Analysis Date: 9/23/2016		SeqNo: 1164934		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.51		0.5000		101	70	130			
Surr: Toluene-d8	0.46		0.5000		92.2	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.5	70	130			

Sample ID 1609b57-004ams	SampType: MS		TestCode: EPA Method 8260B: Volatiles							
Client ID: SWMU 10-24 (6-8')	Batch ID: S37464		RunNo: 37464							
Prep Date:	Analysis Date: 9/23/2016		SeqNo: 1164936		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15	0.36	14.59	0	104	49.2	155			
Toluene	14	0.73	14.59	0.2464	93.8	52	154			
Chlorobenzene	14	0.73	14.59	0	98.5	53.2	150			
1,1-Dichloroethene	14	0.73	14.59	0	94.8	34.2	163			
Trichloroethene (TCE)	13	0.73	14.59	0	92.5	48.2	151			
Surr: Dibromofluoromethane	7.5		7.294		103	70	130			
Surr: 1,2-Dichloroethane-d4	7.7		7.294		106	70	130			
Surr: Toluene-d8	6.8		7.294		92.6	70	130			
Surr: 4-Bromofluorobenzene	5.8		7.294		79.1	70	130			

Sample ID 1609b57-004amsd	SampType: MSD		TestCode: EPA Method 8260B: Volatiles							
Client ID: SWMU 10-24 (6-8')	Batch ID: S37464		RunNo: 37464							
Prep Date:	Analysis Date: 9/23/2016		SeqNo: 1164937		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15	0.36	14.59	0	103	49.2	155	0.929	20	
Toluene	13	0.73	14.59	0.2464	87.1	52	154	7.26	20	
Chlorobenzene	13	0.73	14.59	0	91.0	53.2	150	7.91	20	
1,1-Dichloroethene	13	0.73	14.59	0	88.1	34.2	163	7.35	20	
Trichloroethene (TCE)	13	0.73	14.59	0	86.8	48.2	151	6.39	20	
Surr: Dibromofluoromethane	7.6		7.294		104	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	8.0		7.294		110	70	130	0	0	
Surr: Toluene-d8	6.7		7.294		91.6	70	130	0	0	
Surr: 4-Bromofluorobenzene	5.9		7.294		80.2	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs		SampType: LCS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LCSS		Batch ID: S37484		RunNo: 37484					
Prep Date:			Analysis Date: 9/26/2016		SeqNo: 1165573		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	111	70	130			
Toluene	0.99	0.050	1.000	0	98.5	70	130			
Chlorobenzene	0.96	0.050	1.000	0	95.8	70	130			
1,1-Dichloroethene	1.1	0.050	1.000	0	107	70	130			
Trichloroethene (TCE)	0.91	0.050	1.000	0	91.1	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.3	70	130			
Surr: Toluene-d8	0.48		0.5000		95.0	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.3	70	130			

Sample ID	rb2	SampType: MBLK			TestCode: EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID: S37484			RunNo: 37484					
Prep Date:		Analysis Date: 9/26/2016			SeqNo: 1165574		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	0.022	0.15								J
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb2	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	S37484	RunNo:	37484					
Prep Date:		Analysis Date:	9/26/2016	SeqNo:	1165574	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID rb2	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles							
Client ID: PBS	Batch ID: S37484		RunNo: 37484							
Prep Date:	Analysis Date: 9/26/2016		SeqNo: 1165574		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		108	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.48		0.5000		95.5	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.1	70	130			

Sample ID 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: S37515		RunNo: 37515							
Prep Date:	Analysis Date: 9/27/2016		SeqNo: 1166836		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	1.000	0	116	70	130			
Toluene	0.95	0.050	1.000	0	94.9	70	130			
Chlorobenzene	0.92	0.050	1.000	0	92.4	70	130			
1,1-Dichloroethene	1.1	0.050	1.000	0	106	70	130			
Trichloroethene (TCE)	0.97	0.050	1.000	0	97.3	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.46		0.5000		91.8	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.5	70	130			

Sample ID rb	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles							
Client ID: PBS	Batch ID: S37515		RunNo: 37515							
Prep Date:	Analysis Date: 9/27/2016		SeqNo: 1166837		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	0.0051	0.050								J
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	S37515	RunNo:	37515					
Prep Date:		Analysis Date:	9/27/2016	SeqNo:	1166837	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	0.030	0.15								J
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID: S37515			RunNo: 37515					
Prep Date:		Analysis Date: 9/27/2016			SeqNo: 1166837		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.58		0.5000		116	70	130			
Surr: 1,2-Dichloroethane-d4	0.54		0.5000		108	70	130			
Surr: Toluene-d8	0.45		0.5000		89.1	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-27629	SampType:	MBLK	TestCode:	Method 8260B/5035LOW: VOLATILES					
Client ID:	PBS	Batch ID:	27629	RunNo:	37389					
Prep Date:	9/21/2016	Analysis Date:	9/21/2016	SeqNo:	1162057	Units:	µg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	2.00								
Toluene	ND	2.00								
Ethylbenzene	ND	2.00								
Methyl tert-butyl ether (MTBE)	ND	2.00								
1,2,4-Trimethylbenzene	ND	2.00								
1,3,5-Trimethylbenzene	ND	2.00								
1,2-Dichloroethane (EDC)	ND	2.00								
1,2-Dibromoethane (EDB)	ND	2.00								
Naphthalene	ND	2.00								
1-Methylnaphthalene	0.360	4.00								J
2-Methylnaphthalene	ND	4.00								
Acetone	ND	10.0								
Bromobenzene	ND	2.00								
Bromodichloromethane	ND	2.00								
Bromoform	ND	2.00								
Bromomethane	ND	3.00								
2-Butanone	ND	10.0								
Carbon disulfide	ND	10.0								
Carbon tetrachloride	ND	2.00								
Chlorobenzene	ND	2.00								
Chloroethane	ND	2.00								
Chloroform	ND	2.00								
Chloromethane	ND	2.00								
2-Chlorotoluene	ND	2.00								
4-Chlorotoluene	ND	2.00								
cis-1,2-DCE	ND	2.00								
cis-1,3-Dichloropropene	ND	2.00								
1,2-Dibromo-3-chloropropane	ND	2.00								
Dibromochloromethane	ND	2.00								
Dibromomethane	ND	2.00								
1,2-Dichlorobenzene	ND	2.00								
1,3-Dichlorobenzene	ND	2.00								
1,4-Dichlorobenzene	ND	2.00								
Dichlorodifluoromethane	ND	2.00								
1,1-Dichloroethane	ND	2.00								
1,1-Dichloroethene	ND	2.00								
1,2-Dichloropropane	ND	2.00								
1,3-Dichloropropane	ND	2.00								
2,2-Dichloropropane	ND	2.00								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-27629		SampType:	MBLK		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	PBS		Batch ID:	27629		RunNo:	37389			
Prep Date:	9/21/2016		Analysis Date:	9/21/2016		SeqNo:	1162057	Units:	µg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	2.00								
Hexachlorobutadiene	ND	2.00								
2-Hexanone	ND	10.0								
Isopropylbenzene	ND	2.00								
4-Isopropyltoluene	ND	2.00								
4-Methyl-2-pentanone	ND	10.0								
Methylene chloride	ND	3.00								
n-Butylbenzene	ND	2.00								
n-Propylbenzene	ND	2.00								
sec-Butylbenzene	ND	2.00								
Styrene	0.320	2.00								J
tert-Butylbenzene	ND	2.00								
1,1,1,2-Tetrachloroethane	ND	2.00								
1,1,2,2-Tetrachloroethane	ND	2.00								
Tetrachloroethene (PCE)	ND	2.00								
trans-1,2-DCE	ND	2.00								
trans-1,3-Dichloropropene	ND	2.00								
1,2,3-Trichlorobenzene	ND	2.00								
1,2,4-Trichlorobenzene	ND	2.00								
1,1,1-Trichloroethane	ND	2.00								
1,1,2-Trichloroethane	ND	2.00								
Trichloroethene (TCE)	ND	2.00								
Trichlorofluoromethane	ND	2.00								
1,2,3-Trichloropropane	ND	2.00								
Vinyl chloride	ND	2.00								
Xylenes, Total	ND	2.00								
Surr: 1,2-Dichloroethane-d4	10.2		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10.2		10.00		102	70	130			
Surr: Dibromofluoromethane	10.1		10.00		101	70	130			
Surr: Toluene-d8	9.98		10.00		99.8	70	130			

Sample ID	LCS-27629		SampType:	LCS		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	LCSS		Batch ID:	27629		RunNo:	37389			
Prep Date:	9/21/2016		Analysis Date:	9/21/2016		SeqNo:	1162061	Units:	µg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.90	2.00	10.00	0	99.0	70	130			
Toluene	9.97	2.00	10.00	0	99.7	70	130			
Chlorobenzene	10.1	2.00	10.00	0	101	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS-27629		SampType: LCS		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	LCSS		Batch ID: 27629		RunNo: 37389					
Prep Date:	9/21/2016		Analysis Date: 9/21/2016		SeqNo: 1162061		Units: µg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	9.83	2.00	10.00	0	98.3	68	129			
Trichloroethene (TCE)	9.94	2.00	10.00	0	99.4	70	130			
Surr: 1,2-Dichloroethane-d4	10.4		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10.2		10.00		102	70	130			
Surr: Dibromofluoromethane	10.3		10.00		103	70	130			
Surr: Toluene-d8	9.91		10.00		99.1	70	130			

Sample ID	LCSD-27629		SampType: LCSD		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	LCSS02		Batch ID: 27629		RunNo: 37389					
Prep Date:	9/21/2016		Analysis Date: 9/21/2016		SeqNo: 1162068		Units: µg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	10.1	2.00	10.00	0	101	70	130	1.80	20	
Toluene	10.0	2.00	10.00	0	100	70	130	0.600	20	
Chlorobenzene	10.1	2.00	10.00	0	101	70	130	0.199	20	
1,1-Dichloroethene	9.92	2.00	10.00	0	99.2	68	129	0.911	20	
Trichloroethene (TCE)	10.0	2.00	10.00	0	100	70	130	0.802	20	
Surr: 1,2-Dichloroethane-d4	10.5		10.00		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	10.0		10.00		100	70	130	0	0	
Surr: Dibromofluoromethane	10.2		10.00		102	70	130	0	0	
Surr: Toluene-d8	9.88		10.00		98.8	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: W37464			RunNo: 37464					
Prep Date:		Analysis Date: 9/23/2016			SeqNo: 1164806		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	19	1.0	20.00	0	96.0	70	130			
Chlorobenzene	19	1.0	20.00	0	93.2	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	92.2	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.2	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.9	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.0	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: W37464			RunNo: 37464					
Prep Date:		Analysis Date: 9/23/2016			SeqNo: 1164807		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	0.11	1.0								J
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	0.42	1.0								J
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	0.24	4.0								J
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	0.17	1.0								J
Chloroethane	0.27	2.0								J
Chloroform	ND	1.0								
Chloromethane	0.50	3.0								J
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	W37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164807	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	0.48	1.0								J
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	W37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164807	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.5	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.2		10.00		92.2	70	130			

Sample ID	1609b57-012ams	SampType:	MS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	EB091916	Batch ID:	W37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164930	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	19	1.0	20.00	0	95.9	70	130			
Chlorobenzene	19	1.0	20.00	0	96.6	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	91.7	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	87.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.6		10.00		96.0	70	130			

Sample ID	1609b57-012amsd	SampType:	MSD	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	EB091916	Batch ID:	W37464	RunNo:	37464					
Prep Date:		Analysis Date:	9/23/2016	SeqNo:	1164931	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130	2.78	20	
Toluene	18	1.0	20.00	0	92.0	70	130	4.12	20	
Chlorobenzene	18	1.0	20.00	0	90.3	70	130	6.82	20	
1,1-Dichloroethene	18	1.0	20.00	0	88.0	70	130	4.17	20	
Trichloroethene (TCE)	17	1.0	20.00	0	85.4	70	130	2.28	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		104	70	130	0	0	
Surr: Toluene-d8	9.5		10.00		95.3	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-27700	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	27700	RunNo:	37545					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1168037	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.11	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.077	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-27700	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	27700	RunNo:	37545					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1168037	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		77.4	35	97.9			
Surr: Phenol-d5	2.5		3.330		74.9	37.3	105			
Surr: 2,4,6-Tribromophenol	2.6		3.330		77.8	35.6	118			
Surr: Nitrobenzene-d5	1.0		1.670		62.6	41.2	107			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.3	41.9	119			
Surr: 4-Terphenyl-d14	0.90		1.670		53.9	15	132			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-27700		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 27700		RunNo: 37577					
Prep Date:	9/26/2016		Analysis Date: 9/29/2016		SeqNo: 1169435		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.7	0.20	1.670	0	99.8	45.8	99.8			S
4-Chloro-3-methylphenol	3.3	0.50	3.330	0	99.1	51.5	103			
2-Chlorophenol	3.2	0.20	3.330	0	96.3	46.5	105			
1,4-Dichlorobenzene	1.6	0.20	1.670	0	98.8	45.5	103			
2,4-Dinitrotoluene	1.6	0.50	1.670	0	92.9	36	87.2			S
N-Nitrosodi-n-propylamine	1.6	0.20	1.670	0	94.1	47.3	104			
4-Nitrophenol	3.1	0.25	3.330	0	93.5	47.3	95.3			
Pentachlorophenol	3.1	0.40	3.330	0	91.8	38.7	89.3			S
Phenol	3.5	0.20	3.330	0	105	47.8	106			
Pyrene	1.7	0.20	1.670	0	101	33.4	105			
1,2,4-Trichlorobenzene	1.7	0.20	1.670	0	103	50.4	115			
Surr: 2-Fluorophenol	2.8		3.330		84.3	35	97.9			
Surr: Phenol-d5	3.0		3.330		91.3	37.3	105			
Surr: 2,4,6-Tribromophenol	3.0		3.330		91.2	35.6	118			
Surr: Nitrobenzene-d5	1.3		1.670		77.5	41.2	107			
Surr: 2-Fluorobiphenyl	1.3		1.670		78.5	41.9	119			
Surr: 4-Terphenyl-d14	1.2		1.670		68.9	15	132			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-27668	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBW	Batch ID:	27668	RunNo:	37545					
Prep Date:	9/23/2016	Analysis Date:	9/28/2016	SeqNo:	1168035	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	5.0	20								J
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	2.9	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-27668		SampType:	MBLK		TestCode:	EPA Method 8270C: Semivolatiles			
Client ID:	PBW		Batch ID:	27668		RunNo:	37545			
Prep Date:	9/23/2016		Analysis Date:	9/28/2016		SeqNo:	1168035		Units:	µg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	120		200.0		58.5	15	123			
Surr: Phenol-d5	81		200.0		40.6	4.13	124			
Surr: 2,4,6-Tribromophenol	150		200.0		74.1	18.4	134			
Surr: Nitrobenzene-d5	67		100.0		67.1	28.8	134			
Surr: 2-Fluorobiphenyl	52		100.0		52.4	35.9	125			
Surr: 4-Terphenyl-d14	64		100.0		64.2	15	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-27668		SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles				
Client ID:	LCSW		Batch ID: 27668			RunNo: 37545				
Prep Date:	9/23/2016		Analysis Date: 9/28/2016			SeqNo: 1168036		Units: µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	71	10	100.0	0	71.3	35	113			
4-Chloro-3-methylphenol	170	10	200.0	0	83.3	40.7	114			
2-Chlorophenol	150	10	200.0	0	72.9	37.6	113			
1,4-Dichlorobenzene	60	10	100.0	0	60.2	37.7	106			
2,4-Dinitrotoluene	71	10	100.0	0	70.6	37	91			
N-Nitrosodi-n-propylamine	79	10	100.0	0	78.8	45.4	105			
4-Nitrophenol	120	10	200.0	0	61.2	33.4	104			
Pentachlorophenol	140	20	200.0	0	68.9	29.5	94.9			
Phenol	120	10	200.0	0	62.3	30.6	119			
Pyrene	75	10	100.0	0	74.8	26.2	120			
1,2,4-Trichlorobenzene	66	10	100.0	0	66.4	39.9	125			
Surr: 2-Fluorophenol	140		200.0		68.6	15	123			
Surr: Phenol-d5	120		200.0		60.9	4.13	124			
Surr: 2,4,6-Tribromophenol	160		200.0		80.3	18.4	134			
Surr: Nitrobenzene-d5	67		100.0		66.7	28.8	134			
Surr: 2-Fluorobiphenyl	60		100.0		60.1	35.9	125			
Surr: 4-Terphenyl-d14	57		100.0		57.0	15	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-27711		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 27711		RunNo: 37501					
Prep Date:	9/26/2016		Analysis Date: 9/27/2016		SeqNo: 1166033		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033								

Sample ID	LCS-27711			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	27711		RunNo:	37501			
Prep Date:	9/26/2016			Analysis Date:	9/27/2016		SeqNo:	1166034		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1667	0	105	80	120				

Sample ID	1609B57-001BMS		SampType:	MS		TestCode:	EPA Method 7471: Mercury				
Client ID:	SWMU 10-23 (2-2.5')		Batch ID:	27711		RunNo:	37501				
Prep Date:	9/26/2016		Analysis Date:	9/27/2016		SeqNo:	1166036		Units:	mg/Kg-dry	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.21	0.037	0.1855	0.007182	108	75	125				

Sample ID	1609B57-001BMSD		SampType:	MSD		TestCode:	EPA Method 7471: Mercury				
Client ID:	SWMU 10-23 (2-2.5')		Batch ID:	27711		RunNo:	37501				
Prep Date:	9/26/2016		Analysis Date:	9/27/2016		SeqNo:	1166037		Units:	mg/Kg-dry	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.20	0.037	0.1871	0.007182	104	75	125	2.51	20		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-27709	SampType:	MBLK	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	PBS	Batch ID:	27709	RunNo:	37544					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1167783	Units:	mg/Kg			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Manganese	0.066	0.10								J
Nickel	0.20	0.50								J
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								

Sample ID	LCS-27709	SampType:	LCS	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LCSS	Batch ID:	27709	RunNo:	37544					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1167784	Units:	mg/Kg			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	22	2.5	25.00	0	88.9	80	120			
Arsenic	21	2.5	25.00	0	82.9	80	120			
Barium	22	0.10	25.00	0	88.3	80	120			
Beryllium	23	0.15	25.00	0	90.1	80	120			
Cadmium	23	0.10	25.00	0	90.9	80	120			
Chromium	22	0.30	25.00	0	86.0	80	120			
Manganese	22	0.10	25.00	0	89.3	80	120			
Nickel	22	0.50	25.00	0	86.4	80	120			
Selenium	22	2.5	25.00	0	89.7	80	120			
Silver	4.7	0.25	5.000	0	93.2	80	120			
Vanadium	23	2.5	25.00	0	90.8	80	120			

Sample ID	MB-27709	SampType:	MBLK	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	PBS	Batch ID:	27709	RunNo:	37544					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1167951	Units:	mg/Kg			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.25								
Zinc	0.39	2.5								J

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS-27709		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 27709		RunNo: 37544					
Prep Date:	9/26/2016		Analysis Date: 9/28/2016		SeqNo: 1167952		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	23	0.30	25.00	0	92.8	80	120			
Iron	25	2.5	25.00	0	98.4	80	120			
Lead	23	0.25	25.00	0	91.8	80	120			
Zinc	23	2.5	25.00	0	93.0	80	120			

Sample ID	1609B57-001BMS		SampType: MS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	SWMU 10-23 (2-2.5')		Batch ID: 27709		RunNo: 37544					
Prep Date:	9/26/2016		Analysis Date: 9/28/2016		SeqNo: 1167955		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	13	5.5	27.64	0	48.0	75	125			S
Arsenic	20	5.5	27.64	0	70.9	75	125			S
Barium	230	0.22	27.64	222.0	39.3	75	125			S
Beryllium	23	0.33	27.64	1.115	79.2	75	125			
Cadmium	23	0.22	27.64	0	83.2	75	125			
Chromium	36	0.66	27.64	14.41	78.1	75	125			
Cobalt	28	0.66	27.64	6.815	76.2	75	125			
Lead	23	0.55	27.64	2.558	72.9	75	125			S
Manganese	340	0.22	27.64	451.2	-407	75	125			S
Nickel	32	1.1	27.64	11.88	73.0	75	125			S
Selenium	17	5.5	27.64	0	60.5	75	125			S
Silver	4.5	0.55	5.528	0	81.4	75	125			
Vanadium	46	5.5	27.64	23.24	80.8	75	125			
Zinc	42	5.5	27.64	21.23	74.9	75	125			S

Sample ID	1609B57-001BMSD		SampType: MSD		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	SWMU 10-23 (2-2.5')		Batch ID: 27709		RunNo: 37544					
Prep Date:	9/26/2016		Analysis Date: 9/28/2016		SeqNo: 1167956		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	13	5.6	28.07	0	48.1	75	125	1.72	20	S
Arsenic	22	5.6	28.07	0	78.8	75	125	12.1	20	
Barium	300	0.22	28.07	222.0	295	75	125	26.7	20	RS
Beryllium	25	0.34	28.07	1.115	83.5	75	125	6.49	20	
Cadmium	25	0.22	28.07	0	87.7	75	125	6.77	20	
Chromium	39	0.67	28.07	14.41	87.5	75	125	7.94	20	
Cobalt	30	0.67	28.07	6.815	82.9	75	125	7.59	20	
Lead	24	0.56	28.07	2.558	75.0	75	125	3.94	20	
Manganese	400	0.22	28.07	451.2	-195	75	125	15.7	20	S
Nickel	35	1.1	28.07	11.88	82.7	75	125	9.06	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609B57-001BMSD	SampType:	MSD	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	SWMU 10-23 (2-2.5')	Batch ID:	27709	RunNo:	37544					
Prep Date:	9/26/2016	Analysis Date:	9/28/2016	SeqNo:	1167956	Units:	mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	17	5.6	28.07	0	59.2	75	125	0.758	20	S
Silver	4.8	0.56	5.614	0	86.0	75	125	7.05	20	
Vanadium	49	5.6	28.07	23.24	92.5	75	125	7.68	20	
Zinc	45	5.6	28.07	21.23	86.2	75	125	8.03	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID 2.5ug gro lcs	SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: LCSS	Batch ID: R37464			RunNo: 37464						
Prep Date:	Analysis Date: 9/23/2016			SeqNo: 1164944			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.9	62.9	123			
Surr: BFB	490		500.0		98.8	70	130			

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: PBS	Batch ID: R37464			RunNo: 37464						
Prep Date:	Analysis Date: 9/23/2016			SeqNo: 1164945			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	460		500.0		92.4	70	130			

Sample ID 1609B57-001BMS	SampType: MS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: SWMU 10-23 (2-2.5')	Batch ID: R37464			RunNo: 37464						
Prep Date:	Analysis Date: 9/23/2016			SeqNo: 1164946			Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	3.6	18.11	0.5795	90.6	52.3	132			
Surr: BFB	370		362.2		102	70	130			

Sample ID 1609B57-001BMSD	SampType: MSD			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: SWMU 10-23 (2-2.5')	Batch ID: R37464			RunNo: 37464						
Prep Date:	Analysis Date: 9/23/2016			SeqNo: 1164947			Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	16	3.6	18.11	0.5795	85.4	52.3	132	5.70	20	
Surr: BFB	380		362.2		104	70	130	0	0	

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: PBS	Batch ID: G37576			RunNo: 37576						
Prep Date:	Analysis Date: 9/29/2016			SeqNo: 1169458			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	480		500.0		95.9	70	130			

Sample ID 2.5ug gro lcs	SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID: LCSS	Batch ID: G37576			RunNo: 37576						
Prep Date:	Analysis Date: 9/29/2016			SeqNo: 1169460			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	2.5ug gro lcs	SampType:	LCS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS	Batch ID:	G37576	RunNo:	37576					
Prep Date:		Analysis Date:	9/29/2016	SeqNo:	1169460	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.4	62.9	123			
Surr: BFB	510		500.0		102	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609B57

19-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	2.5ug gro lcs		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: G37464		RunNo: 37464					
Prep Date:			Analysis Date: 9/23/2016		SeqNo: 1164962		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	96.9	75.4	118			
Surr: BFB	9.9		10.00		98.8	70	130			

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID: G37464			RunNo: 37464					
Prep Date:		Analysis Date: 9/23/2016			SeqNo: 1164963		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	9.2		10.00		92.4	70	130			

Sample ID	1609B57-012BMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	EB091916		Batch ID: G37464		RunNo: 37464					
Prep Date:			Analysis Date: 9/23/2016		SeqNo: 1164964		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0.02660	86.8	53.8	128			
Surr: BFB	9.7		10.00		97.1	70	130			

Sample ID	1609B57-012BMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	EB091916		Batch ID:	G37464		RunNo:	37464				
Prep Date:			Analysis Date:	9/23/2016		SeqNo:	1164965		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0.02660	84.7	53.8	128	2.33	20		
Surr: BFB	10		10.00		103	70	130	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified



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

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1609B57

RcptNo: 1

Received by/date: AJ 09/20/16

Logged By: Michelle Garcia 9/20/2016 4:17:00 PM

Michelle Garcia

Completed By: Michelle Garcia 9/21/2016 11:07:18 AM

Michelle Garcia

Reviewed By: AJ 09/21/16

Chain of Custody

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

Log In

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

of preserved bottles checked for pH: 3
(2 or >12 unless noted)
Adjusted? NO
Checked by: LC

Special Handling (if applicable)

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

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

17. Additional remarks:

18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

[illegible]

Any sub-contracted data will be clearly notated on the analytical report. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10
METALS AND CYANIDE ANALYSES FOR SOIL SAMPLES

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10
METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES
AND WATER QA/QC SAMPLES
TOTAL METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
~~Chromium VI~~	~~SW-846 Method 3060A~~
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

~~87~~ - 9/20/16

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES
AND WATER QA/QC SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0



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

October 06, 2016

Ed Riege

Western Refining Company

Rt. 3 Box 7

Gallup, NM 87301

TEL: (505) 722-0231

FAX

RE: SWMU 10

OrderNo.: 1609C66

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/21/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25-GW

Project: SWMU 10

Collection Date: 9/21/2016 8:50:00 AM

Lab ID: 1609C66-001

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: TOM
TPH-DRO	Diesel Range Organics (DRO)	20	0.69	1.0		mg/L	1	9/26/2016 4:19:48 PM
TPH-MRO	Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	9/26/2016 4:19:48 PM
117-84-0	Surr: DNOP	119		0.7.1-144		%Rec	1	9/26/2016 4:19:48 PM
EPA METHOD 300.0: ANIONS								Analyst: MRA
16984-48-8	Fluoride	ND	0.25	0.50		mg/L	5	9/22/2016 11:32:06 AM
16887-00-6	Chloride	1800	10	100		mg/L	200	9/26/2016 10:29:25 PM
14808-79-8	Sulfate	110	0.71	2.5		mg/L	5	9/22/2016 11:32:06 AM
EPA METHOD 200.7: DISSOLVED METALS								Analyst: ELS
7440-39-3	Barium	1.4	0.0066	0.010		mg/L	5	9/29/2016 10:02:57 AM
7440-41-7	Beryllium	ND	0.00031	0.0020		mg/L	1	9/29/2016 10:01:03 AM
7440-43-9	Cadmium	ND	0.00075	0.0020		mg/L	1	9/29/2016 10:01:03 AM
7440-47-3	Chromium	ND	0.0018	0.0060		mg/L	1	9/29/2016 10:01:03 AM
7440-48-4	Cobalt	0.0049	0.00074	0.0060	J	mg/L	1	9/29/2016 10:01:03 AM
7439-89-6	Iron	0.23	0.020	0.020		mg/L	1	9/29/2016 10:01:03 AM
7439-96-5	Manganese	2.1	0.0016	0.010	*	mg/L	5	9/29/2016 10:02:57 AM
7440-02-0	Nickel	0.076	0.0024	0.010		mg/L	1	9/29/2016 10:01:03 AM
7440-22-4	Silver	ND	0.0028	0.0050		mg/L	1	9/29/2016 10:01:03 AM
7440-62-2	Vanadium	0.0030	0.0013	0.050	J	mg/L	1	9/29/2016 10:01:03 AM
7440-66-6	Zinc	0.0049	0.0028	0.010	J	mg/L	1	9/29/2016 10:01:03 AM
EPA METHOD 200.7: METALS								Analyst: ELS
7440-39-3	Barium	1.1	0.0066	0.010		mg/L	5	10/4/2016 5:40:05 PM
7440-41-7	Beryllium	0.00043	0.00036	0.0020	J	mg/L	1	10/4/2016 5:38:13 PM
7440-43-9	Cadmium	ND	0.0015	0.0020		mg/L	1	10/4/2016 5:38:13 PM
7440-47-3	Chromium	ND	0.0027	0.0060		mg/L	1	10/4/2016 5:38:13 PM
7440-48-4	Cobalt	0.0033	0.0017	0.0060	J	mg/L	1	10/4/2016 5:38:13 PM
7439-89-6	Iron	1.9	0.10	0.10	*	mg/L	5	10/4/2016 5:40:05 PM
7439-96-5	Manganese	2.1	0.0016	0.010	*	mg/L	5	10/4/2016 5:40:05 PM
7440-02-0	Nickel	0.059	0.0031	0.010		mg/L	1	10/4/2016 5:38:13 PM
7440-22-4	Silver	ND	0.0028	0.0050		mg/L	1	10/4/2016 5:38:13 PM
7440-62-2	Vanadium	0.0068	0.0013	0.050	J	mg/L	1	10/4/2016 5:38:13 PM
7440-66-6	Zinc	0.0097	0.0027	0.010	J	mg/L	1	10/4/2016 5:38:13 PM
EPA 200.8: DISSOLVED METALS								Analyst: JLF
7440-36-0	Antimony	ND	0.0024	0.0050		mg/L	5	9/28/2016 5:28:10 PM
7440-38-2	Arsenic	0.017	0.00069	0.0050	*	mg/L	5	9/28/2016 5:28:10 PM
7439-92-1	Lead	ND	0.00017	0.00050		mg/L	1	9/28/2016 5:23:01 PM
7782-49-2	Selenium	0.039	0.0011	0.0050		mg/L	5	9/28/2016 5:28:10 PM
EPA 200.8: METALS								Analyst: JLF

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25-GW

Project: SWMU 10

Collection Date: 9/21/2016 8:50:00 AM

Lab ID: 1609C66-001

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	'QL	Qual	Units	DF	Date Analyzed
EPA 200.8: METALS								Analyst: JLF
7440-36-0	Antimony	0.00056	0.00047	0.0010	J	mg/L	1	10/3/2016 1:17:40 PM
7440-38-2	Arsenic	0.017	0.0011	0.0050	*	mg/L	5	10/3/2016 2:18:14 PM
7439-92-1	Lead	0.0021	0.00017	0.00050		mg/L	1	10/3/2016 1:17:40 PM
7782-49-2	Selenium	0.041	0.011	0.050	J	mg/L	50	10/3/2016 2:23:22 PM
EPA METHOD 245.1: MERCURY								Analyst: pmf
7439-97-6	Mercury	0.000085	0.000053	0.00020	J	mg/L	1	9/27/2016 3:40:17 PM
EPA METHOD 8270C: SEMIVOLATILES								Analyst: DAM
83-32-9	Acenaphthene	6.5	2.6	10	J	µg/L	1	9/28/2016 2:56:46 PM
208-96-8	Acenaphthylene	ND	2.4	10		µg/L	1	9/28/2016 2:56:46 PM
62-53-3	Aniline	ND	2.4	10		µg/L	1	9/28/2016 2:56:46 PM
120-12-7	Anthracene	ND	2.5	10		µg/L	1	9/28/2016 2:56:46 PM
103-33-3	Azobenzene	ND	2.7	10		µg/L	1	9/28/2016 2:56:46 PM
56-55-3	Benz(a)anthracene	ND	2.6	10		µg/L	1	9/28/2016 2:56:46 PM
50-32-8	Benzo(a)pyrene	ND	2.7	10		µg/L	1	9/28/2016 2:56:46 PM
205-99-2	Benzo(b)fluoranthene	ND	2.9	10		µg/L	1	9/28/2016 2:56:46 PM
191-24-2	Benzo(g,h,i)perylene	ND	2.6	10		µg/L	1	9/28/2016 2:56:46 PM
207-08-9	Benzo(k)fluoranthene	ND	3.0	10		µg/L	1	9/28/2016 2:56:46 PM
65-85-0	Benzoic acid	ND	2.6	20		µg/L	1	9/28/2016 2:56:46 PM
100-51-6	Benzyl alcohol	ND	3.0	10		µg/L	1	9/28/2016 2:56:46 PM
111-91-1	Bis(2-chloroethoxy)methane	ND	2.8	10		µg/L	1	9/28/2016 2:56:46 PM
111-44-4	Bis(2-chloroethyl)ether	ND	2.7	10		µg/L	1	9/28/2016 2:56:46 PM
108-60-1	Bis(2-chloroisopropyl)ether	ND	1.9	10		µg/L	1	9/28/2016 2:56:46 PM
117-81-7	Bis(2-ethylhexyl)phthalate	2.8	2.6	10	J	µg/L	1	9/28/2016 2:56:46 PM
101-55-3	4-Bromophenyl phenyl ether	ND	2.6	10		µg/L	1	9/28/2016 2:56:46 PM
85-68-7	Butyl benzyl phthalate	ND	2.5	10		µg/L	1	9/28/2016 2:56:46 PM
86-74-8	Carbazole	3.2	2.3	10	J	µg/L	1	9/28/2016 2:56:46 PM
59-50-7	4-Chloro-3-methylphenol	ND	2.6	10		µg/L	1	9/28/2016 2:56:46 PM
106-47-8	4-Chloroaniline	ND	2.7	10		µg/L	1	9/28/2016 2:56:46 PM
91-58-7	2-Chloronaphthalene	ND	2.3	10		µg/L	1	9/28/2016 2:56:46 PM
95-57-8	2-Chlorophenol	ND	2.2	10		µg/L	1	9/28/2016 2:56:46 PM
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.6	10		µg/L	1	9/28/2016 2:56:46 PM
218-01-9	Chrysene	ND	2.8	10		µg/L	1	9/28/2016 2:56:46 PM
84-74-2	Di-n-butyl phthalate	ND	2.4	10		µg/L	1	9/28/2016 2:56:46 PM
117-84-0	Di-n-octyl phthalate	ND	2.0	10		µg/L	1	9/28/2016 2:56:46 PM
53-70-3	Dibenz(a,h)anthracene	ND	2.7	10		µg/L	1	9/28/2016 2:56:46 PM
132-64-9	Dibenzofuran	ND	2.5	10		µg/L	1	9/28/2016 2:56:46 PM
95-50-1	1,2-Dichlorobenzene	ND	2.3	10		µg/L	1	9/28/2016 2:56:46 PM
541-73-1	1,3-Dichlorobenzene	ND	2.3	10		µg/L	1	9/28/2016 2:56:46 PM
106-46-7	1,4-Dichlorobenzene	ND	2.4	10		µg/L	1	9/28/2016 2:56:46 PM
91-94-1	3,3'-Dichlorobenzidine	ND	2.4	10		µg/L	1	9/28/2016 2:56:46 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25-GW

Project: SWMU 10

Collection Date: 9/21/2016 8:50:00 AM

Lab ID: 1609C66-001

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	'QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES								Analyst: DAM
84-66-2	Diethyl phthalate	ND	2.7	10	µg/L	1		9/28/2016 2:56:46 PM
131-11-3	Dimethyl phthalate	ND	2.4	10	µg/L	1		9/28/2016 2:56:46 PM
120-83-2	2,4-Dichlorophenol	ND	2.3	20	µg/L	1		9/28/2016 2:56:46 PM
105-67-9	2,4-Dimethylphenol	1100	60	200	µg/L	20		9/29/2016 8:44:29 PM
534-52-1	4,6-Dinitro-2-methylphenol	ND	1.8	20	µg/L	1		9/28/2016 2:56:46 PM
51-28-5	2,4-Dinitrophenol	ND	2.8	20	µg/L	1		9/28/2016 2:56:46 PM
121-14-2	2,4-Dinitrotoluene	ND	3.1	10	µg/L	1		9/28/2016 2:56:46 PM
606-20-2	2,6-Dinitrotoluene	ND	2.7	10	µg/L	1		9/28/2016 2:56:46 PM
206-44-0	Fluoranthene	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
86-73-7	Fluorene	8.7	2.7	10	J µg/L	1		9/28/2016 2:56:46 PM
118-74-1	Hexachlorobenzene	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
87-68-3	Hexachlorobutadiene	ND	2.2	10	µg/L	1		9/28/2016 2:56:46 PM
77-47-4	Hexachlorocyclopentadiene	ND	2.3	10	µg/L	1		9/28/2016 2:56:46 PM
67-72-1	Hexachloroethane	ND	2.4	10	µg/L	1		9/28/2016 2:56:46 PM
193-39-5	Indeno(1,2,3-cd)pyrene	ND	3.0	10	µg/L	1		9/28/2016 2:56:46 PM
78-59-1	Isophorone	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
90-12-0	1-Methylnaphthalene	120	2.9	10	µg/L	1		9/28/2016 2:56:46 PM
91-57-6	2-Methylnaphthalene	180	2.9	10	µg/L	1		9/28/2016 2:56:46 PM
95-48-7	2-Methylphenol	2600	51	200	µg/L	20		9/29/2016 8:44:29 PM
65794-96-9	3+4-Methylphenol	6.2	2.3	10	J µg/L	1		9/28/2016 2:56:46 PM
621-64-7	N-Nitrosodi-n-propylamine	ND	2.4	10	µg/L	1		9/28/2016 2:56:46 PM
62-75-9	N-Nitrosodimethylamine	ND	2.2	10	µg/L	1		9/28/2016 2:56:46 PM
86-30-6	N-Nitrosodiphenylamine	ND	2.3	10	µg/L	1		9/28/2016 2:56:46 PM
91-20-3	Naphthalene	170	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
88-74-4	2-Nitroaniline	ND	2.8	10	µg/L	1		9/28/2016 2:56:46 PM
99-09-2	3-Nitroaniline	ND	2.9	10	µg/L	1		9/28/2016 2:56:46 PM
100-01-6	4-Nitroaniline	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
98-95-3	Nitrobenzene	ND	2.8	10	µg/L	1		9/28/2016 2:56:46 PM
88-75-5	2-Nitrophenol	ND	2.4	10	µg/L	1		9/28/2016 2:56:46 PM
100-02-7	4-Nitrophenol	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
87-86-5	Pentachlorophenol	ND	2.3	20	µg/L	1		9/28/2016 2:56:46 PM
85-01-8	Phenanthrene	5.7	2.6	10	J µg/L	1		9/28/2016 2:56:46 PM
108-95-2	Phenol	ND	2.0	10	µg/L	1		9/28/2016 2:56:46 PM
129-00-0	Pyrene	ND	3.1	10	µg/L	1		9/28/2016 2:56:46 PM
110-86-1	Pyridine	ND	2.2	10	µg/L	1		9/28/2016 2:56:46 PM
120-82-1	1,2,4-Trichlorobenzene	ND	2.6	10	µg/L	1		9/28/2016 2:56:46 PM
95-95-4	2,4,5-Trichlorophenol	ND	2.2	10	µg/L	1		9/28/2016 2:56:46 PM
88-06-2	2,4,6-Trichlorophenol	ND	2.4	10	µg/L	1		9/28/2016 2:56:46 PM
367-12-4	Surr: 2-Fluorophenol	27.4	0	15-123	%Rec	1		9/28/2016 2:56:46 PM
4165-62-2	Surr: Phenol-d5	30.6	0	15-124	%Rec	1		9/28/2016 2:56:46 PM
118-79-6	Surr: 2,4,6-Tribromophenol	50.6	0	8.4-134	%Rec	1		9/28/2016 2:56:46 PM
4165-60-0	Surr: Nitrobenzene-d5	56.4	0	8.8-134	%Rec	1		9/28/2016 2:56:46 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25-GW

Project: SWMU 10

Collection Date: 9/21/2016 8:50:00 AM

Lab ID: 1609C66-001

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES								Analyst: DAM
321-60-8	Surr: 2-Fluorobiphenyl	52.8	0.5	9-125	%Rec	1		9/28/2016 2:56:46 PM
1718-51-0	Surr: 4-Terphenyl-d14	56.1	0	15-146	%Rec	1		9/28/2016 2:56:46 PM
EPA METHOD 8260B: VOLATILES								Analyst: AG
71-43-2	Benzene	320	4.8	50	µg/L	50		9/22/2016 6:04:01 PM
108-88-3	Toluene	140	5.9	50	µg/L	50		9/22/2016 6:04:01 PM
100-41-4	Ethylbenzene	200	5.6	50	µg/L	50		9/22/2016 6:04:01 PM
1634-04-4	Methyl tert-butyl ether (MTBE)	17	11	50	J µg/L	50		9/22/2016 6:04:01 PM
95-63-6	1,2,4-Trimethylbenzene	170	5.5	50	µg/L	50		9/22/2016 6:04:01 PM
108-67-8	1,3,5-Trimethylbenzene	46	5.8	50	J µg/L	50		9/22/2016 6:04:01 PM
107-06-2	1,2-Dichloroethane (EDC)	ND	5.8	50	µg/L	50		9/22/2016 6:04:01 PM
106-93-4	1,2-Dibromoethane (EDB)	ND	5.6	50	µg/L	50		9/22/2016 6:04:01 PM
91-20-3	Naphthalene	200	4.6	100	µg/L	50		9/22/2016 6:04:01 PM
90-12-0	1-Methylnaphthalene	110	10	200	J µg/L	50		9/22/2016 6:04:01 PM
91-57-6	2-Methylnaphthalene	140	7.9	200	J µg/L	50		9/22/2016 6:04:01 PM
67-64-1	Acetone	ND	250	500	µg/L	50		9/22/2016 6:04:01 PM
108-86-1	Bromobenzene	ND	4.9	50	µg/L	50		9/22/2016 6:04:01 PM
75-27-4	Bromodichloromethane	ND	7.0	50	µg/L	50		9/22/2016 6:04:01 PM
75-25-2	Bromoform	ND	5.1	50	µg/L	50		9/22/2016 6:04:01 PM
74-83-9	Bromomethane	ND	39	150	µg/L	50		9/22/2016 6:04:01 PM
78-93-3	2-Butanone	ND	37	500	µg/L	50		9/22/2016 6:04:01 PM
75-15-0	Carbon disulfide	ND	30	500	µg/L	50		9/22/2016 6:04:01 PM
56-23-5	Carbon Tetrachloride	ND	5.4	50	µg/L	50		9/22/2016 6:04:01 PM
108-90-7	Chlorobenzene	ND	5.7	50	µg/L	50		9/22/2016 6:04:01 PM
75-00-3	Chloroethane	ND	9.6	100	µg/L	50		9/22/2016 6:04:01 PM
67-66-3	Chloroform	ND	4.4	50	µg/L	50		9/22/2016 6:04:01 PM
74-87-3	Chloromethane	ND	11	150	µg/L	50		9/22/2016 6:04:01 PM
95-49-8	2-Chlorotoluene	ND	20	50	µg/L	50		9/22/2016 6:04:01 PM
106-43-4	4-Chlorotoluene	ND	6.4	50	µg/L	50		9/22/2016 6:04:01 PM
156-59-2	cis-1,2-DCE	ND	6.2	50	µg/L	50		9/22/2016 6:04:01 PM
10061-01-5	cis-1,3-Dichloropropene	ND	5.3	50	µg/L	50		9/22/2016 6:04:01 PM
96-12-8	1,2-Dibromo-3-chloropropane	ND	12	100	µg/L	50		9/22/2016 6:04:01 PM
124-48-1	Dibromochloromethane	ND	4.3	50	µg/L	50		9/22/2016 6:04:01 PM
74-95-3	Dibromomethane	ND	6.0	50	µg/L	50		9/22/2016 6:04:01 PM
95-50-1	1,2-Dichlorobenzene	ND	20	50	µg/L	50		9/22/2016 6:04:01 PM
541-73-1	1,3-Dichlorobenzene	ND	7.2	50	µg/L	50		9/22/2016 6:04:01 PM
106-46-7	1,4-Dichlorobenzene	ND	7.1	50	µg/L	50		9/22/2016 6:04:01 PM
75-71-8	Dichlorodifluoromethane	ND	18	50	µg/L	50		9/22/2016 6:04:01 PM
75-34-3	1,1-Dichloroethane	ND	5.4	50	µg/L	50		9/22/2016 6:04:01 PM
75-35-4	1,1-Dichloroethene	ND	5.4	50	µg/L	50		9/22/2016 6:04:01 PM
78-87-5	1,2-Dichloropropane	ND	5.5	50	µg/L	50		9/22/2016 6:04:01 PM
142-28-9	1,3-Dichloropropane	ND	7.8	50	µg/L	50		9/22/2016 6:04:01 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-25-GW

Project: SWMU 10

Collection Date: 9/21/2016 8:50:00 AM

Lab ID: 1609C66-001

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	'QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES								Analyst: AG
594-20-7	2,2-Dichloropropane	ND	8.3	100		µg/L	50	9/22/2016 6:04:01 PM
563-58-6	1,1-Dichloropropene	ND	6.7	50		µg/L	50	9/22/2016 6:04:01 PM
87-68-3	Hexachlorobutadiene	ND	9.9	50		µg/L	50	9/22/2016 6:04:01 PM
591-78-6	2-Hexanone	ND	42	500		µg/L	50	9/22/2016 6:04:01 PM
98-82-8	Isopropylbenzene	24	5.2	50	J	µg/L	50	9/22/2016 6:04:01 PM
99-87-6	4-Isopropyltoluene	ND	7.0	50		µg/L	50	9/22/2016 6:04:01 PM
108-10-1	4-Methyl-2-pentanone	ND	21	500		µg/L	50	9/22/2016 6:04:01 PM
75-09-2	Methylene Chloride	ND	9.4	150		µg/L	50	9/22/2016 6:04:01 PM
104-51-8	n-Butylbenzene	ND	8.0	150		µg/L	50	9/22/2016 6:04:01 PM
103-65-1	n-Propylbenzene	30	6.6	50	J	µg/L	50	9/22/2016 6:04:01 PM
135-98-8	sec-Butylbenzene	12	6.2	50	J	µg/L	50	9/22/2016 6:04:01 PM
100-42-5	Styrene	ND	5.5	50		µg/L	50	9/22/2016 6:04:01 PM
98-06-6	tert-Butylbenzene	ND	5.8	50		µg/L	50	9/22/2016 6:04:01 PM
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.6	50		µg/L	50	9/22/2016 6:04:01 PM
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	100		µg/L	50	9/22/2016 6:04:01 PM
127-18-4	Tetrachloroethene (PCE)	ND	7.6	50		µg/L	50	9/22/2016 6:04:01 PM
156-60-5	trans-1,2-DCE	ND	20	50		µg/L	50	9/22/2016 6:04:01 PM
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	50		µg/L	50	9/22/2016 6:04:01 PM
87-61-6	1,2,3-Trichlorobenzene	ND	5.6	50		µg/L	50	9/22/2016 6:04:01 PM
120-82-1	1,2,4-Trichlorobenzene	ND	6.6	50		µg/L	50	9/22/2016 6:04:01 PM
71-55-6	1,1,1-Trichloroethane	ND	4.6	50		µg/L	50	9/22/2016 6:04:01 PM
79-00-5	1,1,2-Trichloroethane	ND	6.4	50		µg/L	50	9/22/2016 6:04:01 PM
79-01-6	Trichloroethene (TCE)	ND	8.8	50		µg/L	50	9/22/2016 6:04:01 PM
75-69-4	Trichlorofluoromethane	ND	10	50		µg/L	50	9/22/2016 6:04:01 PM
96-18-4	1,2,3-Trichloropropane	ND	10	100		µg/L	50	9/22/2016 6:04:01 PM
75-01-4	Vinyl chloride	ND	9.8	50		µg/L	50	9/22/2016 6:04:01 PM
1330-20-7	Xylenes, Total	1200	18	75		µg/L	50	9/22/2016 6:04:01 PM
17060-07-0	Surr: 1,2-Dichloroethane-d4	92.9	0	70-130		%Rec	50	9/22/2016 6:04:01 PM
460-00-4	Surr: 4-Bromofluorobenzene	96.1	0	70-130		%Rec	50	9/22/2016 6:04:01 PM
1868-53-7	Surr: Dibromofluoromethane	82.4	0	70-130		%Rec	50	9/22/2016 6:04:01 PM
2037-26-5	Surr: Toluene-d8	100	0	70-130		%Rec	50	9/22/2016 6:04:01 PM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: AG
TPH-GRO	Gasoline Range Organics (GRO)	8.6	0.75	2.5		mg/L	50	9/22/2016 6:04:01 PM
460-00-4	Surr: BFB	104	0	70-130		%Rec	50	9/22/2016 6:04:01 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: Trip Blank

Project: SWMU 10

Collection Date:

Lab ID: 1609C66-002

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES								Analyst: AG
71-43-2	Benzene	ND	0.096	1.0	µg/L	1		9/22/2016 6:32:49 PM
108-88-3	Toluene	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
100-41-4	Ethylbenzene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
1634-04-4	Methyl tert-butyl ether (MTBE)	ND	0.21	1.0	µg/L	1		9/22/2016 6:32:49 PM
95-63-6	1,2,4-Trimethylbenzene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
108-67-8	1,3,5-Trimethylbenzene	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
107-06-2	1,2-Dichloroethane (EDC)	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
106-93-4	1,2-Dibromoethane (EDB)	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
91-20-3	Naphthalene	ND	0.093	2.0	µg/L	1		9/22/2016 6:32:49 PM
90-12-0	1-Methylnaphthalene	ND	0.20	4.0	µg/L	1		9/22/2016 6:32:49 PM
91-57-6	2-Methylnaphthalene	ND	0.16	4.0	µg/L	1		9/22/2016 6:32:49 PM
67-64-1	Acetone	ND	4.9	10	µg/L	1		9/22/2016 6:32:49 PM
108-86-1	Bromobenzene	ND	0.098	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-27-4	Bromodichloromethane	ND	0.14	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-25-2	Bromoform	ND	0.10	1.0	µg/L	1		9/22/2016 6:32:49 PM
74-83-9	Bromomethane	ND	0.78	3.0	µg/L	1		9/22/2016 6:32:49 PM
78-93-3	2-Butanone	ND	0.74	10	µg/L	1		9/22/2016 6:32:49 PM
75-15-0	Carbon disulfide	ND	0.60	10	µg/L	1		9/22/2016 6:32:49 PM
56-23-5	Carbon Tetrachloride	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
108-90-7	Chlorobenzene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-00-3	Chloroethane	ND	0.19	2.0	µg/L	1		9/22/2016 6:32:49 PM
67-66-3	Chloroform	ND	0.089	1.0	µg/L	1		9/22/2016 6:32:49 PM
74-87-3	Chloromethane	ND	0.21	3.0	µg/L	1		9/22/2016 6:32:49 PM
95-49-8	2-Chlorotoluene	ND	0.40	1.0	µg/L	1		9/22/2016 6:32:49 PM
106-43-4	4-Chlorotoluene	ND	0.13	1.0	µg/L	1		9/22/2016 6:32:49 PM
156-59-2	cis-1,2-DCE	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
10061-01-5	cis-1,3-Dichloropropene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.23	2.0	µg/L	1		9/22/2016 6:32:49 PM
124-48-1	Dibromochloromethane	ND	0.087	1.0	µg/L	1		9/22/2016 6:32:49 PM
74-95-3	Dibromomethane	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
95-50-1	1,2-Dichlorobenzene	ND	0.40	1.0	µg/L	1		9/22/2016 6:32:49 PM
541-73-1	1,3-Dichlorobenzene	ND	0.14	1.0	µg/L	1		9/22/2016 6:32:49 PM
106-46-7	1,4-Dichlorobenzene	ND	0.14	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-71-8	Dichlorodifluoromethane	ND	0.36	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-34-3	1,1-Dichloroethane	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-35-4	1,1-Dichloroethene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
78-87-5	1,2-Dichloropropane	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
142-28-9	1,3-Dichloropropane	ND	0.16	1.0	µg/L	1		9/22/2016 6:32:49 PM
594-20-7	2,2-Dichloropropane	ND	0.17	2.0	µg/L	1		9/22/2016 6:32:49 PM
563-58-6	1,1-Dichloropropene	ND	0.13	1.0	µg/L	1		9/22/2016 6:32:49 PM
87-68-3	Hexachlorobutadiene	ND	0.20	1.0	µg/L	1		9/22/2016 6:32:49 PM
591-78-6	2-Hexanone	ND	0.84	10	µg/L	1		9/22/2016 6:32:49 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1609C66

Date Reported: 10/6/2016

CLIENT: Western Refining Company

Client Sample ID: Trip Blank

Project: SWMU 10

Collection Date:

Lab ID: 1609C66-002

Matrix: AQUEOUS

Received Date: 9/21/2016 4:15:00 PM

CAS#	Analyses	Result	MDL	'QL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES								Analyst: AG
98-82-8	Isopropylbenzene	ND	0.10	1.0	µg/L	1		9/22/2016 6:32:49 PM
99-87-6	4-Isopropyltoluene	ND	0.14	1.0	µg/L	1		9/22/2016 6:32:49 PM
108-10-1	4-Methyl-2-pentanone	ND	0.43	10	µg/L	1		9/22/2016 6:32:49 PM
75-09-2	Methylene Chloride	ND	0.19	3.0	µg/L	1		9/22/2016 6:32:49 PM
104-51-8	n-Butylbenzene	ND	0.16	3.0	µg/L	1		9/22/2016 6:32:49 PM
103-65-1	n-Propylbenzene	ND	0.13	1.0	µg/L	1		9/22/2016 6:32:49 PM
135-98-8	sec-Butylbenzene	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
100-42-5	Styrene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
98-06-6	tert-Butylbenzene	ND	0.12	1.0	µg/L	1		9/22/2016 6:32:49 PM
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.13	2.0	µg/L	1		9/22/2016 6:32:49 PM
127-18-4	Tetrachloroethene (PCE)	ND	0.15	1.0	µg/L	1		9/22/2016 6:32:49 PM
156-60-5	trans-1,2-DCE	ND	0.40	1.0	µg/L	1		9/22/2016 6:32:49 PM
10061-02-6	trans-1,3-Dichloropropene	ND	0.10	1.0	µg/L	1		9/22/2016 6:32:49 PM
87-61-6	1,2,3-Trichlorobenzene	ND	0.11	1.0	µg/L	1		9/22/2016 6:32:49 PM
120-82-1	1,2,4-Trichlorobenzene	ND	0.13	1.0	µg/L	1		9/22/2016 6:32:49 PM
71-55-6	1,1,1-Trichloroethane	ND	0.091	1.0	µg/L	1		9/22/2016 6:32:49 PM
79-00-5	1,1,2-Trichloroethane	ND	0.13	1.0	µg/L	1		9/22/2016 6:32:49 PM
79-01-6	Trichloroethene (TCE)	ND	0.18	1.0	µg/L	1		9/22/2016 6:32:49 PM
75-69-4	Trichlorofluoromethane	ND	0.20	1.0	µg/L	1		9/22/2016 6:32:49 PM
96-18-4	1,2,3-Trichloropropane	ND	0.20	2.0	µg/L	1		9/22/2016 6:32:49 PM
75-01-4	Vinyl chloride	ND	0.20	1.0	µg/L	1		9/22/2016 6:32:49 PM
1330-20-7	Xylenes, Total	ND	0.37	1.5	µg/L	1		9/22/2016 6:32:49 PM
17060-07-0	Surr: 1,2-Dichloroethane-d4	95.5	0	70-130	%Rec	1		9/22/2016 6:32:49 PM
460-00-4	Surr: 4-Bromofluorobenzene	99.6	0	70-130	%Rec	1		9/22/2016 6:32:49 PM
1868-53-7	Surr: Dibromofluoromethane	97.4	0	70-130	%Rec	1		9/22/2016 6:32:49 PM
2037-26-5	Surr: Toluene-d8	100	0	70-130	%Rec	1		9/22/2016 6:32:49 PM
EPA METHOD 8015D: GASOLINE RANGE								Analyst: AG
TPH-GRO	Gasoline Range Organics (GRO)	0.018	0.015	0.050	J	mg/L	1	9/22/2016 6:32:49 PM
460-00-4	Surr: BFB	103	0	70-130	%Rec	1		9/22/2016 6:32:49 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit



Wet Chemistry by Method 3500Cr C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		0.000500	1	09/28/2016 11:43	<u>WG911779</u>



ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L861590

DATE/TIME:

09/29/16 10:48



Wet Chemistry by Method D 7511-09e2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	0.143		0.00500	1	09/26/2016 19:48	<u>WG911531</u>



WG911779

Wet Chemistry by Method 3500Cr C-2011

QUALITY CONTROL SUMMARY

L861590-01

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3166742-1 09/28/16 10:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hexavalent Chromium	U		0.000150	0.000500

L861521-01 Original Sample (OS) • Duplicate (DUP)

(OS) L861521-01 09/28/16 11:26 • (DUP) R3166742-4 09/28/16 11:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	U	ND	1	0.000		20

L862074-02 Original Sample (OS) • Duplicate (DUP)

(OS) L862074-02 09/28/16 14:11 • (DUP) R3166742-7 09/28/16 14:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3166742-2 09/28/16 10:33 • (LCSD) R3166742-3 09/28/16 10:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	0.00200	0.00199	0.00198	100	99.0	90.0-110			0.000	20

L861789-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L861789-01 09/28/16 12:21 • (MS) R3166742-5 09/28/16 12:29 • (MSD) R3166742-6 09/28/16 12:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	0.0500	ND	0.0502	0.0512	1	90.0-110			2.00	20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L861590

DATE/TIME:

09/29/16 10:48

WG911531

Wet Chemistry by Method D 7511-09e2

QUALITY CONTROL SUMMARY

L861590-02

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3166228-2 09/26/16 17:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U	0.0012	0.0012	0.00500

L861341-01 Original Sample (OS) • Duplicate (DUP)

(OS) L861341-01 09/26/16 19:09 • (DUP) R3166228-7 09/26/16 19:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS D)

(LCS) R3166228-3 09/26/16 17:57 • (LCS D) R3166228-4 09/26/16 18:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Cyanide	0.0500	0.0550	0.0530	110	106	84-116			4	20

L861220-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L861220-02 09/26/16 18:18 • (MS) R3166228-5 09/26/16 18:30 • (MSD) R3166228-6 09/26/16 18:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0720	0.0730	72	73	1	64-136			1	20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L861590

DATE/TIME:

09/29/16 10:48



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Rec.	Recovery.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID MB-27858	SampType: MBLK	TestCode: EPA Method 200.7: Metals
Client ID: PBW	Batch ID: 27858	RunNo: 37678
Prep Date: 10/3/2016	Analysis Date: 10/4/2016	SeqNo: 1173403 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	0.00066	0.0020								J
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS-27858	SampType: LCS	TestCode: EPA Method 200.7: Metals
Client ID: LCSW	Batch ID: 27858	RunNo: 37678
Prep Date: 10/3/2016	Analysis Date: 10/4/2016	SeqNo: 1173404 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	99.1	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.49	0.0020	0.5000	0	99.0	85	115			
Chromium	0.49	0.0060	0.5000	0	97.4	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.3	85	115			
Iron	0.49	0.020	0.5000	0	98.9	85	115			
Manganese	0.49	0.0020	0.5000	0	97.0	85	115			
Nickel	0.48	0.010	0.5000	0	95.2	85	115			
Silver	0.095	0.0050	0.1000	0	95.0	85	115			
Vanadium	0.51	0.050	0.5000	0	103	85	115			
Zinc	0.50	0.010	0.5000	0	99.0	85	115			

Sample ID LLCS-27858	SampType: LCSLL	TestCode: EPA Method 200.7: Metals
Client ID: BatchQC	Batch ID: 27858	RunNo: 37678
Prep Date: 10/3/2016	Analysis Date: 10/4/2016	SeqNo: 1173405 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0022	0.0020	0.002000	0	111	50	150			
Beryllium	0.0021	0.0020	0.002000	0	104	50	150			
Cadmium	0.0020	0.0020	0.002000	0	99.5	50	150			J
Chromium	0.0065	0.0060	0.006000	0	108	50	150			
Cobalt	0.0063	0.0060	0.006000	0	105	50	150			
Iron	0.026	0.020	0.02000	0	132	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LLLCS-27858		SampType: LCSLL		TestCode: EPA Method 200.7: Metals					
Client ID:	BatchQC		Batch ID: 27858		RunNo: 37678					
Prep Date:	10/3/2016		Analysis Date: 10/4/2016		SeqNo: 1173405		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.0021	0.0020	0.002000	0	106	50	150			
Nickel	0.0046	0.010	0.005000	0	92.8	50	150			J
Silver	0.0052	0.0050	0.005000	0	104	50	150			
Vanadium	0.010	0.050	0.01000	0	102	50	150			J
Zinc	0.0052	0.010	0.005000	0	105	50	150			J

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID MB-B	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals
Client ID: PBW	Batch ID: B37552	RunNo: 37552
Prep Date:	Analysis Date: 9/29/2016	SeqNo: 1168337 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS-B	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals
Client ID: LCSW	Batch ID: B37552	RunNo: 37552
Prep Date:	Analysis Date: 9/29/2016	SeqNo: 1168344 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	101	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.7	85	115			
Cadmium	0.51	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	98.0	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.49	0.020	0.5000	0	97.4	85	115			
Manganese	0.49	0.0020	0.5000	0	98.8	85	115			
Nickel	0.48	0.010	0.5000	0	96.0	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.48	0.010	0.5000	0	96.2	85	115			

Sample ID LLCS-B	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals
Client ID: BatchQC	Batch ID: B37552	RunNo: 37552
Prep Date:	Analysis Date: 9/29/2016	SeqNo: 1168346 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0027	0.0020	0.002000	0	135	50	150			
Beryllium	0.0020	0.0020	0.002000	0	99.0	50	150			J
Cadmium	0.0022	0.0020	0.002000	0	110	50	150			
Chromium	0.0053	0.0060	0.006000	0	87.7	50	150			J
Cobalt	0.0063	0.0060	0.006000	0	104	50	150			
Iron	0.021	0.020	0.02000	0	105	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LLLCS-B		SampType: LCSLL			TestCode: EPA Method 200.7: Dissolved Metals				
Client ID:	BatchQC		Batch ID: B37552			RunNo: 37552				
Prep Date:			Analysis Date: 9/29/2016			SeqNo: 1168346		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Nickel	0.0052	0.010	0.005000	0	105	50	150			J
Silver	0.0051	0.0050	0.005000	0	102	50	150			
Vanadium	0.0097	0.050	0.01000	0	96.6	50	150			J
Zinc	0.0049	0.010	0.005000	0	98.2	50	150			J

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-27815		SampType:	MBLK		TestCode:	EPA 200.8: Metals				
Client ID:	PBW		Batch ID:	27815		RunNo:	37638				
Prep Date:	9/30/2016		Analysis Date:	10/3/2016		SeqNo:	1171503		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	ND	0.0010									
Arsenic	ND	0.0010									
Lead	ND	0.00050									
Selenium	ND	0.0010									

Sample ID	MSLCS-27815		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: 27815		RunNo: 37638					
Prep Date:	9/30/2016		Analysis Date: 10/3/2016		SeqNo: 1171504		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	105	85	115			
Arsenic	0.024	0.0010	0.02500	0	96.8	85	115			
Lead	0.013	0.00050	0.01250	0	101	85	115			
Selenium	0.025	0.0010	0.02500	0	100	85	115			

Sample ID	MSLLCS-27815			SampType:	LCSLL		TestCode:	EPA 200.8: Metals			
Client ID:	BatchQC			Batch ID:	27815		RunNo:	37638			
Prep Date:	9/30/2016			Analysis Date:	10/3/2016		SeqNo:	1171505		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	0.0010	0.0010	0.001000	0	103	50	150				
Arsenic	0.0010	0.0010	0.001000	0	101	50	150				
Lead	0.00050	0.00050	0.0005000	0	101	50	150				
Selenium	0.0010	0.0010	0.001000	0	101	50	150				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	LCSW		Batch ID: B37537		RunNo: 37537					
Prep Date:			Analysis Date: 9/28/2016		SeqNo: 1168521		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.9	85	115			
Arsenic	0.025	0.0010	0.02500	0	99.5	85	115			
Lead	0.013	0.00050	0.01250	0	101	85	115			
Selenium	0.024	0.0010	0.02500	0	97.5	85	115			

Sample ID	LLCS			SampType:	LCSLL			TestCode: EPA 200.8: Dissolved Metals			
Client ID:	BatchQC			Batch ID:	B37537			RunNo: 37537			
Prep Date:				Analysis Date:	9/28/2016			SeqNo: 1168522		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	0.0010	0.0010	0.001000	0	104	50	150				
Arsenic	0.0010	0.0010	0.001000	0	103	50	150				
Lead	0.00053	0.00050	0.0005000	0	106	50	150				
Selenium	0.00098	0.0010	0.001000	0	98.4	50	150			J	

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: B37537			RunNo: 37537					
Prep Date:		Analysis Date: 9/28/2016			SeqNo: 1168523		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00070	0.0010								J
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R37435		RunNo: 37435							
Prep Date:	Analysis Date: 9/22/2016		SeqNo: 1163735		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID LCS	SampType: lcs		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R37435		RunNo: 37435							
Prep Date:	Analysis Date: 9/22/2016		SeqNo: 1163736		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	10	0.50	10.00	0	100	90	110			

Sample ID 1609C66-001EMS	SampType: ms		TestCode: EPA Method 300.0: Anions							
Client ID: SWMU 10-25-GW	Batch ID: R37435		RunNo: 37435							
Prep Date:	Analysis Date: 9/22/2016		SeqNo: 1163742		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	160	2.5	50.00	106.8	108	83	118			

Sample ID 1609C66-001EMSD	SampType: msd		TestCode: EPA Method 300.0: Anions							
Client ID: SWMU 10-25-GW	Batch ID: R37435		RunNo: 37435							
Prep Date:	Analysis Date: 9/22/2016		SeqNo: 1163743		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	170	2.5	50.00	106.8	117	83	118	2.58	20	

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R37487		RunNo: 37487							
Prep Date:	Analysis Date: 9/26/2016		SeqNo: 1165787		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID LCS	SampType: lcs		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R37487		RunNo: 37487							
Prep Date:	Analysis Date: 9/26/2016		SeqNo: 1165788		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	97.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS-27667		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 27667		RunNo: 37473					
Prep Date:	9/23/2016		Analysis Date: 9/26/2016		SeqNo: 1165395		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	110	63.2	155			
Surr: DNOP	0.53		0.5000		107	77.1	144			

Sample ID	MB-27667		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 27667		RunNo: 37473					
Prep Date:	9/23/2016		Analysis Date: 9/26/2016		SeqNo: 1165396		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		108	77.1	144			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: W37409			RunNo: 37409					
Prep Date:		Analysis Date: 9/22/2016			SeqNo: 1162560		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	19	1.0	20.00	0	95.8	70	130			
Chlorobenzene	19	1.0	20.00	0	95.6	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	96.4	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	87.4	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.7	70	130			
Surr: Toluene-d8	9.7		10.00		97.5	70	130			

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: W37409			RunNo: 37409					
Prep Date:		Analysis Date: 9/22/2016			SeqNo: 1162561		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	W37409	RunNo:	37409					
Prep Date:		Analysis Date:	9/22/2016	SeqNo:	1162561	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	W37409	RunNo:	37409					
Prep Date:		Analysis Date:	9/22/2016	SeqNo:	1162561	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.1	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.9	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.6	70	130			
Surr: Toluene-d8	9.5		10.00		95.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609c66-001dms		SampType: MS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-25-GW		Batch ID: 27668		RunNo: 37545					
Prep Date:	9/23/2016		Analysis Date: 9/28/2016		SeqNo: 1168031		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	58	10	100.0	6.480	51.1	27.6	123			
4-Chloro-3-methylphenol	130	10	200.0	0	62.8	29.3	126			
2-Chlorophenol	100	10	200.0	0	51.2	15	133			
1,4-Dichlorobenzene	38	10	100.0	0	37.7	17.6	127			
2,4-Dinitrotoluene	56	10	100.0	0	55.8	38.9	98.5			
N-Nitrosodi-n-propylamine	64	10	100.0	0	63.8	25.9	131			
4-Nitrophenol	33	10	200.0	0	16.4	15	102			
Pentachlorophenol	75	20	200.0	0	37.6	15	120			
Phenol	65	10	200.0	0	32.6	15	100			
Pyrene	60	10	100.0	0	59.5	22.8	126			
1,2,4-Trichlorobenzene	41	10	100.0	0	41.0	15	143			
Surr: 2-Fluorophenol	49		200.0		24.7	15	123			
Surr: Phenol-d5	58		200.0		28.8	4.13	124			
Surr: 2,4,6-Tribromophenol	95		200.0		47.6	18.4	134			
Surr: Nitrobenzene-d5	49		100.0		48.8	28.8	134			
Surr: 2-Fluorobiphenyl	43		100.0		43.2	35.9	125			
Surr: 4-Terphenyl-d14	49		100.0		48.8	15	146			

Sample ID	1609c66-001dmsd		SampType: MSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-25-GW		Batch ID: 27668		RunNo: 37545					
Prep Date:	9/23/2016		Analysis Date: 9/28/2016		SeqNo: 1168032		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	54	10	100.0	6.480	47.4	27.6	123	6.60	31.3	
4-Chloro-3-methylphenol	110	10	200.0	0	55.1	29.3	126	13.1	29	
2-Chlorophenol	90	10	200.0	0	44.8	15	133	13.5	28.4	
1,4-Dichlorobenzene	36	10	100.0	0	36.3	17.6	127	3.89	28.2	
2,4-Dinitrotoluene	49	10	100.0	0	48.6	38.9	98.5	13.8	22.9	
N-Nitrosodi-n-propylamine	59	10	100.0	0	58.7	25.9	131	8.30	28.8	
4-Nitrophenol	18	10	200.0	0	9.01	15	102	58.3	41.5	RS
Pentachlorophenol	46	20	200.0	0	23.0	15	120	47.9	45.1	R
Phenol	55	10	200.0	0	27.5	15	100	17.1	33.9	
Pyrene	56	10	100.0	0	56.4	22.8	126	5.49	33.6	
1,2,4-Trichlorobenzene	38	10	100.0	0	38.4	15	143	6.50	28.2	
Surr: 2-Fluorophenol	33		200.0		16.3	15	123	0	0	
Surr: Phenol-d5	51		200.0		25.7	4.13	124	0	0	
Surr: 2,4,6-Tribromophenol	77		200.0		38.6	18.4	134	0	0	
Surr: Nitrobenzene-d5	46		100.0		45.6	28.8	134	0	0	
Surr: 2-Fluorobiphenyl	37		100.0		37.3	35.9	125	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609c66-001dmsd	SampType:	MSD	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	SWMU 10-25-GW	Batch ID:	27668	RunNo:	37545					
Prep Date:	9/23/2016	Analysis Date:	9/28/2016	SeqNo:	1168032	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	46		100.0		45.9	15	146	0	0	

Sample ID	mb-27668	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBW	Batch ID:	27668	RunNo:	37545					
Prep Date:	9/23/2016	Analysis Date:	9/28/2016	SeqNo:	1168035	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	5.0	20								J
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	2.9	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-27668	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBW	Batch ID:	27668	RunNo:	37545					
Prep Date:	9/23/2016	Analysis Date:	9/28/2016	SeqNo:	1168035	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID mb-27668	SampType: MBLK			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: PBW	Batch ID: 27668			RunNo: 37545						
Prep Date: 9/23/2016	Analysis Date: 9/28/2016			SeqNo: 1168035		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	120		200.0		58.5	15	123			
Surr: Phenol-d5	81		200.0		40.6	4.13	124			
Surr: 2,4,6-Tribromophenol	150		200.0		74.1	18.4	134			
Surr: Nitrobenzene-d5	67		100.0		67.1	28.8	134			
Surr: 2-Fluorobiphenyl	52		100.0		52.4	35.9	125			
Surr: 4-Terphenyl-d14	64		100.0		64.2	15	146			

Sample ID lcs-27668	SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSW	Batch ID: 27668			RunNo: 37545						
Prep Date: 9/23/2016	Analysis Date: 9/28/2016			SeqNo: 1168036		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	71	10	100.0	0	71.3	35	113			
4-Chloro-3-methylphenol	170	10	200.0	0	83.3	40.7	114			
2-Chlorophenol	150	10	200.0	0	72.9	37.6	113			
1,4-Dichlorobenzene	60	10	100.0	0	60.2	37.7	106			
2,4-Dinitrotoluene	71	10	100.0	0	70.6	37	91			
N-Nitrosodi-n-propylamine	79	10	100.0	0	78.8	45.4	105			
4-Nitrophenol	120	10	200.0	0	61.2	33.4	104			
Pentachlorophenol	140	20	200.0	0	68.9	29.5	94.9			
Phenol	120	10	200.0	0	62.3	30.6	119			
Pyrene	75	10	100.0	0	74.8	26.2	120			
1,2,4-Trichlorobenzene	66	10	100.0	0	66.4	39.9	125			
Surr: 2-Fluorophenol	140		200.0		68.6	15	123			
Surr: Phenol-d5	120		200.0		60.9	4.13	124			
Surr: 2,4,6-Tribromophenol	160		200.0		80.3	18.4	134			
Surr: Nitrobenzene-d5	67		100.0		66.7	28.8	134			
Surr: 2-Fluorobiphenyl	60		100.0		60.1	35.9	125			
Surr: 4-Terphenyl-d14	57		100.0		57.0	15	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1609C66

06-Oct-16

Client: Western Refining Company

Project: SWMU 10

Sample ID	1609c66-001ams	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	SWMU 10-25-GW	Batch ID:	R37409	RunNo:	37484					
Prep Date:		Analysis Date:	9/26/2016	SeqNo:	1165543	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	2.5	25.00	8.650	64.1	53.8	128			
Surr: BFB	500		500.0		100	70	130			

Sample ID	1609c66-001amsd	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	SWMU 10-25-GW	Batch ID:	R37409	RunNo:	37484					
Prep Date:		Analysis Date:	9/26/2016	SeqNo:	1165544	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	2.5	25.00	8.650	57.4	53.8	128	7.05	20	
Surr: BFB	500		500.0		99.8	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified



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

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1609C66

RcptNo: 1

Received by/date: AT 09/21/16

Logged By: Anne Thorne 9/21/2016 4:15:00 PM

Completed By: Anne Thorne 9/22/2016

Reviewed By: TO 09/22/16

Chain of Custody

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

Log In

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

of preserved
bottles checked
for pH: 31
(<2 or >12 unless noted)
Adjusted? NO
Checked by: jc

Special Handling (if applicable)

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

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

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			



www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel 505-345-3975 Fax 505-345-4107

Analysis Request

Turn-Around Time:		☐ Standard ☒ Rush				
Project Name:		SWMU 10				
Project #:						
Project Manager:		ED RIEGE				
Sampler:		TRACY PAYNE				
On Ice:		☒ Yes ☐ No				
Sample Temperature:		2.3				
HEAL No.		1609666				
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
7/21/16	0850	WATER	SWMU 10-25-GW	40 ML VOA-6	HCL	-001
				1 LITER AMBER-2	NEAT	-001
				250 ML AMBER 1	NEAT	-001
				500 ML PLASTIC-1	HNO3	-001
				125 ML PLASTIC-1	HNO3	-001
				125 ML PLASTIC-1	H2SO4	-001
				500 ML PLASTIC-1	NEAT	-001
				50 ML PLASTIC-1	NH42SO4	-001
				500 ML PLASTIC-1	NAOH	-001
7/21/16		WATER	TRIP BLANK	40 ML VOA-4	HCL	-002
Date:		Time:		Received by:		Date
7/21/16	1010	A 7		[Signature]		7/21/16
Date:		Time:		Received by:		Date
7/21/16	1015	[Signature]		[Signature]		07/21/16

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of the

I, David M. Hays, certify that the information furnished on this form is true and correct. I am aware that this form and the information furnished hereon are being submitted to EPA and the public for review of the applicability of the various provisions of the CERCLA Act and of any other applicable laws. I understand that any false or misleading statements made on this form may constitute a criminal offense under the laws of the United States of America and may be subject to civil sanctions. David M. Hays

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10
METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES
AND WATER QA/QC SAMPLES
TOTAL METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES
AND WATER QA/QC SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0



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

October 05, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1505001

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/30/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 05, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: KJH	
Diesel Range Organics (DRO)	ND	0.91	1.0		mg/L	1	5/1/2015 6:25:02 PM	18985
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	5/1/2015 6:25:02 PM	18985
Surr: DNOP	109	0	76.5-150		%REC	1	5/1/2015 6:25:02 PM	18985
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.012	0.050		mg/L	1	5/4/2015 5:29:47 PM	R25939
Surr: BFB	106	0	80-120		%REC	1	5/4/2015 5:29:47 PM	R25939
EPA METHOD 300.0: ANIONS							Analyst: LGT	
Fluoride	ND	0.58	2.0		mg/L	20	5/1/2015 12:05:38 PM	R25920
Chloride	3600	67	250		mg/L	500	5/6/2015 8:14:26 PM	R26026
Sulfate	340	2.3	10		mg/L	20	5/1/2015 12:05:38 PM	R25920
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	0.45	0.00095	0.0020		mg/L	1	5/6/2015 6:49:37 PM	R26030
Beryllium	ND	0.00031	0.0020		mg/L	1	5/6/2015 6:49:37 PM	R26030
Cadmium	ND	0.00097	0.0020		mg/L	1	5/6/2015 6:49:37 PM	R26030
Chromium	ND	0.0018	0.0060		mg/L	1	5/6/2015 6:49:37 PM	R26030
Cobalt	0.0084	0.0013	0.0060		mg/L	1	5/6/2015 6:49:37 PM	R26030
Iron	0.58	0.0073	0.020	*	mg/L	1	5/6/2015 6:49:37 PM	R26030
Manganese	0.93	0.00027	0.0020	*	mg/L	1	5/6/2015 6:49:37 PM	R26030
Nickel	0.21	0.0021	0.010	*	mg/L	1	5/6/2015 6:49:37 PM	R26030
Silver	ND	0.0012	0.0050		mg/L	1	5/6/2015 6:49:37 PM	R26030
Vanadium	ND	0.0015	0.050		mg/L	1	5/6/2015 6:49:37 PM	R26030
Zinc	0.029	0.0028	0.010		mg/L	1	5/6/2015 6:49:37 PM	R26030
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	0.74	0.00095	0.0020		mg/L	1	5/5/2015 5:25:11 PM	19025
Beryllium	0.0024	0.00031	0.0020		mg/L	1	5/5/2015 5:25:11 PM	19025
Cadmium	ND	0.00097	0.0020		mg/L	1	5/5/2015 5:25:11 PM	19025
Chromium	0.013	0.0022	0.0060		mg/L	1	5/5/2015 5:25:11 PM	19025
Cobalt	0.012	0.0013	0.0060		mg/L	1	5/5/2015 5:25:11 PM	19025
Iron	16	0.36	1.0	*	mg/L	50	5/6/2015 4:49:53 PM	19025
Manganese	1.2	0.0076	0.010	*	mg/L	5	5/6/2015 4:44:00 PM	19025
Nickel	0.19	0.0023	0.010	*	mg/L	1	5/5/2015 5:25:11 PM	19025
Silver	ND	0.0021	0.0050		mg/L	1	5/5/2015 5:25:11 PM	19025
Vanadium	ND	0.0015	0.050		mg/L	1	5/5/2015 5:25:11 PM	19025
Zinc	0.071	0.0036	0.010		mg/L	1	5/6/2015 4:42:01 PM	19025
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Antimony	ND	0.00029	0.0020		mg/L	2	5/11/2015 2:28:51 PM	R26119
Arsenic	ND	0.0013	0.020		mg/L	20	5/12/2015 4:56:55 PM	R26138

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Lead	ND	0.000053	0.0020		mg/L	2	5/11/2015 2:28:51 PM	R26119
Selenium	0.030	0.0039	0.020		mg/L	20	5/12/2015 4:56:55 PM	R26138
EPA 200.8: METALS							Analyst: DBD	
Antimony	0.0011	0.00022	0.0010		mg/L	1	5/8/2015 1:27:40 PM	19025
Arsenic	ND	0.0058	0.020		mg/L	20	5/15/2015 12:08:55 PM	19025
Lead	0.017	0.000069	0.0010	*	mg/L	1	5/8/2015 1:27:40 PM	19025
Selenium	ND	0.0097	0.050		mg/L	50	5/15/2015 12:28:41 PM	19025
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	ND	0.000059	0.00020		mg/L	1	5/5/2015 2:20:16 PM	19047
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Acenaphthylene	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Aniline	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Anthracene	ND	1.6	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Azobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benz(a)anthracene	ND	2.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzo(a)pyrene	ND	2.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzo(b)fluoranthene	ND	2.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzo(g,h,i)perylene	ND	3.1	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzo(k)fluoranthene	ND	2.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzoic acid	ND	1.0	20		µg/L	1	5/5/2015 9:03:51 PM	18996
Benzyl alcohol	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Bis(2-chloroethoxy)methane	ND	1.8	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Bis(2-chloroethyl)ether	ND	1.8	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Bis(2-chloroisopropyl)ether	ND	2.1	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Bis(2-ethylhexyl)phthalate	ND	3.3	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Bromophenyl phenyl ether	ND	1.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Butyl benzyl phthalate	ND	2.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Carbazole	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Chloro-3-methylphenol	ND	1.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Chloroaniline	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Chloronaphthalene	ND	1.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Chlorophenol	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Chlorophenyl phenyl ether	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Chrysene	ND	2.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Di-n-butyl phthalate	ND	2.1	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Di-n-octyl phthalate	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Dibenz(a,h)anthracene	ND	3.3	10		µg/L	1	5/5/2015 9:03:51 PM	18996

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Dibenzofuran	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
1,2-Dichlorobenzene	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
1,3-Dichlorobenzene	ND	1.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
1,4-Dichlorobenzene	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
3,3'-Dichlorobenzidine	ND	2.6	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Diethyl phthalate	ND	1.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Dimethyl phthalate	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4-Dichlorophenol	ND	1.4	20		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4-Dimethylphenol	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4,6-Dinitro-2-methylphenol	ND	1.4	20		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4-Dinitrophenol	ND	1.1	20		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4-Dinitrotoluene	ND	1.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2,6-Dinitrotoluene	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Fluoranthene	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Fluorene	ND	1.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Hexachlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Hexachlorobutadiene	ND	1.9	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Hexachlorocyclopentadiene	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Hexachloroethane	ND	1.6	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Indeno(1,2,3-cd)pyrene	ND	2.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Isophorone	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
1-Methylnaphthalene	ND	1.8	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Methylnaphthalene	ND	2.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Methylphenol	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
3+4-Methylphenol	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
N-Nitrosodi-n-propylamine	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
N-Nitrosodimethylamine	ND	1.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
N-Nitrosodiphenylamine	ND	2.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Naphthalene	ND	1.8	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Nitroaniline	ND	1.8	10		µg/L	1	5/5/2015 9:03:51 PM	18996
3-Nitroaniline	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Nitroaniline	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Nitrobenzene	ND	1.5	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2-Nitrophenol	ND	1.2	10		µg/L	1	5/5/2015 9:03:51 PM	18996
4-Nitrophenol	ND	1.4	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Pentachlorophenol	ND	1.1	20		µg/L	1	5/5/2015 9:03:51 PM	18996
Phenanthrene	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Phenol	ND	1.1	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Pyrene	ND	2.3	10		µg/L	1	5/5/2015 9:03:51 PM	18996

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Pyridine	ND	1.7	10		µg/L	1	5/5/2015 9:03:51 PM	18996
1,2,4-Trichlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4,5-Trichlorophenol	ND	1.6	10		µg/L	1	5/5/2015 9:03:51 PM	18996
2,4,6-Trichlorophenol	ND	1.3	10		µg/L	1	5/5/2015 9:03:51 PM	18996
Surr: 2-Fluorophenol	33.0	0	14.9-111		%REC	1	5/5/2015 9:03:51 PM	18996
Surr: Phenol-d5	33.2	0	11.3-108		%REC	1	5/5/2015 9:03:51 PM	18996
Surr: 2,4,6-Tribromophenol	40.5	0	15.7-154		%REC	1	5/5/2015 9:03:51 PM	18996
Surr: Nitrobenzene-d5	73.6	0	47.8-106		%REC	1	5/5/2015 9:03:51 PM	18996
Surr: 2-Fluorobiphenyl	68.1	0	21.3-123		%REC	1	5/5/2015 9:03:51 PM	18996
Surr: 4-Terphenyl-d14	69.5	0	14.3-135		%REC	1	5/5/2015 9:03:51 PM	18996
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	4.7	0.065	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Toluene	ND	0.11	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Ethylbenzene	ND	0.10	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Methyl tert-butyl ether (MTBE)	6.1	0.17	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2,4-Trimethylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,3,5-Trimethylbenzene	ND	0.12	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2-Dichloroethane (EDC)	ND	0.18	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Naphthalene	ND	0.22	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1-Methylnaphthalene	ND	0.54	4.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
2-Methylnaphthalene	ND	0.59	4.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Acetone	ND	0.94	10		µg/L	1	5/6/2015 12:44:51 PM	R26017
Bromobenzene	ND	0.11	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Bromodichloromethane	ND	0.090	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Bromoform	ND	0.16	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Bromomethane	ND	1.2	3.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
2-Butanone	ND	0.36	10		µg/L	1	5/6/2015 12:44:51 PM	R26017
Carbon disulfide	ND	0.67	10		µg/L	1	5/6/2015 12:44:51 PM	R26017
Carbon Tetrachloride	ND	0.078	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Chlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Chloroethane	ND	0.10	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Chloroform	ND	0.21	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Chloromethane	ND	0.17	3.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
2-Chlorotoluene	ND	0.079	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
4-Chlorotoluene	ND	0.15	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
cis-1,2-DCE	ND	0.081	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
cis-1,3-Dichloropropene	ND	0.13	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2-Dibromo-3-chloropropane	ND	0.14	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Dibromochloromethane	ND	0.097	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Dibromomethane	ND	0.23	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2-Dichlorobenzene	ND	0.12	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,3-Dichlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,4-Dichlorobenzene	ND	0.17	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Dichlorodifluoromethane	ND	0.69	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1-Dichloroethene	ND	0.099	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
2,2-Dichloropropane	ND	0.15	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1-Dichloropropene	ND	0.12	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Hexachlorobutadiene	ND	0.25	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
2-Hexanone	ND	0.48	10		µg/L	1	5/6/2015 12:44:51 PM	R26017
Isopropylbenzene	ND	0.15	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
4-Isopropyltoluene	ND	0.19	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
4-Methyl-2-pentanone	ND	0.26	10		µg/L	1	5/6/2015 12:44:51 PM	R26017
Methylene Chloride	ND	0.36	3.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
n-Butylbenzene	ND	0.25	3.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
n-Propylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
sec-Butylbenzene	ND	0.23	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Styrene	ND	0.11	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
tert-Butylbenzene	ND	0.13	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1,1,2-Tetrachloroethane	ND	0.11	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1,2,2-Tetrachloroethane	ND	0.18	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Tetrachloroethene (PCE)	ND	0.16	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
trans-1,2-DCE	ND	0.094	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
trans-1,3-Dichloropropene	ND	0.11	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2,3-Trichlorobenzene	ND	0.27	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2,4-Trichlorobenzene	ND	0.28	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1,1-Trichloroethane	ND	0.078	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,1,2-Trichloroethane	ND	0.079	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Trichloroethene (TCE)	ND	0.16	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Trichlorofluoromethane	ND	0.13	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
1,2,3-Trichloropropane	ND	0.16	2.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Vinyl chloride	ND	0.13	1.0		µg/L	1	5/6/2015 12:44:51 PM	R26017
Xylenes, Total	ND	0.28	1.5		µg/L	1	5/6/2015 12:44:51 PM	R26017
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%REC	1	5/6/2015 12:44:51 PM	R26017
Surr: 4-Bromofluorobenzene	99.6	0	70-130		%REC	1	5/6/2015 12:44:51 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1505001**

Date Reported: **10/5/2015**

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-1-GW

Project: SWMU 10

Collection Date: 4/29/2015 5:10:00 PM

Lab ID: 1505001-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Surr: Dibromofluoromethane	94.8	0	70-130		%REC	1	5/6/2015 12:44:51 PM	R26017
Surr: Toluene-d8	103	0	70-130		%REC	1	5/6/2015 12:44:51 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: Trip Blank

Project: SWMU 10

Collection Date:

Lab ID: 1505001-002

Matrix: TRIP BLANK

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Benzene	ND	0.065	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Toluene	ND	0.11	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Ethylbenzene	ND	0.10	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Methyl tert-butyl ether (MTBE)	ND	0.17	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2,4-Trimethylbenzene	ND	0.16	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,3,5-Trimethylbenzene	ND	0.12	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2-Dichloroethane (EDC)	ND	0.18	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Naphthalene	ND	0.22	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1-Methylnaphthalene	ND	0.54	4.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
2-Methylnaphthalene	ND	0.59	4.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Acetone	ND	0.94	10		µg/L	1	5/7/2015 3:29:51 PM	R26051
Bromobenzene	ND	0.11	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Bromodichloromethane	ND	0.090	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Bromoform	ND	0.16	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Bromomethane	ND	1.2	3.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
2-Butanone	ND	0.36	10		µg/L	1	5/7/2015 3:29:51 PM	R26051
Carbon disulfide	ND	0.67	10		µg/L	1	5/7/2015 3:29:51 PM	R26051
Carbon Tetrachloride	ND	0.078	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Chlorobenzene	ND	0.093	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Chloroethane	ND	0.10	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Chloroform	ND	0.21	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Chloromethane	ND	0.17	3.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
2-Chlorotoluene	ND	0.079	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
4-Chlorotoluene	ND	0.15	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
cis-1,2-DCE	ND	0.081	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
cis-1,3-Dichloropropene	ND	0.13	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2-Dibromo-3-chloropropane	ND	0.14	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Dibromochloromethane	ND	0.097	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Dibromomethane	ND	0.23	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2-Dichlorobenzene	ND	0.12	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,3-Dichlorobenzene	ND	0.093	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,4-Dichlorobenzene	ND	0.17	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Dichlorodifluoromethane	ND	0.69	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1-Dichloroethene	ND	0.099	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
2,2-Dichloropropane	ND	0.15	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505001

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: Trip Blank

Project: SWMU 10

Collection Date:

Lab ID: 1505001-002

Matrix: TRIP BLANK

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
1,1-Dichloropropene	ND	0.12	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Hexachlorobutadiene	ND	0.25	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
2-Hexanone	ND	0.48	10		µg/L	1	5/7/2015 3:29:51 PM	R26051
Isopropylbenzene	ND	0.15	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
4-Isopropyltoluene	ND	0.19	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
4-Methyl-2-pentanone	ND	0.26	10		µg/L	1	5/7/2015 3:29:51 PM	R26051
Methylene Chloride	ND	0.36	3.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
n-Butylbenzene	ND	0.25	3.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
n-Propylbenzene	ND	0.16	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
sec-Butylbenzene	ND	0.23	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Styrene	ND	0.11	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
tert-Butylbenzene	ND	0.13	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1,1,2-Tetrachloroethane	ND	0.11	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1,2,2-Tetrachloroethane	ND	0.18	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Tetrachloroethene (PCE)	ND	0.16	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
trans-1,2-DCE	ND	0.094	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
trans-1,3-Dichloropropene	ND	0.11	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2,3-Trichlorobenzene	ND	0.27	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2,4-Trichlorobenzene	ND	0.28	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1,1-Trichloroethane	ND	0.078	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,1,2-Trichloroethane	ND	0.079	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Trichloroethene (TCE)	ND	0.16	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Trichlorofluoromethane	ND	0.13	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
1,2,3-Trichloropropane	ND	0.16	2.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Vinyl chloride	ND	0.13	1.0		µg/L	1	5/7/2015 3:29:51 PM	R26051
Xylenes, Total	ND	0.28	1.5		µg/L	1	5/7/2015 3:29:51 PM	R26051
Surr: 1,2-Dichloroethane-d4	125	0	70-130		%REC	1	5/7/2015 3:29:51 PM	R26051
Surr: 4-Bromofluorobenzene	106	0	70-130		%REC	1	5/7/2015 3:29:51 PM	R26051
Surr: Dibromofluoromethane	107	0	70-130		%REC	1	5/7/2015 3:29:51 PM	R26051
Surr: Toluene-d8	93.7	0	70-130		%REC	1	5/7/2015 3:29:51 PM	R26051

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	



12065 Lebanon Rd.
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

May 12, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505001-001H SWMU 10-1-GW
Collected By :
Collection Date : 04/29/15 17:10

ESC Sample # : L762967-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	0.046	0.0050	mg/l	4500CN E-2011	05/11/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/12/15 10:42 Printed: 05/12/15 10:43



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

May 12, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505001-001I SWMU 10-1-GW
Collected By :
Collection Date : 04/29/15 17:10

ESC Sample # : L762967-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexavalent Chromium	BDL	0.00050	mg/l	3500Cr C-2011	05/11/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 05/12/15 10:42 Printed: 05/12/15 10:43
L762967-02 (CR6ICFFP) - pH=7.53



YOUR LAB OF CHOICE

Hall Environmental Analysis Laboratory

4901 Hawkins NE

Albuquerque, NM 87109

Quality Assurance Report
Level II

L762967

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

May 12, 2015

Analyte	Result	Units	Laboratory Blank % Rec	Limit	Batch	Date Analyzed
Cyanide	< .005	mg/l			WG787731	05/11/15 16:24
Hexavalent Chromium	< .0005	mg/l			WG788013	05/11/15 12:19

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Cyanide	mg/l	0.0	0.0	0.0	20	L763281-02	WG787731
Cyanide	mg/l	0.0	0.00700	NA	20	L763288-02	WG787731
Hexavalent Chromium	mg/l	0.000540	0.000510	5.71	20	L762964-02	WG788013
Hexavalent Chromium	mg/l	0.0	0.0	0.0	20	L763563-02	WG788013

Analyte	Units	Known Val	Laboratory Control Sample Result	% Rec	Limit	Batch
Cyanide	mg/l	.1	0.0990	99.0	90-110	WG787731
Hexavalent Chromium	mg/l	.002	0.00208	104.	90-110	WG788013

Analyte	Units	Result	Ref	Laboratory Control Sample Duplicate %Rec	Limit	RPD	Limit	Batch
Cyanide	mg/l	0.0988	0.0990	99.0	90-110	0.202	20	WG787731
Hexavalent Chromium	mg/l	0.00196	0.00208	98.0	90-110	5.94	20	WG788013

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Cyanide	mg/l	0.205	0.0	.2	100.	90-110	L762964-01	WG787731
Hexavalent Chromium	mg/l	0.0566	0.0	.05	110.*	90-110	L763173-02	WG788013

Analyte	Units	MSD	Ref	Laboratory Control Sample Duplicate %Rec	Limit	RPD	Limit	Ref Samp	Batch
Cyanide	mg/l	0.188	0.205	94.0	90-110	8.65	20	L762964-01	WG787731
Hexavalent Chromium	mg/l	0.0564	0.0566	113.*	90-110	0.354	20	L763173-02	WG788013

Batch number /Run number / Sample number cross reference

WG787731: R3036222: L762967-01
WG788013: R3036316: L762967-02

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19025		SampType:	MBLK		TestCode:	EPA Method 200.7: Metals			
Client ID:	PBW		Batch ID:	19025		RunNo:	25975			
Prep Date:	5/4/2015		Analysis Date:	5/5/2015		SeqNo:	769760		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								

Sample ID	LCS-19025		SampType:	LCS		TestCode:	EPA Method 200.7: Metals			
Client ID:	LCSW		Batch ID:	19025		RunNo:	25975			
Prep Date:	5/4/2015		Analysis Date:	5/5/2015		SeqNo:	769761		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	95.5	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.3	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.7	85	115			
Chromium	0.48	0.0060	0.5000	0	96.3	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.0	85	115			
Iron	0.48	0.020	0.5000	0	95.9	85	115			
Manganese	0.47	0.0020	0.5000	0	93.6	85	115			
Nickel	0.47	0.010	0.5000	0	94.5	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Vanadium	0.50	0.050	0.5000	0	99.7	85	115			

Sample ID	MB-19025		SampType:	MBLK		TestCode:	EPA Method 200.7: Metals			
Client ID:	PBW		Batch ID:	19025		RunNo:	25986			
Prep Date:	5/4/2015		Analysis Date:	5/5/2015		SeqNo:	770113		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	ND	0.010								

Sample ID	LCS-19025		SampType:	LCS		TestCode:	EPA Method 200.7: Metals			
Client ID:	LCSW		Batch ID:	19025		RunNo:	25986			
Prep Date:	5/4/2015		Analysis Date:	5/5/2015		SeqNo:	770114		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.51	0.010	0.5000	0	102	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R26030	RunNo:	26030					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771646	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	R26030	RunNo:	26030					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771647	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	95.7	85	115			
Beryllium	0.48	0.0020	0.5000	0	96.6	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.48	0.0060	0.5000	0	95.1	85	115			
Cobalt	0.48	0.0060	0.5000	0	96.0	85	115			
Iron	0.49	0.020	0.5000	0	98.8	85	115			
Manganese	0.48	0.0020	0.5000	0	96.8	85	115			
Nickel	0.47	0.010	0.5000	0	93.2	85	115			
Silver	0.096	0.0050	0.1000	0	95.9	85	115			
Vanadium	0.49	0.050	0.5000	0	97.5	85	115			
Zinc	0.46	0.010	0.5000	0	92.0	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	R26030	RunNo:	26030					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771648	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	R26030	RunNo:	26030					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771649	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.48	0.0020	0.5000	0	96.0	85	115			
Beryllium	0.49	0.0020	0.5000	0	97.5	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Chromium	0.49	0.0060	0.5000	0	97.7	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.50	0.020	0.5000	0	101	85	115			
Manganese	0.49	0.0020	0.5000	0	97.3	85	115			
Nickel	0.47	0.010	0.5000	0	94.7	85	115			
Silver	0.094	0.0050	0.1000	0	93.9	85	115			
Vanadium	0.49	0.050	0.5000	0	97.2	85	115			
Zinc	0.47	0.010	0.5000	0	93.8	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19025		SampType:	MBLK		TestCode:	EPA 200.8: Metals				
Client ID:	PBW		Batch ID:	19025		RunNo:	25987				
Prep Date:	5/4/2015		Analysis Date:	5/5/2015		SeqNo:	770247		Units:		mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	0.0010									

Sample ID	MB-19025		SampType: MBLK		TestCode: EPA 200.8: Metals					
Client ID:	PBW		Batch ID: 19025		RunNo: 25987					
Prep Date:	5/4/2015		Analysis Date: 5/5/2015		SeqNo: 770248			Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774818		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.9	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774819		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.2	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			

Sample ID	MB		SampType: MBLK		TestCode: EPA 200.8: Metals					
Client ID:	PBW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774821		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Lead	ND	0.00050								

Sample ID	MB		SampType: MBLK		TestCode: EPA 200.8: Metals					
Client ID:	PBW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774822		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB		SampType: MBLK		TestCode: EPA 200.8: Metals					
Client ID:	PBW		Batch ID: R26119		RunNo: 26119					
Prep Date:			Analysis Date: 5/11/2015		SeqNo: 774822		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Lead	ND	0.00050								

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26138		RunNo: 26138					
Prep Date:			Analysis Date: 5/12/2015		SeqNo: 775338		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115			
Selenium	0.024	0.0010	0.02500	0	95.6	85	115			

Sample ID	MB	SampType: MBLK		TestCode: EPA 200.8: Metals						
Client ID:	PBW	Batch ID: R26138		RunNo: 26138						
Prep Date:		Analysis Date: 5/12/2015		SeqNo: 775342		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26138		RunNo: 26138					
Prep Date:			Analysis Date: 5/12/2015		SeqNo: 775769		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.6	85	115			
Selenium	0.024	0.0010	0.02500	0	96.4	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID:	PBW	Batch ID: R26138			RunNo: 26138					
Prep Date:		Analysis Date: 5/12/2015			SeqNo: 775770		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID LCS	SampType: LCS			TestCode: EPA 200.8: Dissolved Metals						
Client ID: LCSW	Batch ID: R26119			RunNo: 26119						
Prep Date:	Analysis Date: 5/11/2015			SeqNo: 774863			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.9	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			

Sample ID LCS	SampType: LCS			TestCode: EPA 200.8: Dissolved Metals						
Client ID: LCSW	Batch ID: R26119			RunNo: 26119						
Prep Date:	Analysis Date: 5/11/2015			SeqNo: 774864			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.2	85	115			
Lead	0.025	0.00050	0.02500	0	99.5	85	115			

Sample ID MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals						
Client ID: PBW	Batch ID: R26119			RunNo: 26119						
Prep Date:	Analysis Date: 5/11/2015			SeqNo: 774865			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Lead	ND	0.00050								

Sample ID MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals						
Client ID: PBW	Batch ID: R26119			RunNo: 26119						
Prep Date:	Analysis Date: 5/11/2015			SeqNo: 774866			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Lead	ND	0.00050								

Sample ID LCS	SampType: LCS			TestCode: EPA 200.8: Dissolved Metals						
Client ID: LCSW	Batch ID: R26138			RunNo: 26138						
Prep Date:	Analysis Date: 5/12/2015			SeqNo: 775346			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115			
Selenium	0.024	0.0010	0.02500	0	95.6	85	115			

Sample ID MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals						
Client ID: PBW	Batch ID: R26138			RunNo: 26138						
Prep Date:	Analysis Date: 5/12/2015			SeqNo: 775348			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: R26138		RunNo: 26138							
Prep Date:	Analysis Date: 5/12/2015		SeqNo: 775348		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Sample ID LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: R26138		RunNo: 26138							
Prep Date:	Analysis Date: 5/12/2015		SeqNo: 775777		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.6	85	115			
Selenium	0.024	0.0010	0.02500	0	96.4	85	115			

Sample ID MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: R26138		RunNo: 26138							
Prep Date:	Analysis Date: 5/12/2015		SeqNo: 775778		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19047		SampType:	MBLK		TestCode:	EPA Method 245.1: Mercury				
Client ID:	PBW		Batch ID:	19047		RunNo:	25969				
Prep Date:	5/5/2015		Analysis Date:	5/5/2015		SeqNo:	769643		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.00020									

Sample ID	LCS-19047		SampType: LCS		TestCode: EPA Method 245.1: Mercury					
Client ID:	LCSW		Batch ID: 19047		RunNo: 25969					
Prep Date:	5/5/2015		Analysis Date: 5/5/2015		SeqNo: 769644		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R25920	RunNo:	25920					
Prep Date:		Analysis Date:	5/1/2015	SeqNo:	768219	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R25920	RunNo:	25920					
Prep Date:		Analysis Date:	5/1/2015	SeqNo:	768220	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.4	90	110			
Sulfate	9.7	0.50	10.00	0	97.4	90	110			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R25920	RunNo:	25920					
Prep Date:		Analysis Date:	5/1/2015	SeqNo:	768273	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R25920	RunNo:	25920					
Prep Date:		Analysis Date:	5/1/2015	SeqNo:	768274	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Sulfate	9.7	0.50	10.00	0	97.1	90	110			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R26026	RunNo:	26026					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771570	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R26026	RunNo:	26026					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771571	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	97.9	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-18985		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767854		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		101	76.5	150			

Sample ID	LCS-18985		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767970		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1.0	5.000	0	104	60.1	156			
Surr: DNOP	0.52		0.5000		105	76.5	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768862		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		88.4	80	120			

Sample ID	2.5UG GRO LCS	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID: R25939			RunNo: 25939					
Prep Date:		Analysis Date: 5/4/2015			SeqNo: 768863		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	92.2	80	120			
Surr: BFB	18		20.00		91.1	80	120			

Sample ID	1505001-001BMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	SWMU 10-1-GW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768876		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0.02780	87.1	51	131			
Surr: BFB	21		20.00		106	80	120			

Sample ID	1505001-001BMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	SWMU 10-1-GW		Batch ID:	R25939		RunNo:	25939				
Prep Date:			Analysis Date:	5/4/2015		SeqNo:	768877		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0.02780	85.5	51	131	1.74	20		
Surr: BFB	21		20.00		105	80	120	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771281	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771281	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		116	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.0	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771283	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	19	1.0	20.00	0	97.1	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R26017			RunNo: 26017						
Prep Date:	Analysis Date: 5/6/2015			SeqNo: 771283		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	25	1.0	20.00	0	123	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID 1505001-001a ms	SampType: MS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: SWMU 10-1-GW	Batch ID: R26017			RunNo: 26017						
Prep Date:	Analysis Date: 5/6/2015			SeqNo: 771288		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	26	1.0	20.00	4.693	104	70	130			
Toluene	20	1.0	20.00	0	99.7	70	130			
Chlorobenzene	20	1.0	20.00	0	98.6	70	130			
1,1-Dichloroethene	24	1.0	20.00	0	121	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		111	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.1	70	130			
Surr: Toluene-d8	9.8		10.00		97.5	70	130			

Sample ID 1505001-001a msd	SampType: MSD			TestCode: EPA Method 8260B: VOLATILES						
Client ID: SWMU 10-1-GW	Batch ID: R26017			RunNo: 26017						
Prep Date:	Analysis Date: 5/6/2015			SeqNo: 771289		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	26	1.0	20.00	4.693	108	70	130	2.94	20	
Toluene	21	1.0	20.00	0	103	70	130	3.36	20	
Chlorobenzene	20	1.0	20.00	0	102	70	130	3.71	20	
1,1-Dichloroethene	25	1.0	20.00	0	127	70	130	4.50	20	
Trichloroethene (TCE)	20	1.0	20.00	0	99.5	70	130	0.436	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		101	70	130	0	0	
Surr: Toluene-d8	10		10.00		101	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs		SampType: LCS		TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW		Batch ID: R26051		RunNo: 26051					
Prep Date:			Analysis Date: 5/7/2015		SeqNo: 772391		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	24	1.0	20.00	0	122	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Sample ID	5ml rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R26051			RunNo: 26051					
Prep Date:		Analysis Date: 5/7/2015			SeqNo: 772398		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26051	RunNo:	26051					
Prep Date:		Analysis Date:	5/7/2015	SeqNo:	772398	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26051	RunNo:	26051					
Prep Date:		Analysis Date:	5/7/2015	SeqNo:	772398	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		119	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.5	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.2	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	170		200.0		86.6	14.9	111			
Surr: Phenol-d5	170		200.0		85.6	11.3	108			
Surr: 2,4,6-Tribromophenol	170		200.0		83.0	15.7	154			
Surr: Nitrobenzene-d5	86		100.0		86.0	47.8	106			
Surr: 2-Fluorobiphenyl	86		100.0		86.3	21.3	123			
Surr: 4-Terphenyl-d14	76		100.0		75.5	14.3	135			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	lcs-18996		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770337		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	78	10	100.0	0	77.9	47.8	99.7			
4-Chloro-3-methylphenol	180	10	200.0	0	88.1	58.1	103			
2-Chlorophenol	150	10	200.0	0	73.7	49.5	96.8			
1,4-Dichlorobenzene	75	10	100.0	0	75.1	40.4	89.4			
2,4-Dinitrotoluene	71	10	100.0	0	71.0	38.6	91.3			
N-Nitrosodi-n-propylamine	81	10	100.0	0	81.3	53.9	95.6			
4-Nitrophenol	160	10	200.0	0	80.1	26.4	108			
Pentachlorophenol	140	20	200.0	0	72.3	36.5	86.6			
Phenol	160	10	200.0	0	81.8	29.3	108			
Pyrene	77	10	100.0	0	77.1	45.7	100			
1,2,4-Trichlorobenzene	77	10	100.0	0	77.0	39.3	94.5			
Surr: 2-Fluorophenol	160		200.0		80.1	14.9	111			
Surr: Phenol-d5	180		200.0		88.0	11.3	108			
Surr: 2,4,6-Tribromophenol	210		200.0		105	15.7	154			
Surr: Nitrobenzene-d5	82		100.0		82.0	47.8	106			
Surr: 2-Fluorobiphenyl	85		100.0		84.9	21.3	123			
Surr: 4-Terphenyl-d14	94		100.0		94.2	14.3	135			

Sample ID	lcsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	88	10	100.0	0	87.9	47.8	99.7	12.0	28.2	
4-Chloro-3-methylphenol	210	10	200.0	0	103	58.1	103	15.2	24.4	
2-Chlorophenol	150	10	200.0	0	74.5	49.5	96.8	1.08	28.1	
1,4-Dichlorobenzene	72	10	100.0	0	72.0	40.4	89.4	4.19	31.2	
2,4-Dinitrotoluene	84	10	100.0	0	83.9	38.6	91.3	16.6	44.4	
N-Nitrosodi-n-propylamine	90	10	100.0	0	89.6	53.9	95.6	9.67	24.2	
4-Nitrophenol	190	10	200.0	0	95.2	26.4	108	17.2	36.6	
Pentachlorophenol	170	20	200.0	0	85.2	36.5	86.6	16.3	29.5	
Phenol	170	10	200.0	0	82.7	29.3	108	1.08	30	
Pyrene	89	10	100.0	0	89.0	45.7	100	14.3	31	
1,2,4-Trichlorobenzene	80	10	100.0	0	80.4	39.3	94.5	4.35	24	
Surr: 2-Fluorophenol	160		200.0		78.4	14.9	111	0	0	
Surr: Phenol-d5	180		200.0		88.9	11.3	108	0	0	
Surr: 2,4,6-Tribromophenol	220		200.0		112	15.7	154	0	0	
Surr: Nitrobenzene-d5	89		100.0		88.8	47.8	106	0	0	
Surr: 2-Fluorobiphenyl	89		100.0		89.1	21.3	123	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505001

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Icsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	97		100.0		96.6	14.3	135	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1505001

RcptNo: 1

Received by/date:

Logged By: Lindsay Mangin

4/30/2015 3:50:00 PM

Completed By: Lindsay Mangin

5/1/2015 6:02:51 AM

Reviewed By:

Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☒

No ☐

Not Present ☐

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Client

Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of >0° C to 6.0°C

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☒

No ☐

No VOA Vials ☐

11. Were any sample containers received broken?

Yes ☐

No ☒

12. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

13. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

14. Is it clear what analyses were requested?

Yes ☒

No ☐

15. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

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

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?

Yes ☐

No ☐

NA ☒

Person Notified:

Date:

By Whom:

Via:

☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
GALLUP REFINERY
 Mailing Address: 92 GIANT CROSSING RD
GALLUP, NM 87301
 Phone #: 505-722-0231
 Email or Fax#: CHERYL.JOHNSON@WNR.COM
 QA/QC Package: ☒ Level 4 (Full Validation)
☐ Standard ☐ Other
 Accreditation ☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time: ☒ Standard ☐ Rush
 Project Name: SWMU 10
 Project #:
 Project Manager: CHERYL JOHNSON
 Sampler: TRACY PAYNE
 On Ice: ☒ Yes ☐ No
 Sample Temperature: 1.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
29.15	1710	WATER	SWMU10-1-GW	40 ML VOA-6	HCL	1525001
				1 LITER AMBER-2	NEAT	-001
				250 ML AMBER-1	NEAT	-001
				100 ML PLASTIC-1	HNO3	-001
				500 ML PLASTIC-1	HNO3	-001
				500 ML PLASTIC-1	NAOH	-001
				50 ML PLASTIC-1	NH42SO4	-001
29.15	-	WATER	TRIP BLANK	40 ML VOA-2	HCL	-002

Date: 30.15 Time: 0800 Relinquished by:
 Date: 30.15 Time: 1550 Relinquished by:



HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

BTEX + MTBE + TMBs (8021)		BTEX + MTBE + TPH (Gas only)		TPH Method 8015B (Gas/Diesel)	✓	TPH (Method 418.4) Diesel		EDB (Method 504.1)		8310 (PNA or PAH)		RCRA Metals (CYANIDE)		Anions (F, Cl, NO3, NO2, PO4, SO4)		8081 Pesticides / 8082 PCBs		8260B (VOA)	✓	8270 (Semi-VOA)		METALS - Total & Dissolved	(SEE ATTACHED SHEET)	GEN CHEM	CR 6	Air Bubbles (Y or N)

Remarks:

Received by: Date: 4.30.15 Time: 1300
 Received by: Date: 04.30.15 Time: 1630

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10

METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES TOTAL
METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

WESTERN REFINING SOUTHWEST, INC.

GALLUP REFINERY - SWMU 10

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0



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

October 05, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1505002

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 4/30/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 09, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505002

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: KJH	
Diesel Range Organics (DRO)	ND	0.91	1.0		mg/L	1	5/1/2015 6:46:18 PM	18985
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	5/1/2015 6:46:18 PM	18985
Surr: DNOP	106	0	76.5-150		%REC	1	5/1/2015 6:46:18 PM	18985
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.012	0.050		mg/L	1	5/4/2015 8:54:20 PM	R25939
Surr: BFB	86.0	0	80-120		%REC	1	5/4/2015 8:54:20 PM	R25939
EPA METHOD 300.0: ANIONS							Analyst: LGT	
Fluoride	ND	0.029	0.10		mg/L	1	5/1/2015 12:18:03 PM	R25920
Chloride	0.20	0.13	0.50	J	mg/L	1	5/1/2015 12:18:03 PM	R25920
Sulfate	ND	0.11	0.50		mg/L	1	5/1/2015 12:18:03 PM	R25920
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	ND	0.00095	0.0020		mg/L	1	5/6/2015 6:53:49 PM	R26030
Beryllium	ND	0.00031	0.0020		mg/L	1	5/6/2015 6:53:49 PM	R26030
Cadmium	ND	0.00097	0.0020		mg/L	1	5/6/2015 6:53:49 PM	R26030
Chromium	ND	0.0018	0.0060		mg/L	1	5/6/2015 6:53:49 PM	R26030
Cobalt	ND	0.0013	0.0060		mg/L	1	5/6/2015 6:53:49 PM	R26030
Iron	0.030	0.0073	0.020		mg/L	1	5/6/2015 6:53:49 PM	R26030
Manganese	0.00060	0.00027	0.0020	J	mg/L	1	5/6/2015 6:53:49 PM	R26030
Nickel	ND	0.0021	0.010		mg/L	1	5/6/2015 6:53:49 PM	R26030
Silver	ND	0.0012	0.0050		mg/L	1	5/6/2015 6:53:49 PM	R26030
Vanadium	ND	0.0015	0.050		mg/L	1	5/6/2015 6:53:49 PM	R26030
Zinc	0.023	0.0028	0.010		mg/L	1	5/6/2015 6:53:49 PM	R26030
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	ND	0.00095	0.0020		mg/L	1	5/4/2015 2:08:10 PM	R25943
Beryllium	ND	0.00031	0.0020		mg/L	1	5/4/2015 2:08:10 PM	R25943
Cadmium	ND	0.00097	0.0020		mg/L	1	5/4/2015 2:08:10 PM	R25943
Chromium	ND	0.0022	0.0060		mg/L	1	5/4/2015 2:08:10 PM	R25943
Cobalt	ND	0.0013	0.0060		mg/L	1	5/4/2015 2:08:10 PM	R25943
Iron	ND	0.0073	0.020		mg/L	1	5/4/2015 2:08:10 PM	R25943
Manganese	ND	0.0015	0.0020		mg/L	1	5/4/2015 2:08:10 PM	R25943
Nickel	ND	0.0023	0.010		mg/L	1	5/4/2015 2:08:10 PM	R25943
Silver	ND	0.0021	0.0050		mg/L	1	5/4/2015 2:08:10 PM	R25943
Vanadium	ND	0.0015	0.050		mg/L	1	5/4/2015 2:08:10 PM	R25943
Zinc	ND	0.0036	0.010		mg/L	1	5/4/2015 2:08:10 PM	R25943
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Antimony	0.00040	0.00014	0.0010	J	mg/L	1	5/12/2015 2:28:40 PM	R26138
Arsenic	ND	0.000065	0.0010		mg/L	1	5/12/2015 2:28:40 PM	R26138

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505002

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: DISSOLVED METALS							Analyst: DBD	
Lead	0.000073	0.000026	0.0010	J	mg/L	1	5/12/2015 2:28:40 PM	R26138
Selenium	ND	0.00019	0.0010		mg/L	1	5/12/2015 2:28:40 PM	R26138
EPA 200.8: METALS							Analyst: DBD	
Antimony	0.00061	0.00022	0.0010	J	mg/L	1	5/12/2015 2:48:30 PM	R26138
Arsenic	ND	0.00044	0.0010		mg/L	1	5/12/2015 2:48:30 PM	R26138
Lead	ND	0.000069	0.00050		mg/L	1	5/12/2015 2:48:30 PM	R26138
Selenium	ND	0.00019	0.0010		mg/L	1	5/12/2015 2:48:30 PM	R26138
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	ND	0.000059	0.00020		mg/L	1	5/5/2015 2:22:03 PM	19047
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Acenaphthylene	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Aniline	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Anthracene	ND	1.6	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Azobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benz(a)anthracene	ND	2.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzo(a)pyrene	ND	2.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzo(b)fluoranthene	ND	2.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzo(g,h,i)perylene	ND	3.1	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzo(k)fluoranthene	ND	2.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzoic acid	ND	1.0	20		µg/L	1	5/5/2015 9:31:26 PM	18996
Benzyl alcohol	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Bis(2-chloroethoxy)methane	ND	1.8	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Bis(2-chloroethyl)ether	ND	1.8	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Bis(2-chloroisopropyl)ether	ND	2.1	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Bis(2-ethylhexyl)phthalate	ND	3.3	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Bromophenyl phenyl ether	ND	1.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Butyl benzyl phthalate	ND	2.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Carbazole	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Chloro-3-methylphenol	ND	1.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Chloroaniline	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Chloronaphthalene	ND	1.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Chlorophenol	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Chlorophenyl phenyl ether	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Chrysene	ND	2.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Di-n-butyl phthalate	ND	2.1	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Di-n-octyl phthalate	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Dibenz(a,h)anthracene	ND	3.3	10		µg/L	1	5/5/2015 9:31:26 PM	18996

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505002

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Dibenzofuran	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
1,2-Dichlorobenzene	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
1,3-Dichlorobenzene	ND	1.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
1,4-Dichlorobenzene	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
3,3'-Dichlorobenzidine	ND	2.6	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Diethyl phthalate	ND	1.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Dimethyl phthalate	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4-Dichlorophenol	ND	1.4	20		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4-Dimethylphenol	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4,6-Dinitro-2-methylphenol	ND	1.4	20		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4-Dinitrophenol	ND	1.1	20		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4-Dinitrotoluene	ND	1.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2,6-Dinitrotoluene	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Fluoranthene	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Fluorene	ND	1.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Hexachlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Hexachlorobutadiene	ND	1.9	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Hexachlorocyclopentadiene	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Hexachloroethane	ND	1.6	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Indeno(1,2,3-cd)pyrene	ND	2.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Isophorone	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
1-Methylnaphthalene	ND	1.8	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Methylnaphthalene	ND	2.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Methylphenol	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
3+4-Methylphenol	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
N-Nitrosodi-n-propylamine	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
N-Nitrosodimethylamine	ND	1.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
N-Nitrosodiphenylamine	ND	2.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Naphthalene	ND	1.8	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Nitroaniline	ND	1.8	10		µg/L	1	5/5/2015 9:31:26 PM	18996
3-Nitroaniline	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Nitroaniline	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Nitrobenzene	ND	1.5	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2-Nitrophenol	ND	1.2	10		µg/L	1	5/5/2015 9:31:26 PM	18996
4-Nitrophenol	ND	1.4	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Pentachlorophenol	ND	1.1	20		µg/L	1	5/5/2015 9:31:26 PM	18996
Phenanthrene	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Phenol	ND	1.1	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Pyrene	ND	2.3	10		µg/L	1	5/5/2015 9:31:26 PM	18996

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505002

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Pyridine	ND	1.7	10		µg/L	1	5/5/2015 9:31:26 PM	18996
1,2,4-Trichlorobenzene	ND	2.0	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4,5-Trichlorophenol	ND	1.6	10		µg/L	1	5/5/2015 9:31:26 PM	18996
2,4,6-Trichlorophenol	ND	1.3	10		µg/L	1	5/5/2015 9:31:26 PM	18996
Surr: 2-Fluorophenol	94.3	0	14.9-111		%REC	1	5/5/2015 9:31:26 PM	18996
Surr: Phenol-d5	86.2	0	11.3-108		%REC	1	5/5/2015 9:31:26 PM	18996
Surr: 2,4,6-Tribromophenol	105	0	15.7-154		%REC	1	5/5/2015 9:31:26 PM	18996
Surr: Nitrobenzene-d5	108	0	47.8-106	S	%REC	1	5/5/2015 9:31:26 PM	18996
Surr: 2-Fluorobiphenyl	105	0	21.3-123		%REC	1	5/5/2015 9:31:26 PM	18996
Surr: 4-Terphenyl-d14	93.3	0	14.3-135		%REC	1	5/5/2015 9:31:26 PM	18996
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.065	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Toluene	ND	0.11	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Ethylbenzene	ND	0.10	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Methyl tert-butyl ether (MTBE)	ND	0.17	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2,4-Trimethylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,3,5-Trimethylbenzene	ND	0.12	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2-Dichloroethane (EDC)	ND	0.18	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Naphthalene	ND	0.22	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1-Methylnaphthalene	ND	0.54	4.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
2-Methylnaphthalene	ND	0.59	4.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Acetone	3.8	0.94	10	J	µg/L	1	5/6/2015 2:35:04 PM	R26017
Bromobenzene	ND	0.11	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Bromodichloromethane	ND	0.090	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Bromoform	ND	0.16	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Bromomethane	ND	1.2	3.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
2-Butanone	ND	0.36	10		µg/L	1	5/6/2015 2:35:04 PM	R26017
Carbon disulfide	ND	0.67	10		µg/L	1	5/6/2015 2:35:04 PM	R26017
Carbon Tetrachloride	ND	0.078	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Chlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Chloroethane	ND	0.10	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Chloroform	ND	0.21	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Chloromethane	ND	0.17	3.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
2-Chlorotoluene	ND	0.079	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
4-Chlorotoluene	ND	0.15	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
cis-1,2-DCE	ND	0.081	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
cis-1,3-Dichloropropene	ND	0.13	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2-Dibromo-3-chloropropane	ND	0.14	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505002

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Dibromochloromethane	ND	0.097	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Dibromomethane	ND	0.23	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2-Dichlorobenzene	ND	0.12	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,3-Dichlorobenzene	ND	0.093	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,4-Dichlorobenzene	ND	0.17	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Dichlorodifluoromethane	ND	0.69	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1-Dichloroethene	ND	0.099	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
2,2-Dichloropropane	ND	0.15	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1-Dichloropropene	ND	0.12	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Hexachlorobutadiene	ND	0.25	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
2-Hexanone	ND	0.48	10		µg/L	1	5/6/2015 2:35:04 PM	R26017
Isopropylbenzene	ND	0.15	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
4-Isopropyltoluene	ND	0.19	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
4-Methyl-2-pentanone	ND	0.26	10		µg/L	1	5/6/2015 2:35:04 PM	R26017
Methylene Chloride	ND	0.36	3.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
n-Butylbenzene	ND	0.25	3.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
n-Propylbenzene	ND	0.16	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
sec-Butylbenzene	ND	0.23	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Styrene	ND	0.11	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
tert-Butylbenzene	ND	0.13	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1,1,2-Tetrachloroethane	ND	0.11	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1,2,2-Tetrachloroethane	ND	0.18	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Tetrachloroethene (PCE)	ND	0.16	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
trans-1,2-DCE	ND	0.094	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
trans-1,3-Dichloropropene	ND	0.11	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2,3-Trichlorobenzene	ND	0.27	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2,4-Trichlorobenzene	ND	0.28	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1,1-Trichloroethane	ND	0.078	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,1,2-Trichloroethane	ND	0.079	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Trichloroethene (TCE)	ND	0.16	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Trichlorofluoromethane	ND	0.13	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
1,2,3-Trichloropropane	ND	0.16	2.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Vinyl chloride	ND	0.13	1.0		µg/L	1	5/6/2015 2:35:04 PM	R26017
Xylenes, Total	ND	0.28	1.5		µg/L	1	5/6/2015 2:35:04 PM	R26017
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%REC	1	5/6/2015 2:35:04 PM	R26017
Surr: 4-Bromofluorobenzene	98.6	0	70-130		%REC	1	5/6/2015 2:35:04 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1505002**

Date Reported: 10/5/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 EB02

Project: SWMU 10

Collection Date: 4/29/2015 7:05:00 PM

Lab ID: 1505002-001

Matrix: AQUEOUS

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Surr: Dibromofluoromethane	105	0	70-130		%REC	1	5/6/2015 2:35:04 PM	R26017
Surr: Toluene-d8	98.7	0	70-130		%REC	1	5/6/2015 2:35:04 PM	R26017

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		



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Mt. Juliet, TN 37122
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1-800-767-5859
Fax (615) 758-5859
Tax I.D. 62-0814289
Est. 1970

REPORT OF ANALYSIS

May 12, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505002-001H SWMU 10 EB02
Collected By :
Collection Date : 04/29/15 19:05

ESC Sample # : L762969-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.0050	mg/l	4500CN E-2011	05/11/15	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
Note:
The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.
Reported: 05/12/15 08:17 Printed: 05/12/15 08:18



YOUR LAB OF CHOICE

Hall Environmental Analysis Laboratory

4901 Hawkins NE

Albuquerque, NM 87109

Quality Assurance Report
Level II

L762969

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

May 12, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed				
		Units	% Rec							
Cyanide	< .005	mg/l			WG787731	05/11/15 16:24				
Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch			
Cyanide	mg/l	0.0	0.0	0.0	20	L763281-02	WG787731			
Cyanide	mg/l	0.0	0.00700	NA	20	L763288-02	WG787731			
Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch				
		Known Val	Result							
Cyanide	mg/l	.1	0.0990	99.0	90-110	WG787731				
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch		
Cyanide	mg/l	0.0988	0.0990	99.0	90-110	0.202	20	WG787731		
Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch		
			Ref Res	TV						
Cyanide	mg/l	0.205	0.0	.2	100.	90-110	L762964-01	WG787731		
Analyte	Units	MSD	Matrix Spike Duplicate		%Rec	Limit	RPD	Limit	Ref Samp	Batch
			Ref							
Cyanide	mg/l	0.188	0.205	94.0		90-110	8.65	20	L762964-01	WG787731

Batch number /Run number / Sample number cross reference

WG787731: R3036222: L762969-01

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R25943	RunNo:	25943					
Prep Date:		Analysis Date:	5/4/2015	SeqNo:	768973	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	R25943	RunNo:	25943					
Prep Date:		Analysis Date:	5/4/2015	SeqNo:	768974	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.48	0.0020	0.5000	0	95.3	85	115			
Beryllium	0.50	0.0020	0.5000	0	99.1	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.6	85	115			
Chromium	0.48	0.0060	0.5000	0	96.2	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.4	85	115			
Iron	0.47	0.020	0.5000	0	94.4	85	115			
Manganese	0.47	0.0020	0.5000	0	93.7	85	115			
Nickel	0.47	0.010	0.5000	0	93.6	85	115			
Silver	0.090	0.0050	0.1000	0	90.4	85	115			
Vanadium	0.50	0.050	0.5000	0	99.4	85	115			
Zinc	0.47	0.010	0.5000	0	93.5	85	115			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R26030	RunNo:	26030					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771646	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0020								
Beryllium	0.00038	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA Method 200.7: Metals							
Client ID: PBW	Batch ID: R26030		RunNo: 26030							
Prep Date:	Analysis Date: 5/6/2015		SeqNo: 771646		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 200.7: Metals							
Client ID: LCSW	Batch ID: R26030		RunNo: 26030							
Prep Date:	Analysis Date: 5/6/2015		SeqNo: 771647		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	95.7	85	115			
Beryllium	0.48	0.0020	0.5000	0	96.6	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.48	0.0060	0.5000	0	95.1	85	115			
Cobalt	0.48	0.0060	0.5000	0	96.0	85	115			
Iron	0.49	0.020	0.5000	0	98.8	85	115			
Manganese	0.48	0.0020	0.5000	0	96.8	85	115			
Nickel	0.47	0.010	0.5000	0	93.2	85	115			
Silver	0.096	0.0050	0.1000	0	95.9	85	115			
Vanadium	0.49	0.050	0.5000	0	97.5	85	115			
Zinc	0.46	0.010	0.5000	0	92.0	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB		SampType:	MBLK		TestCode:	EPA Method 200.7: Dissolved Metals			
Client ID:	PBW		Batch ID:	R25943		RunNo:	25943			
Prep Date:			Analysis Date:	5/4/2015		SeqNo:	768975	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID	LCS		SampType:	LCS		TestCode:	EPA Method 200.7: Dissolved Metals			
Client ID:	LCSW		Batch ID:	R25943		RunNo:	25943			
Prep Date:			Analysis Date:	5/4/2015		SeqNo:	768976	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.50	0.0020	0.5000	0	99.0	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.3	85	115			
Chromium	0.48	0.0060	0.5000	0	96.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.7	85	115			
Iron	0.48	0.020	0.5000	0	95.1	85	115			
Manganese	0.47	0.0020	0.5000	0	93.5	85	115			
Nickel	0.47	0.010	0.5000	0	93.8	85	115			
Silver	0.090	0.0050	0.1000	0	90.4	85	115			
Vanadium	0.50	0.050	0.5000	0	99.6	85	115			
Zinc	0.48	0.010	0.5000	0	96.7	85	115			

Sample ID	MB		SampType:	MBLK		TestCode:	EPA Method 200.7: Dissolved Metals			
Client ID:	PBW		Batch ID:	R26030		RunNo:	26030			
Prep Date:			Analysis Date:	5/6/2015		SeqNo:	771648	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID MB	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: R26030		RunNo: 26030							
Prep Date:	Analysis Date: 5/6/2015		SeqNo: 771648		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: R26030		RunNo: 26030							
Prep Date:	Analysis Date: 5/6/2015		SeqNo: 771649		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.0	85	115			
Beryllium	0.49	0.0020	0.5000	0	97.5	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Chromium	0.49	0.0060	0.5000	0	97.7	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.50	0.020	0.5000	0	101	85	115			
Manganese	0.49	0.0020	0.5000	0	97.3	85	115			
Nickel	0.47	0.010	0.5000	0	94.7	85	115			
Silver	0.094	0.0050	0.1000	0	93.9	85	115			
Vanadium	0.49	0.050	0.5000	0	97.2	85	115			
Zinc	0.47	0.010	0.5000	0	93.8	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS			SampType:	LCS			TestCode:	EPA 200.8: Metals			
Client ID:	LCSW			Batch ID:	R26138			RunNo:	26138			
Prep Date:				Analysis Date:	5/12/2015			SeqNo:	775338		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony	0.025	0.0010	0.02500	0	101	85	115					
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115					
Lead	0.013	0.00050	0.01250	0	104	85	115					
Selenium	0.024	0.0010	0.02500	0	95.6	85	115					

Sample ID	MB	SampType: MBLK		TestCode: EPA 200.8: Metals						
Client ID:	PBW	Batch ID: R26138		RunNo: 26138						
Prep Date:		Analysis Date: 5/12/2015		SeqNo: 775342			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Metals					
Client ID:	LCSW		Batch ID: R26138		RunNo: 26138					
Prep Date:			Analysis Date: 5/12/2015		SeqNo: 775769		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.6	85	115			
Lead	0.013	0.00050	0.01250	0	103	85	115			
Selenium	0.024	0.0010	0.02500	0	96.4	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID:	PBW	Batch ID: R26138			RunNo: 26138					
Prep Date:		Analysis Date: 5/12/2015			SeqNo: 775770			Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	LCSW		Batch ID: R26138		RunNo: 26138					
Prep Date:			Analysis Date: 5/12/2015		SeqNo: 775346		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	101	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115			
Lead	0.013	0.00050	0.01250	0	104	85	115			
Selenium	0.024	0.0010	0.02500	0	95.6	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: R26138			RunNo: 26138					
Prep Date:		Analysis Date: 5/12/2015			SeqNo: 775348		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID	LCS		SampType: LCS		TestCode: EPA 200.8: Dissolved Metals					
Client ID:	LCSW		Batch ID: R26138		RunNo: 26138					
Prep Date:			Analysis Date: 5/12/2015		SeqNo: 775777		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.6	85	115			
Lead	0.013	0.00050	0.01250	0	103	85	115			
Selenium	0.024	0.0010	0.02500	0	96.4	85	115			

Sample ID	MB	SampType: MBLK			TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batch ID: R26138			RunNo: 26138					
Prep Date:		Analysis Date: 5/12/2015			SeqNo: 775778		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19047		SampType: MBLK		TestCode: EPA Method 245.1: Mercury					
Client ID:	PBW		Batch ID: 19047		RunNo: 25969					
Prep Date:	5/5/2015		Analysis Date: 5/5/2015		SeqNo: 769643		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	LCS-19047			SampType:	LCS		TestCode:	EPA Method 245.1: Mercury			
Client ID:	LCSW			Batch ID:	19047		RunNo:	25969			
Prep Date:	5/5/2015			Analysis Date:	5/5/2015		SeqNo:	769644		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.0050	0.00020	0.005000	0	101	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB		SampType:	MBLK		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBW		Batch ID:	R25920		RunNo:	25920			
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768219	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID	LCS		SampType:	LCS		TestCode:	EPA Method 300.0: Anions			
Client ID:	LCSW		Batch ID:	R25920		RunNo:	25920			
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768220	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.4	90	110			
Chloride	4.8	0.50	5.000	0	96.8	90	110			
Sulfate	9.7	0.50	10.00	0	97.4	90	110			

Sample ID	1505002-001EMS		SampType:	MS		TestCode:	EPA Method 300.0: Anions			
Client ID:	SWMU 10 EB02		Batch ID:	R25920		RunNo:	25920			
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768236	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	99.3	66.1	113			
Chloride	4.8	0.50	5.000	0.2004	92.7	81.8	112			
Sulfate	9.4	0.50	10.00	0	94.5	88.3	114			

Sample ID	1505002-001EMSD		SampType:	MSD		TestCode:	EPA Method 300.0: Anions			
Client ID:	SWMU 10 EB02		Batch ID:	R25920		RunNo:	25920			
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768237	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	100	66.1	113	0.902	20	
Chloride	4.9	0.50	5.000	0.2004	93.5	81.8	112	0.817	20	
Sulfate	9.5	0.50	10.00	0	95.1	88.3	114	0.637	20	

Sample ID	MB		SampType:	MBLK		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBW		Batch ID:	R25920		RunNo:	25920			
Prep Date:			Analysis Date:	5/1/2015		SeqNo:	768273	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	LCS		SampType: LCS		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSW		Batch ID: R25920		RunNo: 25920					
Prep Date:			Analysis Date: 5/1/2015		SeqNo: 768274		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.9	0.50	5.000	0	97.0	90	110			
Sulfate	9.7	0.50	10.00	0	97.1	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-18985		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767854		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		101	76.5	150			

Sample ID	LCS-18985		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 18985		RunNo: 25902					
Prep Date:	4/30/2015		Analysis Date: 5/1/2015		SeqNo: 767970		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1.0	5.000	0	104	60.1	156			
Surr: DNOP	0.52		0.5000		105	76.5	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768862		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		88.4	80	120			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R25939		RunNo: 25939					
Prep Date:			Analysis Date: 5/4/2015		SeqNo: 768863		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	92.2	80	120			
Surr: BFB	18		20.00		91.1	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R26017			RunNo: 26017					
Prep Date:		Analysis Date: 5/6/2015			SeqNo: 771281		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5ml rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771281	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		116	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.0	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	R26017	RunNo:	26017					
Prep Date:		Analysis Date:	5/6/2015	SeqNo:	771283	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	19	1.0	20.00	0	97.1	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R26017			RunNo: 26017					
Prep Date:	Analysis Date: 5/6/2015			SeqNo: 771283		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	25	1.0	20.00	0	123	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-18996		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770336		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	170		200.0		86.6	14.9	111			
Surr: Phenol-d5	170		200.0		85.6	11.3	108			
Surr: 2,4,6-Tribromophenol	170		200.0		83.0	15.7	154			
Surr: Nitrobenzene-d5	86		100.0		86.0	47.8	106			
Surr: 2-Fluorobiphenyl	86		100.0		86.3	21.3	123			
Surr: 4-Terphenyl-d14	76		100.0		75.5	14.3	135			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	lcs-18996		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSW		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770337		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	78	10	100.0	0	77.9	47.8	99.7			
4-Chloro-3-methylphenol	180	10	200.0	0	88.1	58.1	103			
2-Chlorophenol	150	10	200.0	0	73.7	49.5	96.8			
1,4-Dichlorobenzene	75	10	100.0	0	75.1	40.4	89.4			
2,4-Dinitrotoluene	71	10	100.0	0	71.0	38.6	91.3			
N-Nitrosodi-n-propylamine	81	10	100.0	0	81.3	53.9	95.6			
4-Nitrophenol	160	10	200.0	0	80.1	26.4	108			
Pentachlorophenol	140	20	200.0	0	72.3	36.5	86.6			
Phenol	160	10	200.0	0	81.8	29.3	108			
Pyrene	77	10	100.0	0	77.1	45.7	100			
1,2,4-Trichlorobenzene	77	10	100.0	0	77.0	39.3	94.5			
Surr: 2-Fluorophenol	160		200.0		80.1	14.9	111			
Surr: Phenol-d5	180		200.0		88.0	11.3	108			
Surr: 2,4,6-Tribromophenol	210		200.0		105	15.7	154			
Surr: Nitrobenzene-d5	82		100.0		82.0	47.8	106			
Surr: 2-Fluorobiphenyl	85		100.0		84.9	21.3	123			
Surr: 4-Terphenyl-d14	94		100.0		94.2	14.3	135			

Sample ID	lcsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	88	10	100.0	0	87.9	47.8	99.7	12.0	28.2	
4-Chloro-3-methylphenol	210	10	200.0	0	103	58.1	103	15.2	24.4	
2-Chlorophenol	150	10	200.0	0	74.5	49.5	96.8	1.08	28.1	
1,4-Dichlorobenzene	72	10	100.0	0	72.0	40.4	89.4	4.19	31.2	
2,4-Dinitrotoluene	84	10	100.0	0	83.9	38.6	91.3	16.6	44.4	
N-Nitrosodi-n-propylamine	90	10	100.0	0	89.6	53.9	95.6	9.67	24.2	
4-Nitrophenol	190	10	200.0	0	95.2	26.4	108	17.2	36.6	
Pentachlorophenol	170	20	200.0	0	85.2	36.5	86.6	16.3	29.5	
Phenol	170	10	200.0	0	82.7	29.3	108	1.08	30	
Pyrene	89	10	100.0	0	89.0	45.7	100	14.3	31	
1,2,4-Trichlorobenzene	80	10	100.0	0	80.4	39.3	94.5	4.35	24	
Surr: 2-Fluorophenol	160		200.0		78.4	14.9	111	0	0	
Surr: Phenol-d5	180		200.0		88.9	11.3	108	0	0	
Surr: 2,4,6-Tribromophenol	220		200.0		112	15.7	154	0	0	
Surr: Nitrobenzene-d5	89		100.0		88.8	47.8	106	0	0	
Surr: 2-Fluorobiphenyl	89		100.0		89.1	21.3	123	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505002

05-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Icsd-18996		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 18996		RunNo: 25988					
Prep Date:	5/1/2015		Analysis Date: 5/5/2015		SeqNo: 770338		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	97		100.0		96.6	14.3	135	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1505002

RcptNo: 1

Received by/date:

Logged By: Lindsay Mangin

4/30/2015 3:50:00 PM

Completed By: Lindsay Mangin

5/1/2015 6:28:50 AM

Reviewed By:

Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☒

No ☐

Not Present ☐

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Client

Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of >0° C to 6.0°C

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☒

No ☐

No VOA Vials ☐

11. Were any sample containers received broken?

Yes ☐

No ☒

12. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

13. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

14. Is it clear what analyses were requested?

Yes ☒

No ☐

15. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

of preserved bottles checked for pH: 21
<2 or >2 unless noted
Adjusted? ☒
Checked by: *[Signature]*

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?

Yes ☐

No ☐

NA ☒

Person Notified:

Date

By Whom:

Via:

☐ eMail

☐ Phone

☐ Fax

☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

WESTERN REFINING SOUTHWEST, INC.

GALLUP REFINERY - SWMU 10

**METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES TOTAL
METALS ANALYSIS AND DISSOLVED METALS ANALYSIS**

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

WESTERN REFINING SOUTHWEST, INC.

GALLUP REFINERY - SWMU 10

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0



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

November 05, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1505003

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 4/30/2015 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



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

Case Narrative

WO#: 1505003
Date: 11/5/2015

CLIENT: Western Refining Company
Project: SWMU 10

Analytical Notes Regarding Hexavalent Chromium:

This report is an addendum to the original report, with an updated value for hexavalent chromium. The original result of 5.7 mg/kg, for sample SWMU 10-5 (0-2'), was in question because of previous suspected false positive results. An alternate laboratory was used for the analysis. Sample SWMU 10-5 (0-2') is less than 1.0mg/kg from the alternate laboratory.



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www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515
College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

ANALYTICAL SUMMARY REPORT

August 24, 2015

Hall Environmental

4901 Hawkins St NE Ste D

Albuquerque, NM 87109-4372

Work Order: B15080963

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 1 sample for Hall Environmental on 8/11/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B15080963-001	1505003-001C, SWMU 10-5 (0-2 Feet)	04/29/15 12:00	08/11/15	Solid	Chromium, Hexavalent Water Extraction for Hex Chromium

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:


Corporate Quality Assurance Officer

Digitally signed by
Andy Valkenburg
Date: 2015.08.24 14:42:19 -06:00



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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

CLIENT: Hall Environmental
Project: Not Indicated
Work Order: B15080963

Report Date: 08/24/15

CASE NARRATIVE

Level IV reporting was requested. Included with the analysis reports are instrument data reports for all analysis associated with the instrument calibration, QC sample analysis, and sample analysis. Copies of the detailed laboratory records for the analyses are sorted by method, instrument, and then analysis time. All analytical data is within method QA/QC specifications except as noted on analyses and/or QC summary reports, or in this narrative. The detailed report format with the instrument data identifies which QC batch ID and sequence QC are associated with each analysis result for a sample.

Inclusion of the raw data will be found with the attached data files. The results of this Analytical Report relate only to the items submitted for analysis. Only the raw data associated with parameters listed on this report should be validated.



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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Client Sample ID: 1505003-001C, SWMU 10-5 (0-2 Feet)
Project: Not Indicated
Matrix: Solid

Lab ID: B15080963-001
Collection Date: 04/29/15 12:00
Date Received: 08/11/15
Report Date: 08/24/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, WATER EXTRACTABLE Chromium, Hexavalent - Soluble	ND	mg/kg		1	SW7196A		08/12/15 15:00 / ma	08/12/15 11:30	Water Extr	SPEC_150812C	6	92222

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



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Billings, MT 800.735.4489 • Casper, WY 888.235.0515
College Station, TX 888.690.2218 • Gillette, WY 866.886.7175 • Helena, MT 877.472.0711

Client: Hall Environmental
Work Order: B15080963
Project: Not Indicated

ANALYTICAL QC SUMMARY REPORT
Prepared by Billings, MT Branch
BatchID: 92222

Date: 24-Aug-15

Run ID :Run Order: SPEC_150812C: 5 SampType: Method Blank Lab ID: MB-92222 Method: SW7196A
Analysis Date: 08/12/15 15:00 Units: mg/kg Prep Info: Prep Date: 8/12/2015 Prep Method: Water Extraction
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium, Hexavalent - Soluble ND 0.01
Associated samples: B15080963-001A

Run ID :Run Order: SPEC_150812C: 7 SampType: Sample Matrix Spike Lab ID: B15080963-001AMS Method: SW7196A
Analysis Date: 08/12/15 15:00 Units: mg/kg Prep Info: Prep Date: Prep Method:
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium, Hexavalent - Soluble 0.751 1.0 1 0 75 70 130
Associated samples: B15080963-001A

Run ID :Run Order: SPEC_150812C: 8 SampType: Sample Matrix Spike Duplicate Lab ID: B15080963-001AMSD Method: SW7196A
Analysis Date: 08/12/15 15:00 Units: mg/kg Prep Info: Prep Date: Prep Method:
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium, Hexavalent - Soluble 0.713 1.0 1 0 71 70 130 0.7512 20
Associated samples: B15080963-001A

Run ID :Run Order: SPEC_150812C: 9 SampType: Sample Duplicate Lab ID: B15080963-001ADUP Method: SW7196A
Analysis Date: 08/12/15 15:00 Units: mg/kg Prep Info: Prep Date: 8/12/2015 Prep Method: Water Extraction
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium, Hexavalent - Soluble ND 1.0 0 0 0 0 30
Associated samples: B15080963-001A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Hall Environmental

B15080963

Login completed by: Randa Nees

Date Received: 8/11/2015

Reviewed by: BL2000\edwards

Received by: jrjz

Reviewed Date: 8/12/2015

Carrier name: Return-UPS NDA

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☒	Not Applicable ☐
Container/Temp Blank temperature:	1.8°C Blue Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None



CHAIN OF CUSTODY RECORD

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

SUB CONTRACTOR: Bil-Energy		COMPANY: Energy Laboratories		PHONE: (800) 735-4489	FAX: (406) 252-6069
ADDRESS: 1120 South 27th Street		ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Billings, MT 59107					
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE
1	1505003-001C	SWMU 10-5 (0-2')	80ZGU	Soil	4/29/2015 12:00:00 PM
			# CONTAINERS	1	
			LEVEL	4	
ANALYTICAL COMMENTS 15080913-001					

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 8/10/2015	Time: 3:06 PM	Received By:	Date: 4/16/2015	Time: 1:13
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
TAT: Standard ☒	RUSH ☐	Next BD ☐	2nd BD ☐	3rd BD ☐	
			REPORT TRANSMITTAL DESIRED: ☐ HARD COPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE		
			FOR LAB USE ONLY		
			Temp of samples 1.3 °C Attempt to Cool? BLUE ICE		
			Comments: RTN UPS W/TA / SEALON COOLER		

Energy Laboratories Inc

ANALYTICAL RUN Summary

24-Aug-15

Run ID SPEC_150812C

Run Start Date: 8/12/2015 3:00:00 P

Analyst: Mark A Spitzer

Ical:

Column ID:

Comments:

Seq No	Lab ID	Test Code	Sample Type	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
9781583	CCB	CR-HEX-W	CCB		8/12/2015 3:00:0	1	R247670		0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Chromium, Hexavalent	A	mg/L	0.0002	0.0002		0	0	0.000557	0.01	0	0%	0	0	0	0%

Seq No	Lab ID	Test Code	Sample Type	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
9781584	CCV	CR-HEX-W	CCV		8/12/2015 3:00:0	1	R247670		0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Chromium, Hexavalent	A	mg/L	0.1059	0.1059		0.1	0	0.000557	0.01	0	106%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Type	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
9781585	MB-R247670	CR-HEX-W	MBLK		8/12/2015 3:00:0	1	R247670		0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Chromium, Hexavalent	A	mg/L	0.0002	0		0	0	0.004	0.01	0	0%	0	0	0	0%

Seq No	Lab ID	Test Code	Sample Type	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
9781586	LCS-R247670	CR-HEX-W	LCS		8/12/2015 3:00:0	1	R247670		1E+07	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Chromium, Hexavalent	A	mg/L	0.0988	0.0988		0.1	0	0.004	0.01	0	99%	85	115	0%	

Hexavalent Chromium (Cr⁶⁺) in Soil and Water SM3500-Cr B

Analyst: MAS

Analysis Date: 11/5/14

Time: 3:30 PM

Calibration Standard: ME406020
Calibration Date Used: new calibration

Reference Std: MA4225B
Color Reagent: Me141020B

[illegible]

Hexavalent Chromium (Cr6+) in Soil and Water SM3500-Cr B

Analyst: MAS Analysis Date: 8/12/15 Time: 3:00 PM
Instrument: Spec
Calibration Standard: ME150226B Reference Std: ME150226A
Calibration Date Used: 11-5-14 Color Reagent: ME150812C

[illegible]

PREP BATCH REPORT

Prep Code: CR-HEX-S-WATER-EX Technician: Mark A Spitzer Prep Start Date: 8/12/2015 11:30:29 A
 Prep Batch 92222 Prep Temp NA °C Batch Units: G Prep End Date: 8/12/2015 2:49:00 PM

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-92222			100	0	0	100	1		8/12/2015	8/12/2015
B15080963-001A	Solid		10	0	0	100	9.95024876		8/12/2015	8/12/2015
B15080963-001ADUP	Solid		10	0	0	100	9.98003992		8/12/2015	8/12/2015

Energy Laboratories Inc

Standard LOG

Standard ID: ME150226A
Standard Name: HEX Cr 1.0 mg/L QCS
Date Prepared: 2/26/2015
Date Expires: 2/26/2016
Department: ME
Vendor:
Lot Number:
Balance ID:
Type: Secondary
BY: Mark A Spitzer
Status: New
Comments:

<u>Stock Source</u>	Base Units	Final Volume:	250 mL
ETC0311 Cr 6+ Stock Ref Solution	ug/mL	Amount Added	5 mL
<u>Analyses</u>	CAS	Conc:	ug/mL
A Chromium, Hexavalent	18540-29-9		0

Energy Laboratories Inc

Standard LOG

Standard ID: ME150226B
Standard Name: HEX Cr 1.0 mg/L STD
Date Prepared: 2/26/2015
Date Expires: 2/26/2016
Department: ME
Vendor:
Lot Number:
Balance ID:

Type: Secondary
BY: Mark A Spitzer
Status: Open

Comments:

<u>Stock Source</u>	Base Units	Final Volume:	Amount Added
ETC0310 CR6+ STOCK	ug/mL	250 mL	0.5 mL
<u>Analytes</u>	CAS	Conc:	ug/mL
A Chromium, Hexavalent	18540-29-9		0

Energy Laboratories Inc

Standard LOG

Standard ID: ME150812C
Standard Name: Hex chrome color reagent
Date Prepared: 8/12/2015
Date Expires: 8/12/2016
Department: ME
Vendor:
Lot Number:
Balance ID: 4-place Balance
Comments: Diluted to 40 mL in acetone

Type:
BY: Mark A Spitzer
Status: Open

Chemical / Solvent Used	Bottle No	Amt	Units
1,5-Diphenylcarbohydrazide	1925	0.2	g

Final Volume: 40 mL

Stock Source

Base Units

Amount Added

Analyses

CAS

Conc: ug/mL

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1505003

RcptNo: 1

Received by/date:

[Signature] 04/30/15

Logged By: Lindsay Mangin

4/30/2015 3:50:00 PM

[Signature]

Completed By: Lindsay Mangin

5/1/2015 6:34:19 AM

[Signature]

Reviewed By:

[Signature] 05/10/15

Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☒

No ☐

Not Present ☐

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Client

Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of >0° C to 6.0°C

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☐

No ☐

No VOA Vials ☒

11. Were any sample containers received broken?

Yes ☐

No ☒

12. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

13. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

14. Is it clear what analyses were requested?

Yes ☒

No ☐

15. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (If applicable)

16. Was client notified of all discrepancies with this order?

Yes ☐

No ☐

NA ☒

Person Notified:

Date

By Whom:

Via:

☐ eMail

☐ Phone

☐ Fax

☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

GALLUP REFINERY

Mailing Address: 92 GIANT CROSSING ROAD

GALLUP, NM 87301

Phone #: 505-722-0231

email or Fax#: CHERYL.JOHNSON@WNR.COM

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

Accreditation ☐ NELAP ☐ Other

☒ EDD (Type) EXCEL

Sample Request ID

Date

Time

Matrix

Sample Request ID

4/29/15 1310 SOIL SWMU 10-5 (22-24)

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Turn-Around Time:

☒ Standard ☐ Rush

Project Name:

SWMU 10

Project #:

Project Manager:

CHERYL JOHNSON

Sampler: TRACY PAYNE

Sample ID

Container Type and #

Preservative Type

JARS-2 NEAT

VIALS-2 MECH

VIALS-2 SOB1

-005

-005

-005

Remarks:

Received by: [Signature] Date: 4/29/15 Time: 1300

Received by: [Signature] Date: 04/30/15 Time: 1550

Relinquished by: [Signature] Date: 4/29/15 Time: 0800

Relinquished by: [Signature] Date: 4/29/15 Time: 1550

Relinquished by: [Signature] Date: 4/29/15 Time: 1550



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	
TPH Method 8015B (Gas/Diesel)	✓
TPH (Method 418.1)	✓
EDB (Method 504.1)	✓
8310 (PNA or PAH)	✓
RCRA 8 Metals	✓
Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	✓
8081 Pesticides / 8082 PCB's	✓
8260B (VOA)	✓
8270 (Semi-VOA)	✓
METALS & CYANIDE	✓
(SEE ATTACHED SHEET)	
Air Bubbles (Y or N)	



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

October 08, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1505003

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 4/30/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 09, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



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

Case Narrative

WO#: 1505003
Date: 10/8/2015

CLIENT: Western Refining Company
Project: SWMU 10

Analytical Notes Regarding EPA Method 8015 and 8270:
The surrogates with "S" flags are unrecoverable due to sample dilution and matrix interferences.

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 12:00:00 PM

Lab ID: 1505003-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	7700	540	980		mg/Kg-dr	100	5/5/2015 2:49:11 PM	19040
Motor Oil Range Organics (MRO)	5900	4900	4900		mg/Kg-dr	100	5/5/2015 2:49:11 PM	19040
Surr: DNOP	0	0	57.9-140	S	%REC	100	5/5/2015 2:49:11 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	16	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.53	0.0071	0.080		mg/Kg-dr	2	5/6/2015 4:02:26 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.9		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Arsenic	2.6	0.34	2.9	J	mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Barium	500	0.069	0.23		mg/Kg-dr	2	5/7/2015 1:22:33 PM	19080
Beryllium	0.99	0.0086	0.17		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Cadmium	ND	0.032	0.12		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Chromium	54	0.070	0.35		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Cobalt	6.7	0.044	0.35		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Iron	18000	70	290		mg/Kg-dr	100	5/7/2015 11:03:43 AM	19080
Lead	4.9	0.13	0.29		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Manganese	870	0.34	0.58		mg/Kg-dr	5	5/8/2015 2:30:37 PM	19080
Nickel	14	0.15	0.58		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Silver	ND	0.035	0.29		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Vanadium	26	0.039	2.9		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
Zinc	150	0.75	2.9		mg/Kg-dr	1	5/7/2015 1:21:01 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	1.5	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Acenaphthylene	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Aniline	ND	1.0	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Anthracene	ND	1.0	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Azobenzene	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benz(a)anthracene	ND	0.95	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzo(a)pyrene	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzo(b)fluoranthene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzo(g,h,i)perylene	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzo(k)fluoranthene	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzoic acid	ND	0.69	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Benzyl alcohol	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Bis(2-chloroethoxy)methane	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 12:00:00 PM

Lab ID: 1505003-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.92	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Bis(2-ethylhexyl)phthalate	ND	1.4	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Bromophenyl phenyl ether	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Butyl benzyl phthalate	ND	1.5	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Carbazole	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Chloro-3-methylphenol	ND	1.2	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Chloroaniline	ND	1.1	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Chloronaphthalene	ND	1.3	3.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Chlorophenol	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Chlorophenyl phenyl ether	ND	1.8	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Chrysene	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Di-n-butyl phthalate	ND	1.4	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Di-n-octyl phthalate	ND	1.3	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Dibenz(a,h)anthracene	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Dibenzofuran	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
1,2-Dichlorobenzene	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
1,3-Dichlorobenzene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
1,4-Dichlorobenzene	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
3,3'-Dichlorobenzidine	ND	0.93	3.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Diethyl phthalate	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Dimethyl phthalate	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4-Dichlorophenol	ND	1.2	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4-Dimethylphenol	ND	0.95	3.6		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.65	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4-Dinitrophenol	ND	0.50	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4-Dinitrotoluene	ND	1.1	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,6-Dinitrotoluene	ND	1.3	6.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Fluoranthene	ND	1.5	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Fluorene	ND	1.6	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Hexachlorobenzene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Hexachlorobutadiene	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Hexachlorocyclopentadiene	ND	0.83	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Hexachloroethane	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Indeno(1,2,3-cd)pyrene	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Isophorone	ND	1.3	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
1-Methylnaphthalene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Methylnaphthalene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Methylphenol	ND	1.2	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026

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

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 12:00:00 PM

Lab ID: 1505003-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
N-Nitrosodi-n-propylamine	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
N-Nitrosodiphenylamine	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Naphthalene	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Nitroaniline	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
3-Nitroaniline	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Nitroaniline	ND	1.1	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Nitrobenzene	ND	1.2	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2-Nitrophenol	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
4-Nitrophenol	ND	1.0	3.0		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Pentachlorophenol	ND	0.75	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Phenanthrene	ND	1.3	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Phenol	ND	1.1	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Pyrene	ND	1.6	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Pyridine	ND	1.0	4.8		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
1,2,4-Trichlorobenzene	ND	1.2	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4,5-Trichlorophenol	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
2,4,6-Trichlorophenol	ND	1.4	2.4		mg/Kg-dr	1	5/8/2015 6:26:16 PM	19026
Surr: 2-Fluorophenol	0		26.4-129	S	%REC	1	5/8/2015 6:26:16 PM	19026
Surr: Phenol-d5	0		34.8-118	S	%REC	1	5/8/2015 6:26:16 PM	19026
Surr: 2,4,6-Tribromophenol	0		26.8-128	S	%REC	1	5/8/2015 6:26:16 PM	19026
Surr: Nitrobenzene-d5	0		35.8-124	S	%REC	1	5/8/2015 6:26:16 PM	19026
Surr: 2-Fluorobiphenyl	0		24.5-139	S	%REC	1	5/8/2015 6:26:16 PM	19026
Surr: 4-Terphenyl-d14	0		29.4-129	S	%REC	1	5/8/2015 6:26:16 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	0.014	0.0046	0.031	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Toluene	0.010	0.0037	0.031	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Ethylbenzene	0.016	0.0028	0.031	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Methyl tert-butyl ether (MTBE)	ND	0.0044	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2,4-Trimethylbenzene	0.063	0.0016	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,3,5-Trimethylbenzene	0.041	0.0020	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2-Dichloroethane (EDC)	ND	0.012	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2-Dibromoethane (EDB)	ND	0.0025	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Naphthalene	0.12	0.0074	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1-Methylnaphthalene	0.51	0.019	0.12		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
2-Methylnaphthalene	0.53	0.020	0.12		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Acetone	ND	0.023	0.47		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Bromobenzene	ND	0.0023	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Bromodichloromethane	ND	0.0025	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-5 (0-2')**Project:** SWMU 10**Collection Date:** 4/29/2015 12:00:00 PM**Lab ID:** 1505003-001**Matrix:** SOIL**Received Date:** 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Bromoform	ND	0.0025	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Bromomethane	ND	0.0060	0.093		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
2-Butanone	ND	0.020	0.31		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Carbon disulfide	ND	0.022	0.31		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Carbon tetrachloride	ND	0.0030	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Chlorobenzene	ND	0.0024	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Chloroethane	ND	0.024	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Chloroform	ND	0.0032	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Chloromethane	ND	0.0036	0.093		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
2-Chlorotoluene	ND	0.0035	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
4-Chlorotoluene	ND	0.0023	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
cis-1,2-DCE	ND	0.0039	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
cis-1,3-Dichloropropene	ND	0.0022	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2-Dibromo-3-chloropropane	ND	0.0053	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Dibromochloromethane	ND	0.0023	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Dibromomethane	ND	0.0033	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2-Dichlorobenzene	ND	0.0019	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,3-Dichlorobenzene	ND	0.0037	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,4-Dichlorobenzene	ND	0.0039	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Dichlorodifluoromethane	ND	0.0078	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1-Dichloroethane	ND	0.012	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1-Dichloroethene	ND	0.0021	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2-Dichloropropane	ND	0.0017	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,3-Dichloropropane	ND	0.0043	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
2,2-Dichloropropane	ND	0.0045	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1-Dichloropropene	ND	0.0046	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Hexachlorobutadiene	ND	0.0043	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
2-Hexanone	ND	0.0076	0.31		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Isopropylbenzene	ND	0.0026	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
4-Isopropyltoluene	0.0061	0.0022	0.031	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
4-Methyl-2-pentanone	ND	0.0054	0.31		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Methylene chloride	ND	0.012	0.093		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
n-Butylbenzene	0.0094	0.0027	0.093	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
n-Propylbenzene	0.0051	0.0023	0.031	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
sec-Butylbenzene	ND	0.0044	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Styrene	ND	0.0057	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
tert-Butylbenzene	ND	0.0036	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1,1,2-Tetrachloroethane	ND	0.0025	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1,2,2-Tetrachloroethane	ND	0.0038	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 12:00:00 PM

Lab ID: 1505003-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Tetrachloroethene (PCE)	ND	0.0027	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
trans-1,2-DCE	ND	0.0020	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
trans-1,3-Dichloropropene	ND	0.0056	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2,3-Trichlorobenzene	ND	0.0066	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2,4-Trichlorobenzene	ND	0.0057	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1,1-Trichloroethane	ND	0.0047	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,1,2-Trichloroethane	ND	0.0037	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Trichloroethene (TCE)	ND	0.0030	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Trichlorofluoromethane	ND	0.0094	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
1,2,3-Trichloropropane	ND	0.0052	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Vinyl chloride	ND	0.012	0.031		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Xylenes, Total	0.14	0.0086	0.062		mg/Kg-dr	1	5/5/2015 12:59:46 AM	19008
Surr: Dibromofluoromethane	99.5		70-130		%REC	1	5/5/2015 12:59:46 AM	19008
Surr: 1,2-Dichloroethane-d4	93.8		70-130		%REC	1	5/5/2015 12:59:46 AM	19008
Surr: Toluene-d8	95.1		70-130		%REC	1	5/5/2015 12:59:46 AM	19008
Surr: 4-Bromofluorobenzene	81.4		70-130		%REC	1	5/5/2015 12:59:46 AM	19008
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	2.5	0.78	3.1	J	mg/Kg-dr	1	5/5/2015 12:59:46 AM	R25941
Surr: BFB	112	0	67.4-150		%REC	1	5/5/2015 12:59:46 AM	R25941

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (2-4'

Project: SWMU 10

Collection Date: 4/29/2015 12:12:00 PM

Lab ID: 1505003-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	780	5.3	9.6		mg/Kg-dr	1	5/5/2015 3:16:02 PM	19040
Motor Oil Range Organics (MRO)	300	48	48		mg/Kg-dr	1	5/5/2015 3:16:02 PM	19040
Surr: DNOP	110	0	57.9-140		%REC	1	5/5/2015 3:16:02 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	31	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0087	0.0044	0.050	J	mg/Kg-dr	1	5/6/2015 3:33:31 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.9	3.5		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Arsenic	1.9	0.41	3.5	J	mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Barium	190	0.042	0.14		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Beryllium	1.4	0.010	0.21		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Cadmium	ND	0.039	0.14		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Chromium	5.0	0.085	0.42		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Cobalt	2.9	0.053	0.42		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Iron	12000	85	350		mg/Kg-dr	100	5/7/2015 11:05:07 AM	19080
Lead	9.2	0.15	0.35		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Manganese	410	0.17	0.28		mg/Kg-dr	2	5/7/2015 1:25:33 PM	19080
Nickel	4.4	0.18	0.70		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Selenium	ND	2.2	3.5		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Silver	ND	0.042	0.35		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Vanadium	11	0.047	3.5		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
Zinc	22	0.91	3.5		mg/Kg-dr	1	5/7/2015 1:24:03 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.90	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Acenaphthylene	ND	0.75	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Aniline	ND	0.65	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Anthracene	ND	0.63	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Azobenzene	ND	0.83	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benz(a)anthracene	ND	0.58	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzo(a)pyrene	ND	0.83	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzo(b)fluoranthene	ND	0.70	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzo(g,h,i)perylene	ND	0.84	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzo(k)fluoranthene	ND	0.84	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzoic acid	ND	0.42	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Benzyl alcohol	ND	0.66	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Bis(2-chloroethoxy)methane	ND	0.71	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (2-4'

Project: SWMU 10

Collection Date: 4/29/2015 12:12:00 PM

Lab ID: 1505003-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.73	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.57	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.83	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Bromophenyl phenyl ether	ND	0.79	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Butyl benzyl phthalate	ND	0.90	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Carbazole	ND	0.69	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Chloro-3-methylphenol	ND	0.74	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Chloroaniline	ND	0.69	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Chloronaphthalene	ND	0.79	1.9		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Chlorophenol	ND	0.69	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Chlorophenyl phenyl ether	ND	1.1	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Chrysene	ND	0.74	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Di-n-butyl phthalate	ND	0.84	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Di-n-octyl phthalate	ND	0.83	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Dibenz(a,h)anthracene	ND	0.80	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Dibenzofuran	ND	0.79	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
1,2-Dichlorobenzene	ND	0.71	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
1,3-Dichlorobenzene	ND	0.66	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
1,4-Dichlorobenzene	ND	0.78	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
3,3'-Dichlorobenzidine	ND	0.57	1.9		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Diethyl phthalate	ND	0.84	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Dimethyl phthalate	ND	0.68	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4-Dichlorophenol	ND	0.74	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4-Dimethylphenol	ND	0.58	2.2		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.40	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4-Dinitrophenol	ND	0.31	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4-Dinitrotoluene	ND	0.66	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,6-Dinitrotoluene	ND	0.82	3.7		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Fluoranthene	ND	0.90	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Fluorene	ND	1.0	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Hexachlorobenzene	ND	0.70	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Hexachlorobutadiene	ND	0.73	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Hexachlorocyclopentadiene	ND	0.51	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Hexachloroethane	ND	0.66	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.84	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Isophorone	ND	0.79	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
1-Methylnaphthalene	ND	0.69	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Methylnaphthalene	ND	0.68	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Methylphenol	ND	0.74	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (2-4'

Project: SWMU 10

Collection Date: 4/29/2015 12:12:00 PM

Lab ID: 1505003-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.77	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
N-Nitrosodi-n-propylamine	ND	0.77	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
N-Nitrosodiphenylamine	ND	0.66	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Naphthalene	ND	0.71	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Nitroaniline	ND	0.84	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
3-Nitroaniline	ND	0.71	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Nitroaniline	ND	0.67	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Nitrobenzene	ND	0.76	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2-Nitrophenol	ND	0.67	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
4-Nitrophenol	ND	0.64	1.9		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Pentachlorophenol	ND	0.46	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Phenanthrene	1.1	0.78	1.5	J	mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Phenol	ND	0.66	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Pyrene	ND	0.96	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Pyridine	ND	0.62	3.0		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
1,2,4-Trichlorobenzene	ND	0.76	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4,5-Trichlorophenol	ND	0.86	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
2,4,6-Trichlorophenol	ND	0.86	1.5		mg/Kg-dr	1	5/8/2015 6:54:09 PM	19026
Surr: 2-Fluorophenol	92.9		26.4-129		%REC	1	5/8/2015 6:54:09 PM	19026
Surr: Phenol-d5	92.6		34.8-118		%REC	1	5/8/2015 6:54:09 PM	19026
Surr: 2,4,6-Tribromophenol	90.9		26.8-128		%REC	1	5/8/2015 6:54:09 PM	19026
Surr: Nitrobenzene-d5	83.7		35.8-124		%REC	1	5/8/2015 6:54:09 PM	19026
Surr: 2-Fluorobiphenyl	80.1		24.5-139		%REC	1	5/8/2015 6:54:09 PM	19026
Surr: 4-Terphenyl-d14	103		29.4-129		%REC	1	5/8/2015 6:54:09 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	0.040	0.0060	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Toluene	0.024	0.0048	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Ethylbenzene	0.030	0.0037	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Methyl tert-butyl ether (MTBE)	ND	0.0057	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2,4-Trimethylbenzene	0.11	0.0020	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,3,5-Trimethylbenzene	0.054	0.0026	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2-Dichloroethane (EDC)	ND	0.016	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2-Dibromoethane (EDB)	ND	0.0032	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Naphthalene	0.16	0.0096	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1-Methylnaphthalene	0.63	0.024	0.16		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
2-Methylnaphthalene	0.74	0.026	0.16		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Acetone	ND	0.030	0.60		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Bromobenzene	ND	0.0030	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Bromodichloromethane	ND	0.0033	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 12:12:00 PM

Lab ID: 1505003-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Bromoform	ND	0.0032	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Bromomethane	ND	0.0078	0.12		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
2-Butanone	ND	0.026	0.40		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Carbon disulfide	ND	0.029	0.40		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Carbon tetrachloride	ND	0.0039	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Chlorobenzene	ND	0.0031	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Chloroethane	ND	0.031	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Chloroform	ND	0.0042	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Chloromethane	ND	0.0047	0.12		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
2-Chlorotoluene	ND	0.0045	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
4-Chlorotoluene	ND	0.0030	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
cis-1,2-DCE	ND	0.0051	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
cis-1,3-Dichloropropene	ND	0.0028	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2-Dibromo-3-chloropropane	ND	0.0069	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Dibromochloromethane	ND	0.0030	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Dibromomethane	ND	0.0042	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2-Dichlorobenzene	ND	0.0024	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,3-Dichlorobenzene	ND	0.0047	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,4-Dichlorobenzene	ND	0.0050	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Dichlorodifluoromethane	ND	0.010	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1-Dichloroethane	ND	0.016	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1-Dichloroethene	ND	0.0028	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2-Dichloropropane	ND	0.0022	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,3-Dichloropropane	ND	0.0055	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
2,2-Dichloropropane	ND	0.0059	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1-Dichloropropene	ND	0.0060	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Hexachlorobutadiene	ND	0.0056	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
2-Hexanone	ND	0.0099	0.40		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Isopropylbenzene	0.0046	0.0034	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
4-Isopropyltoluene	0.0092	0.0029	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
4-Methyl-2-pentanone	ND	0.0070	0.40		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Methylene chloride	ND	0.016	0.12		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
n-Butylbenzene	0.016	0.0035	0.12	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
n-Propylbenzene	0.010	0.0030	0.040	J	mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
sec-Butylbenzene	ND	0.0057	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Styrene	ND	0.0074	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
tert-Butylbenzene	ND	0.0046	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1,1,2-Tetrachloroethane	ND	0.0033	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1,2,2-Tetrachloroethane	ND	0.0049	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (2-4'

Project: SWMU 10

Collection Date: 4/29/2015 12:12:00 PM

Lab ID: 1505003-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Tetrachloroethene (PCE)	ND	0.0035	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
trans-1,2-DCE	ND	0.0026	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
trans-1,3-Dichloropropene	ND	0.0072	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2,3-Trichlorobenzene	ND	0.0086	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2,4-Trichlorobenzene	ND	0.0074	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1,1-Trichloroethane	ND	0.0061	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,1,2-Trichloroethane	ND	0.0048	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Trichloroethene (TCE)	ND	0.0039	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Trichlorofluoromethane	ND	0.012	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
1,2,3-Trichloropropane	ND	0.0067	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Vinyl chloride	ND	0.016	0.040		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Xylenes, Total	0.15	0.011	0.080		mg/Kg-dr	1	5/5/2015 2:26:08 AM	19008
Surr: Dibromofluoromethane	101		70-130		%REC	1	5/5/2015 2:26:08 AM	19008
Surr: 1,2-Dichloroethane-d4	94.3		70-130		%REC	1	5/5/2015 2:26:08 AM	19008
Surr: Toluene-d8	93.9		70-130		%REC	1	5/5/2015 2:26:08 AM	19008
Surr: 4-Bromofluorobenzene	75.7		70-130		%REC	1	5/5/2015 2:26:08 AM	19008
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	4.7	1.0	4.0		mg/Kg-dr	1	5/5/2015 2:26:08 AM	R25941
Surr: BFB	106	0	67.4-150		%REC	1	5/5/2015 2:26:08 AM	R25941

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (4-6')

Project: SWMU 10

Collection Date: 4/29/2015 12:32:00 PM

Lab ID: 1505003-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	3000	54	97		mg/Kg-dr	10	5/7/2015 3:18:58 PM	19040
Motor Oil Range Organics (MRO)	ND	480	480		mg/Kg-dr	10	5/7/2015 3:18:58 PM	19040
Surr: DNOP	0	0	57.9-140	S	%REC	10	5/7/2015 3:18:58 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	50	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0085	0.0063	0.071	J	mg/Kg-dr	1	5/6/2015 3:35:24 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	2.6	4.9		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Arsenic	1.5	0.57	4.9	J	mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Barium	110	0.058	0.20		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Beryllium	1.8	0.014	0.29		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Cadmium	0.062	0.054	0.20	J	mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Chromium	ND	0.12	0.59		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Cobalt	1.0	0.074	0.59		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Iron	7200	120	490		mg/Kg-dr	100	5/7/2015 11:06:30 AM	19080
Lead	17	0.21	0.49		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Manganese	200	0.11	0.20		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Nickel	0.69	0.25	0.98	J	mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Selenium	ND	3.0	4.9		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Silver	ND	0.058	0.49		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Vanadium	2.3	0.065	4.9	J	mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
Zinc	24	1.3	4.9		mg/Kg-dr	1	5/7/2015 1:26:55 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.24	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Acenaphthylene	ND	0.20	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Aniline	ND	0.17	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Anthracene	ND	0.17	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Azobenzene	ND	0.22	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benz(a)anthracene	ND	0.16	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzo(a)pyrene	ND	0.22	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzo(b)fluoranthene	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzo(g,h,i)perylene	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzo(k)fluoranthene	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzoic acid	ND	0.11	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Benzyl alcohol	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Bis(2-chloroethoxy)methane	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (4-6')

Project: SWMU 10

Collection Date: 4/29/2015 12:32:00 PM

Lab ID: 1505003-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.20	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.15	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.22	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Bromophenyl phenyl ether	ND	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Butyl benzyl phthalate	ND	0.24	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Carbazole	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Chloro-3-methylphenol	ND	0.20	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Chloroaniline	ND	0.18	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2-Chloronaphthalene	ND	0.21	0.50		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2-Chlorophenol	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Chlorophenyl phenyl ether	ND	0.30	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Chrysene	ND	0.20	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Di-n-butyl phthalate	ND	0.23	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Di-n-octyl phthalate	ND	0.22	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Dibenz(a,h)anthracene	ND	0.22	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Dibenzofuran	ND	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
1,2-Dichlorobenzene	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
1,3-Dichlorobenzene	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
1,4-Dichlorobenzene	ND	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
3,3'-Dichlorobenzidine	ND	0.15	0.50		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Diethyl phthalate	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Dimethyl phthalate	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4-Dichlorophenol	ND	0.20	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4-Dimethylphenol	ND	0.16	0.60		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.11	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4-Dinitrophenol	ND	0.083	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4-Dinitrotoluene	ND	0.18	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,6-Dinitrotoluene	ND	0.22	1.0		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Fluoranthene	ND	0.24	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Fluorene	1.4	0.27	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Hexachlorobenzene	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Hexachlorobutadiene	ND	0.20	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Hexachlorocyclopentadiene	ND	0.14	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Hexachloroethane	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Isophorone	ND	0.21	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
1-Methylnaphthalene	16	0.93	2.0		mg/Kg-dr	5	5/11/2015 12:27:02 PM	19026
2-Methylnaphthalene	26	0.91	2.0		mg/Kg-dr	5	5/11/2015 12:27:02 PM	19026
2-Methylphenol	ND	0.20	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (4-6')

Project: SWMU 10

Collection Date: 4/29/2015 12:32:00 PM

Lab ID: 1505003-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
N-Nitrosodi-n-propylamine	ND	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
N-Nitrosodiphenylamine	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Naphthalene	5.8	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2-Nitroaniline	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
3-Nitroaniline	ND	0.19	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Nitroaniline	ND	0.18	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Nitrobenzene	ND	0.21	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2-Nitrophenol	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
4-Nitrophenol	ND	0.17	0.50		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Pentachlorophenol	ND	0.12	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Phenanthrene	3.0	0.21	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Phenol	ND	0.18	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Pyrene	ND	0.26	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Pyridine	ND	0.17	0.80		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
1,2,4-Trichlorobenzene	ND	0.20	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4,5-Trichlorophenol	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
2,4,6-Trichlorophenol	ND	0.23	0.40		mg/Kg-dr	1	5/8/2015 7:22:09 PM	19026
Surr: 2-Fluorophenol	69.4		26.4-129		%REC	1	5/8/2015 7:22:09 PM	19026
Surr: Phenol-d5	71.1		34.8-118		%REC	1	5/8/2015 7:22:09 PM	19026
Surr: 2,4,6-Tribromophenol	46.1		26.8-128		%REC	1	5/8/2015 7:22:09 PM	19026
Surr: Nitrobenzene-d5	40.1		35.8-124		%REC	1	5/8/2015 7:22:09 PM	19026
Surr: 2-Fluorobiphenyl	55.7		24.5-139		%REC	1	5/8/2015 7:22:09 PM	19026
Surr: 4-Terphenyl-d14	88.8		29.4-129		%REC	1	5/8/2015 7:22:09 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	8.0	0.12	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Toluene	7.1	0.094	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Ethylbenzene	14	0.073	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Methyl tert-butyl ether (MTBE)	ND	0.11	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2,4-Trimethylbenzene	25	0.040	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,3,5-Trimethylbenzene	8.4	0.052	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2-Dichloroethane (EDC)	ND	0.32	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2-Dibromoethane (EDB)	ND	0.063	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Naphthalene	26	0.19	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1-Methylnaphthalene	46	0.48	3.2		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
2-Methylnaphthalene	80	2.6	16		mg/Kg-dr	50	5/5/2015 12:28:54 PM	R25982
Acetone	ND	0.59	12		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Bromobenzene	ND	0.059	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Bromodichloromethane	ND	0.065	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-5 (4-6')**Project:** SWMU 10**Collection Date:** 4/29/2015 12:32:00 PM**Lab ID:** 1505003-003**Matrix:** SOIL**Received Date:** 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Bromoform	ND	0.064	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Bromomethane	ND	0.15	2.4		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
2-Butanone	ND	0.51	7.9		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Carbon disulfide	ND	0.57	7.9		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Carbon tetrachloride	ND	0.077	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Chlorobenzene	ND	0.061	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Chloroethane	ND	0.61	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Chloroform	ND	0.083	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Chloromethane	ND	0.092	2.4		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
2-Chlorotoluene	ND	0.090	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
4-Chlorotoluene	ND	0.060	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
cis-1,2-DCE	ND	0.10	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
cis-1,3-Dichloropropene	ND	0.055	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2-Dibromo-3-chloropropane	ND	0.14	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Dibromochloromethane	ND	0.060	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Dibromomethane	ND	0.084	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2-Dichlorobenzene	ND	0.048	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,3-Dichlorobenzene	ND	0.093	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,4-Dichlorobenzene	ND	0.099	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Dichlorodifluoromethane	ND	0.20	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1-Dichloroethane	ND	0.32	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1-Dichloroethene	ND	0.055	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2-Dichloropropane	ND	0.044	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,3-Dichloropropane	ND	0.11	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
2,2-Dichloropropane	ND	0.12	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1-Dichloropropene	ND	0.12	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Hexachlorobutadiene	ND	0.11	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
2-Hexanone	ND	0.20	7.9		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Isopropylbenzene	2.6	0.067	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
4-Isopropyltoluene	1.2	0.056	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
4-Methyl-2-pentanone	ND	0.14	7.9		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Methylene chloride	ND	0.32	2.4		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
n-Butylbenzene	1.9	0.068	2.4	J	mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
n-Propylbenzene	3.8	0.059	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
sec-Butylbenzene	1.2	0.11	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Styrene	ND	0.15	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
tert-Butylbenzene	ND	0.091	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1,1,2-Tetrachloroethane	ND	0.065	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1,2,2-Tetrachloroethane	ND	0.096	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (4-6')

Project: SWMU 10

Collection Date: 4/29/2015 12:32:00 PM

Lab ID: 1505003-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Tetrachloroethene (PCE)	ND	0.069	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
trans-1,2-DCE	ND	0.052	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
trans-1,3-Dichloropropene	ND	0.14	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2,3-Trichlorobenzene	ND	0.17	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2,4-Trichlorobenzene	ND	0.15	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1,1-Trichloroethane	ND	0.12	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,1,2-Trichloroethane	ND	0.095	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Trichloroethene (TCE)	ND	0.077	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Trichlorofluoromethane	ND	0.24	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
1,2,3-Trichloropropane	ND	0.13	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Vinyl chloride	ND	0.32	0.79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Xylenes, Total	54	0.22	1.6		mg/Kg-dr	10	5/5/2015 2:55:01 AM	19008
Surr: Dibromofluoromethane	101		70-130		%REC	10	5/5/2015 2:55:01 AM	19008
Surr: 1,2-Dichloroethane-d4	98.6		70-130		%REC	10	5/5/2015 2:55:01 AM	19008
Surr: Toluene-d8	98.9		70-130		%REC	10	5/5/2015 2:55:01 AM	19008
Surr: 4-Bromofluorobenzene	74.6		70-130		%REC	10	5/5/2015 2:55:01 AM	19008
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	740	20	79		mg/Kg-dr	10	5/5/2015 2:55:01 AM	R25941
Surr: BFB	99.6	0	67.4-150		%REC	10	5/5/2015 2:55:01 AM	R25941

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (14-16'

Project: SWMU 10

Collection Date: 4/29/2015 12:50:00 PM

Lab ID: 1505003-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.5	10		mg/Kg-dr	1	5/5/2015 4:36:28 PM	19040
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg-dr	1	5/5/2015 4:36:28 PM	19040
Surr: DNOP	105	0	57.9-140		%REC	1	5/5/2015 4:36:28 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	49	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.011	0.0060	0.068	J	mg/Kg-dr	1	5/6/2015 3:37:14 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	2.5	4.7		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Arsenic	1.5	0.56	4.7	J	mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Barium	120	0.056	0.19		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Beryllium	1.8	0.014	0.28		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Cadmium	ND	0.053	0.19		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Chromium	2.5	0.11	0.57		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Cobalt	2.3	0.071	0.57		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Iron	10000	110	470		mg/Kg-dr	100	5/7/2015 11:08:10 AM	19080
Lead	16	0.21	0.47		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Manganese	280	0.11	0.19		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Nickel	3.1	0.24	0.94		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Selenium	ND	2.9	4.7		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Silver	ND	0.056	0.47		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Vanadium	7.2	0.063	4.7		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
Zinc	27	1.2	4.7		mg/Kg-dr	1	5/7/2015 1:29:41 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.24	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Acenaphthylene	ND	0.20	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Aniline	ND	0.17	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Anthracene	ND	0.17	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Azobenzene	ND	0.22	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benz(a)anthracene	ND	0.16	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzo(a)pyrene	ND	0.22	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzo(b)fluoranthene	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzo(g,h,i)perylene	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzo(k)fluoranthene	ND	0.22	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzoic acid	ND	0.11	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Benzyl alcohol	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Bis(2-chloroethoxy)methane	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (14-16')

Project: SWMU 10

Collection Date: 4/29/2015 12:50:00 PM

Lab ID: 1505003-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.20	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.15	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.22	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Bromophenyl phenyl ether	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Butyl benzyl phthalate	ND	0.24	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Carbazole	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Chloro-3-methylphenol	ND	0.20	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Chloroaniline	ND	0.18	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Chloronaphthalene	ND	0.21	0.50		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Chlorophenol	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Chlorophenyl phenyl ether	ND	0.30	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Chrysene	ND	0.20	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Di-n-butyl phthalate	ND	0.22	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Di-n-octyl phthalate	ND	0.22	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Dibenz(a,h)anthracene	ND	0.22	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Dibenzofuran	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
1,2-Dichlorobenzene	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
1,3-Dichlorobenzene	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
1,4-Dichlorobenzene	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
3,3'-Dichlorobenzidine	ND	0.15	0.50		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Diethyl phthalate	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Dimethyl phthalate	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4-Dichlorophenol	ND	0.20	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4-Dimethylphenol	ND	0.16	0.60		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.11	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4-Dinitrophenol	ND	0.082	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4-Dinitrotoluene	ND	0.18	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,6-Dinitrotoluene	ND	0.22	0.99		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Fluoranthene	ND	0.24	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Fluorene	ND	0.27	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Hexachlorobenzene	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Hexachlorobutadiene	ND	0.20	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Hexachlorocyclopentadiene	ND	0.14	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Hexachloroethane	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Isophorone	ND	0.21	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
1-Methylnaphthalene	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Methylnaphthalene	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Methylphenol	ND	0.20	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (14-16')

Project: SWMU 10

Collection Date: 4/29/2015 12:50:00 PM

Lab ID: 1505003-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
N-Nitrosodi-n-propylamine	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
N-Nitrosodiphenylamine	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Naphthalene	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Nitroaniline	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
3-Nitroaniline	ND	0.19	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Nitroaniline	ND	0.18	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Nitrobenzene	ND	0.20	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2-Nitrophenol	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
4-Nitrophenol	ND	0.17	0.50		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Pentachlorophenol	ND	0.12	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Phenanthrene	ND	0.21	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Phenol	ND	0.18	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Pyrene	ND	0.26	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Pyridine	ND	0.17	0.80		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
1,2,4-Trichlorobenzene	ND	0.20	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4,5-Trichlorophenol	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
2,4,6-Trichlorophenol	ND	0.23	0.40		mg/Kg-dr	1	5/7/2015 7:45:24 PM	19026
Surr: 2-Fluorophenol	63.1		26.4-129		%REC	1	5/7/2015 7:45:24 PM	19026
Surr: Phenol-d5	64.2		34.8-118		%REC	1	5/7/2015 7:45:24 PM	19026
Surr: 2,4,6-Tribromophenol	63.8		26.8-128		%REC	1	5/7/2015 7:45:24 PM	19026
Surr: Nitrobenzene-d5	54.7		35.8-124		%REC	1	5/7/2015 7:45:24 PM	19026
Surr: 2-Fluorobiphenyl	41.2		24.5-139		%REC	1	5/7/2015 7:45:24 PM	19026
Surr: 4-Terphenyl-d14	73.1		29.4-129		%REC	1	5/7/2015 7:45:24 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	0.049	0.010	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Toluene	0.013	0.0084	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Ethylbenzene	0.026	0.0065	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Methyl tert-butyl ether (MTBE)	ND	0.010	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2,4-Trimethylbenzene	0.17	0.0035	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,3,5-Trimethylbenzene	0.056	0.0046	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2-Dichloroethane (EDC)	ND	0.028	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2-Dibromoethane (EDB)	ND	0.0056	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Naphthalene	0.11	0.017	0.14	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1-Methylnaphthalene	0.38	0.042	0.28		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
2-Methylnaphthalene	0.69	0.046	0.28		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Acetone	ND	0.053	1.1		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Bromobenzene	ND	0.0052	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Bromodichloromethane	ND	0.0058	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-5 (14-16')**Project:** SWMU 10**Collection Date:** 4/29/2015 12:50:00 PM**Lab ID:** 1505003-004**Matrix:** SOIL**Received Date:** 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Bromoform	ND	0.0057	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Bromomethane	ND	0.014	0.21		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
2-Butanone	ND	0.045	0.71		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Carbon disulfide	ND	0.051	0.71		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Carbon tetrachloride	ND	0.0069	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Chlorobenzene	ND	0.0054	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Chloroethane	ND	0.055	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Chloroform	ND	0.0074	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Chloromethane	ND	0.0082	0.21		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
2-Chlorotoluene	ND	0.0080	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
4-Chlorotoluene	ND	0.0053	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
cis-1,2-DCE	ND	0.0089	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
cis-1,3-Dichloropropene	ND	0.0049	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2-Dibromo-3-chloropropane	ND	0.012	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Dibromochloromethane	ND	0.0053	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Dibromomethane	ND	0.0074	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2-Dichlorobenzene	ND	0.0043	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,3-Dichlorobenzene	ND	0.0083	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,4-Dichlorobenzene	ND	0.0088	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Dichlorodifluoromethane	ND	0.018	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1-Dichloroethane	ND	0.028	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1-Dichloroethene	ND	0.0049	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2-Dichloropropane	ND	0.0039	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,3-Dichloropropane	ND	0.0097	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
2,2-Dichloropropane	ND	0.010	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1-Dichloropropene	ND	0.011	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Hexachlorobutadiene	ND	0.0098	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
2-Hexanone	ND	0.017	0.71		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Isopropylbenzene	0.013	0.0060	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
4-Isopropyltoluene	0.020	0.0050	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
4-Methyl-2-pentanone	ND	0.012	0.71		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Methylene chloride	ND	0.028	0.21		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
n-Butylbenzene	0.038	0.0061	0.21	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
n-Propylbenzene	0.026	0.0053	0.071	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
sec-Butylbenzene	ND	0.010	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Styrene	ND	0.013	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
tert-Butylbenzene	ND	0.0081	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1,1,2-Tetrachloroethane	ND	0.0058	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1,2,2-Tetrachloroethane	ND	0.0086	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (14-16'

Project: SWMU 10

Collection Date: 4/29/2015 12:50:00 PM

Lab ID: 1505003-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Tetrachloroethene (PCE)	ND	0.0061	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
trans-1,2-DCE	ND	0.0046	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
trans-1,3-Dichloropropene	ND	0.013	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2,3-Trichlorobenzene	ND	0.015	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2,4-Trichlorobenzene	ND	0.013	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1,1-Trichloroethane	ND	0.011	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,1,2-Trichloroethane	ND	0.0085	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Trichloroethene (TCE)	ND	0.0069	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Trichlorofluoromethane	ND	0.021	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
1,2,3-Trichloropropane	ND	0.012	0.14		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Vinyl chloride	ND	0.028	0.071		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Xylenes, Total	0.11	0.020	0.14	J	mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Surr: Dibromofluoromethane	100		70-130		%REC	1	5/5/2015 12:57:41 PM	R25982
Surr: 1,2-Dichloroethane-d4	89.7		70-130		%REC	1	5/5/2015 12:57:41 PM	R25982
Surr: Toluene-d8	94.0		70-130		%REC	1	5/5/2015 12:57:41 PM	R25982
Surr: 4-Bromofluorobenzene	92.4		70-130		%REC	1	5/5/2015 12:57:41 PM	R25982
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	13	1.8	7.1		mg/Kg-dr	1	5/5/2015 12:57:41 PM	R25982
Surr: BFB	111	0	67.4-150		%REC	1	5/5/2015 12:57:41 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (22-24')

Project: SWMU 10

Collection Date: 4/29/2015 1:10:00 PM

Lab ID: 1505003-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.5	10		mg/Kg-dr	1	5/5/2015 5:03:15 PM	19040
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg-dr	1	5/5/2015 5:03:15 PM	19040
Surr: DNOP	110	0	57.9-140		%REC	1	5/5/2015 5:03:15 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	12	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0039	0.0034	0.039	J	mg/Kg-dr	1	5/6/2015 3:39:05 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.8		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Arsenic	1.6	0.33	2.8	J	mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Barium	200	0.034	0.11		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Beryllium	0.99	0.0084	0.17		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Cadmium	ND	0.031	0.11		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Chromium	15	0.068	0.34		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Cobalt	7.4	0.043	0.34		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Iron	18000	68	280		mg/Kg-dr	100	5/7/2015 11:09:34 AM	19080
Lead	ND	0.12	0.28		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Manganese	820	0.33	0.57		mg/Kg-dr	5	5/8/2015 2:32:19 PM	19080
Nickel	15	0.15	0.57		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Selenium	ND	1.7	2.8		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Silver	ND	0.034	0.28		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Vanadium	18	0.038	2.8		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
Zinc	23	0.73	2.8		mg/Kg-dr	1	5/7/2015 1:36:50 PM	19080
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Acenaphthylene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Aniline	ND	0.098	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Anthracene	ND	0.096	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Azobenzene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benz(a)anthracene	ND	0.088	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzo(a)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzoic acid	ND	0.064	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Benzyl alcohol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (22-24')

Project: SWMU 10

Collection Date: 4/29/2015 1:10:00 PM

Lab ID: 1505003-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.086	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Butyl benzyl phthalate	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Carbazole	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Chloro-3-methylphenol	ND	0.11	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Chloroaniline	ND	0.10	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Chloronaphthalene	ND	0.12	0.28		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Chlorophenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Chrysene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Di-n-butyl phthalate	ND	0.13	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Di-n-octyl phthalate	ND	0.13	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Dibenz(a,h)anthracene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Dibenzofuran	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
1,3-Dichlorobenzene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
3,3'-Dichlorobenzidine	ND	0.087	0.28		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Diethyl phthalate	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Dimethyl phthalate	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4-Dichlorophenol	ND	0.11	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4-Dimethylphenol	ND	0.088	0.34		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.061	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4-Dinitrophenol	ND	0.047	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,6-Dinitrotoluene	ND	0.12	0.56		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Fluoranthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Fluorene	ND	0.15	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Hexachlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Hexachlorobutadiene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Hexachlorocyclopentadiene	ND	0.078	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Hexachloroethane	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Isophorone	ND	0.12	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
1-Methylnaphthalene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Methylnaphthalene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Methylphenol	ND	0.11	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (22-24')

Project: SWMU 10

Collection Date: 4/29/2015 1:10:00 PM

Lab ID: 1505003-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Nitroaniline	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
3-Nitroaniline	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Nitroaniline	ND	0.10	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Nitrobenzene	ND	0.12	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2-Nitrophenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
4-Nitrophenol	ND	0.097	0.28		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Pentachlorophenol	ND	0.070	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Phenanthrene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Phenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Pyrene	ND	0.15	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Pyridine	ND	0.094	0.45		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4,5-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
2,4,6-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:13:38 PM	19026
Surr: 2-Fluorophenol	64.5		26.4-129		%REC	1	5/7/2015 8:13:38 PM	19026
Surr: Phenol-d5	62.2		34.8-118		%REC	1	5/7/2015 8:13:38 PM	19026
Surr: 2,4,6-Tribromophenol	75.4		26.8-128		%REC	1	5/7/2015 8:13:38 PM	19026
Surr: Nitrobenzene-d5	56.1		35.8-124		%REC	1	5/7/2015 8:13:38 PM	19026
Surr: 2-Fluorobiphenyl	60.1		24.5-139		%REC	1	5/7/2015 8:13:38 PM	19026
Surr: 4-Terphenyl-d14	95.5		29.4-129		%REC	1	5/7/2015 8:13:38 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.0179	0.000432	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Toluene	0.0112	0.000199	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Ethylbenzene	0.00258	0.000322	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Xylenes, Total	0.00849	0.00114	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000803	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2,4-Trimethylbenzene	0.00263	0.000501	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,3,5-Trimethylbenzene	0.00179	0.000336	0.00192	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000513	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000229	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Naphthalene	0.000785	0.000626	0.00192	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1-Methylnaphthalene	0.000843	0.000752	0.00383	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
2-Methylnaphthalene	0.000852	0.000749	0.00383	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Acetone	0.00186	0.00120	0.00958	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Bromobenzene	ND	0.000533	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10-5 (22-24')**Project:** SWMU 10**Collection Date:** 4/29/2015 1:10:00 PM**Lab ID:** 1505003-005**Matrix:** SOIL**Received Date:** 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Bromodichloromethane	ND	0.000259	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Bromoform	ND	0.000496	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Bromomethane	ND	0.00113	0.00287		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
2-Butanone	ND	0.000613	0.00958		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Carbon tetrachloride	ND	0.000347	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Chlorobenzene	ND	0.000194	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Chloroethane	ND	0.00192	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Chloroform	ND	0.000395	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Chloromethane	ND	0.000226	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
2-Chlorotoluene	ND	0.000374	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Carbon disulfide	ND	0.000867	0.00958		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
4-Chlorotoluene	ND	0.000369	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
cis-1,2-DCE	ND	0.000507	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
cis-1,3-Dichloropropene	ND	0.00192	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000563	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Dibromochloromethane	ND	0.000215	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Dibromomethane	ND	0.00109	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2-Dichlorobenzene	ND	0.000425	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,3-Dichlorobenzene	ND	0.000325	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,4-Dichlorobenzene	ND	0.000301	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Dichlorodifluoromethane	ND	0.000782	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1-Dichloroethane	ND	0.000447	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1-Dichloroethene	ND	0.000320	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2-Dichloropropane	ND	0.000409	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,3-Dichloropropane	ND	0.000298	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
2,2-Dichloropropane	ND	0.000333	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1-Dichloropropene	ND	0.000351	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Hexachlorobutadiene	ND	0.000387	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Isopropylbenzene	ND	0.000444	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
4-Isopropyltoluene	ND	0.000743	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Methylene chloride	0.000565	0.000473	0.00192	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
n-Butylbenzene	ND	0.000786	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
2-Hexanone	ND	0.000398	0.00958		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
n-Propylbenzene	0.000469	0.000359	0.00192	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
sec-Butylbenzene	0.000766	0.000484	0.00192	J	mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Styrene	ND	0.000317	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
4-Methyl-2-pentanone	ND	0.000809	0.00958		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
tert-Butylbenzene	ND	0.000294	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000312	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505003

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-5 (22-24')

Project: SWMU 10

Collection Date: 4/29/2015 1:10:00 PM

Lab ID: 1505003-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.000421	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Tetrachloroethene (PCE)	ND	0.000380	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
trans-1,2-DCE	ND	0.000310	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
trans-1,3-Dichloropropene	ND	0.000250	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2,3-Trichlorobenzene	ND	0.000701	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2,4-Trichlorobenzene	ND	0.000718	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1,1-Trichloroethane	ND	0.000272	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,1,2-Trichloroethane	ND	0.00192	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Trichloroethene (TCE)	ND	0.000381	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Trichlorofluoromethane	ND	0.000387	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
1,2,3-Trichloropropane	ND	0.000673	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Vinyl chloride	ND	0.000219	0.00192		mg/Kg-dr	1	5/6/2015 6:21:36 PM	19032
Surr: 1,2-Dichloroethane-d4	90.9	0	70-130		%REC	1	5/6/2015 6:21:36 PM	19032
Surr: 4-Bromofluorobenzene	106	0	70-130		%REC	1	5/6/2015 6:21:36 PM	19032
Surr: Dibromofluoromethane	105	0	70-130		%REC	1	5/6/2015 6:21:36 PM	19032
Surr: Toluene-d8	81.3	0	70-130		%REC	1	5/6/2015 6:21:36 PM	19032
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	ND	0.87	3.5		mg/Kg-dr	1	5/5/2015 8:10:29 PM	R25982
Surr: BFB	106	0	67.4-150		%REC	1	5/5/2015 8:10:29 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		



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REPORT OF ANALYSIS

May 13, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505003-001C SWMU 10-5 0-2 FT
Collected By :
Collection Date : 04/29/15 12:00

ESC Sample # : L762976-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/12/15	1
Chromium, Hexavalent	5.7	2.0	mg/kg	3060A/7196A	05/09/15	1
ORP	140		mV	2580 B-2011	05/10/15	1
pH	8.1	0.10	su	9045D	05/08/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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L762976-01 (PH) - 8.1 at 21.0c



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REPORT OF ANALYSIS

May 13, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505003-002C SWMU 10-5 2-4 FT
Collected By :
Collection Date : 04/29/15 12:12

ESC Sample # : L762976-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/12/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/09/15	1
ORP	130		mV	2580 B-2011	05/10/15	1
pH	8.5	0.10	su	9045D	05/08/15	1

BDL - Below Detection Limit

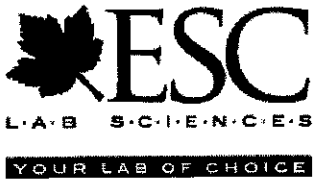
Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762976-02 (PH) - 8.5 at 20.7c



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REPORT OF ANALYSIS

May 13, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505003-003C SWMU 10-5 4-6 FT
Collected By :
Collection Date : 04/29/15 12:32

ESC Sample # : L762976-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/12/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/09/15	1
ORP	140		mV	2580 B-2011	05/10/15	1
pH	8.3	0.10	su	9045D	05/08/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762976-03 (PH) - 8.3 at 20.9c



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REPORT OF ANALYSIS

May 13, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505003-004C SWMU 10-5 14-16 FT
Collected By :
Collection Date : 04/29/15 12:50

ESC Sample # : L762976-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/12/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/09/15	1
ORP	140		mV	2580 B-2011	05/10/15	1
pH	8.3	0.10	su	9045D	05/08/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L762976-04 (PH) - 8.3 at 21.0c



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REPORT OF ANALYSIS

May 13, 2015

Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

Date Received : May 05, 2015
Description :
Sample ID : 1505003-005C SWMU 10-5 22-24 FT
Collected By :
Collection Date : 04/29/15 13:10

ESC Sample # : L762976-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Cyanide	BDL	0.25	mg/kg	9012B	05/12/15	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/09/15	1
ORP	120		mV	2580 B-2011	05/10/15	1
pH	9.2	0.10	su	9045D	05/08/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/13/15 11:23 Printed: 05/13/15 11:24
L762976-05 (PH) - 9.2 at 20.7c



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May 13, 2015

Analyte	Result	Laboratory Blank Units % Rec	Limit	Batch	Date Analyzed
Chromium, Hexavalent	< 2	mg/kg		WG787134	05/09/15 04:55
Cyanide	< .25	mg/kg		WG787733	05/12/15 10:23
Cyanide	< .25	mg/kg		WG787856	05/12/15 12:46

Analyte	Units	Result	Duplicate Duplicate	RPD	Limit	Ref Samp	Batch
pH	su	7.60	7.60	0.656	1	L762972-04	WG787168
pH	su	6.70	6.70	0.449	1	L763354-01	WG787168
Chromium, Hexavalent	mg/kg	0.0	0.0	0.0	20	L762972-07	WG787134
ORP	mV	70.0	70.0	0.0	20	L762970-02	WG787860
ORP	mV	140.	140.	0.0	20	L762978-01	WG787860
Cyanide	mg/kg	0.0	0.0	0.0	20	L762970-02	WG787733
Cyanide	mg/kg	0.0	0.0	0.0	20	L762976-05	WG787733
Cyanide	mg/kg	0.0	0.0	0.0	20	L763578-02	WG787856
Cyanide	mg/kg	0.0	0.0	0.0	20	L763853-01	WG787856

Analyte	Units	Laboratory Control Known Val	Sample Result	% Rec	Limit	Batch
pH	su	7.84	7.80	99.5	98.3-101.7	WG787168
Chromium, Hexavalent	mg/kg	59.8	66.4	111.	80-120	WG787134
ORP	mV	100	100.	100.	90-110	WG787860
Cyanide	mg/kg	101	102.	101.	50-150	WG787733
Cyanide	mg/kg	101	108.	107.	50-150	WG787856

Analyte	Units	Laboratory Control Result	Sample Ref	Duplicate %Rec	Limit	RPD	Limit	Batch
pH	su	7.80	7.80	99.0	98.3-101.7	0.0	20	WG787168
Chromium, Hexavalent	mg/kg	66.6	66.4	111.	80-120	0.301	20	WG787134
ORP	mV	100.	100.	100.	90-110	0.0	20	WG787860
Cyanide	mg/kg	107.	102.	106.	50-150	4.78	20	WG787733

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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May 13, 2015

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Cyanide	mg/kg	112.	108.	111.	50-150	3.64	20	WG787856

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Chromium, Hexavalent	mg/kg	19.3	0.0	20	96.0	75-125	L762972-07	WG787134
Cyanide	mg/kg	3.27	0.0	3.33	98.0	80-120	L763578-01	WG787856

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Chromium, Hexavalent	mg/kg	19.5	19.3	97.5	75-125	1.03	20	L762972-07	WG787134
Cyanide	mg/kg	3.18	3.27	95.5	80-120	2.79	20	L763578-01	WG787856

Batch number / Run number / Sample number cross reference

WG787168: R3035796: L762976-01 02 03 04 05
WG787134: R3035910: L762976-01 02 03 04 05
WG787860: R3036066: L762976-01 02 03 04 05
WG787733: R3036388: L762976-01 02 03 05
WG787856: R3036409: L762976-04

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19040	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 19040			RunNo: 25952					
Prep Date:	5/4/2015	Analysis Date: 5/5/2015			SeqNo: 769701		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		95.4	57.9	140			

Sample ID	LCS-19040		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 19040		RunNo: 25952					
Prep Date:	5/4/2015		Analysis Date: 5/5/2015		SeqNo: 769702		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	67.8	130			
Surr: DNOP	4.9		5.000		97.4	57.9	140			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19008	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	19008	RunNo:	25941					
Prep Date:	5/1/2015	Analysis Date:	5/4/2015	SeqNo:	768949	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	0.0091	0.050								J
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	0.054	0.75								J
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	0.038	0.50								J
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	0.0048	0.050								J
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	0.012	0.050								J
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19008		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	19008		RunNo:	25941			
Prep Date:	5/1/2015		Analysis Date:	5/4/2015		SeqNo:	768949		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.1	70	130			
Surr: Toluene-d8	0.46		0.5000		92.4	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.7	70	130			

Sample ID	ics-19008		SampType:	LCS		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	LCSS		Batch ID:	19008		RunNo:	25941			
Prep Date:	5/1/2015		Analysis Date:	5/4/2015		SeqNo:	768950		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.050	1.000	0	97.5	70	130			
Toluene	0.89	0.050	1.000	0	89.1	70	130			
Chlorobenzene	1.0	0.050	1.000	0	99.7	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-19008		SampType: LCS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LCSS		Batch ID: 19008		RunNo: 25941					
Prep Date:	5/1/2015		Analysis Date: 5/4/2015		SeqNo: 768950		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.2	0.050	1.000	0	123	60.6	134			
Trichloroethene (TCE)	0.90	0.050	1.000	0	90.3	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.7	70	130			
Surr: Toluene-d8	0.44		0.5000		88.0	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.9	70	130			

Sample ID	5mL rb	SampType: MBLK			TestCode: EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID: R25982			RunNo: 25982					
Prep Date:		Analysis Date: 5/5/2015			SeqNo: 770974		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	0.0083	0.050								J
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5mL rb	SampType: MBLK			TestCode: EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID: R25982			RunNo: 25982					
Prep Date:		Analysis Date: 5/5/2015			SeqNo: 770974		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		98.1	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	5mL rb	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	R25982	RunNo:	25982					
Prep Date:		Analysis Date:	5/5/2015	SeqNo:	770974	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.0	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		100	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	LCSS	Batch ID:	R25982	RunNo:	25982					
Prep Date:		Analysis Date:	5/5/2015	SeqNo:	770975	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	101	70	130			
Toluene	1.1	0.050	1.000	0	105	70	130			
Chlorobenzene	1.0	0.050	1.000	0	102	70	130			
1,1-Dichloroethene	1.2	0.050	1.000	0	116	60.6	134			
Trichloroethene (TCE)	0.92	0.050	1.000	0	92.4	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		99.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.1	70	130			
Surr: Toluene-d8	0.51		0.5000		103	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	1505003-005AMS		SampType: MS		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	SWMU 10-5 (22-24')		Batch ID: 19032		RunNo: 26013					
Prep Date:	5/4/2015		Analysis Date: 5/6/2015		SeqNo: 771126		Units: mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0117	0.00223	0.01114	0.01785	-55.6	33.4	127			S
Toluene	0.0118	0.00223	0.01114	0.01116	5.42	24.8	130			S
Chlorobenzene	0.0107	0.00223	0.01114	0	96.5	25.8	132			
1,1-Dichloroethene	0.0121	0.00223	0.01114	0	109	70	130			
Trichloroethene (TCE)	0.0112	0.00223	0.01114	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.0232		0.02784		83.3	70	130			
Surr: 4-Bromofluorobenzene	0.0258		0.02784		92.6	70	130			
Surr: Dibromofluoromethane	0.0254		0.02784		91.1	70	130			
Surr: Toluene-d8	0.0263		0.02784		94.3	70	130			

Sample ID	1505003-005amsd		SampType: MSD		TestCode: Method 8260B/5035LOW: VOLATILES						
Client ID:	SWMU 10-5 (22-24')		Batch ID: 19032		RunNo: 26013						
Prep Date:	5/4/2015		Analysis Date: 5/6/2015		SeqNo: 771127		Units: mg/Kg-dry				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.0140	0.00226	0.01129	0.01785	-34.0	33.4	127	18.3	20	S	
Toluene	0.0133	0.00226	0.01129	0.01116	19.0	24.8	130	12.3	20	S	
Chlorobenzene	0.0121	0.00226	0.01129	0	107	25.8	132	12.0	20		
1,1-Dichloroethene	0.0146	0.00226	0.01129	0	129	70	130	18.7	20		
Trichloroethene (TCE)	0.0137	0.00226	0.01129	0	121	70	130	19.9	20		
Surr: 1,2-Dichloroethane-d4	0.0248		0.02823		87.7	70	130	0	0		
Surr: 4-Bromofluorobenzene	0.0272		0.02823		96.3	70	130	0	0		
Surr: Dibromofluoromethane	0.0274		0.02823		97.0	70	130	0	0		
Surr: Toluene-d8	0.0269		0.02823		95.4	70	130	0	0		

Sample ID	lcs-19032		SampType: LCS		TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID:	LCSS		Batch ID: 19032		RunNo: 26013					
Prep Date:	5/4/2015		Analysis Date: 5/6/2015		SeqNo: 771128		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0108	0.00200	0.01000	0	108	70	130			
Toluene	0.00992	0.00200	0.01000	0	99.2	70	130			
Chlorobenzene	0.00872	0.00200	0.01000	0	87.2	70	130			
1,1-Dichloroethene	0.0112	0.00200	0.01000	0	112	70	130			
Trichloroethene (TCE)	0.0105	0.00200	0.01000	0	105	61.6	131			
Surr: 1,2-Dichloroethane-d4	0.0266		0.02500		106	70	130			
Surr: 4-Bromofluorobenzene	0.0221		0.02500		88.5	70	130			
Surr: Dibromofluoromethane	0.0266		0.02500		107	70	130			
Surr: Toluene-d8	0.0248		0.02500		99.4	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19032		SampType:	MBLK		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	PBS		Batch ID:	19032		RunNo:	26013			
Prep Date:	5/4/2015		Analysis Date:	5/6/2015		SeqNo:	771129		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.00200								
Toluene	0.000210	0.00200								J
Ethylbenzene	ND	0.00200								
Xylenes, Total	ND	0.00200								
Methyl tert-butyl ether (MTBE)	ND	0.00200								
1,2,4-Trimethylbenzene	ND	0.00200								
1,3,5-Trimethylbenzene	ND	0.00200								
1,2-Dichloroethane (EDC)	ND	0.00200								
1,2-Dibromoethane (EDB)	ND	0.00200								
Naphthalene	ND	0.00200								
1-Methylnaphthalene	ND	0.00400								
2-Methylnaphthalene	ND	0.00400								
Acetone	ND	0.0100								
Bromobenzene	ND	0.00200								
Bromodichloromethane	ND	0.00200								
Bromoform	ND	0.00200								
Bromomethane	ND	0.00300								
2-Butanone	0.000830	0.0100								J
Carbon tetrachloride	ND	0.00200								
Chlorobenzene	ND	0.00200								
Chloroethane	ND	0.00200								
Chloroform	ND	0.00200								
Chloromethane	ND	0.00200								
2-Chlorotoluene	ND	0.00200								
Carbon disulfide	ND	0.0100								
4-Chlorotoluene	ND	0.00200								
cis-1,2-DCE	ND	0.00200								
cis-1,3-Dichloropropene	ND	0.00200								
1,2-Dibromo-3-chloropropane	ND	0.00200								
Dibromochloromethane	ND	0.00200								
Dibromomethane	ND	0.00200								
1,2-Dichlorobenzene	ND	0.00200								
1,3-Dichlorobenzene	ND	0.00200								
1,4-Dichlorobenzene	ND	0.00200								
Dichlorodifluoromethane	ND	0.00200								
1,1-Dichloroethane	ND	0.00200								
1,1-Dichloroethene	ND	0.00200								
1,2-Dichloropropane	ND	0.00200								
1,3-Dichloropropane	ND	0.00200								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19032		SampType:	MBLK		TestCode:	Method 8260B/5035LOW: VOLATILES			
Client ID:	PBS		Batch ID:	19032		RunNo:	26013			
Prep Date:	5/4/2015		Analysis Date:	5/6/2015		SeqNo:	771129		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,2-Dichloropropane	ND	0.00200								
1,1-Dichloropropene	ND	0.00200								
Hexachlorobutadiene	ND	0.00200								
Isopropylbenzene	ND	0.00200								
4-Isopropyltoluene	ND	0.00200								
Methylene chloride	ND	0.00200								
n-Butylbenzene	ND	0.00200								
2-Hexanone	ND	0.0100								
n-Propylbenzene	ND	0.00200								
sec-Butylbenzene	ND	0.00200								
Styrene	ND	0.00200								
4-Methyl-2-pentanone	ND	0.0100								
tert-Butylbenzene	ND	0.00200								
1,1,1,2-Tetrachloroethane	ND	0.00200								
1,1,2,2-Tetrachloroethane	ND	0.00200								
Tetrachloroethene (PCE)	ND	0.00200								
trans-1,2-DCE	ND	0.00200								
trans-1,3-Dichloropropene	ND	0.00200								
1,2,3-Trichlorobenzene	ND	0.00200								
1,2,4-Trichlorobenzene	ND	0.00200								
1,1,1-Trichloroethane	ND	0.00200								
1,1,2-Trichloroethane	ND	0.00200								
Trichloroethene (TCE)	ND	0.00200								
Trichlorofluoromethane	ND	0.00200								
1,2,3-Trichloropropane	ND	0.00200								
Vinyl chloride	ND	0.00200								
Surr: 1,2-Dichloroethane-d4	0.0275		0.02500		110	70	130			
Surr: 4-Bromofluorobenzene	0.0232		0.02500		93.0	70	130			
Surr: Dibromofluoromethane	0.0276		0.02500		110	70	130			
Surr: Toluene-d8	0.0239		0.02500		95.4	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19026	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772520	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

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S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	mb-19026	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	19026	RunNo:	26053					
Prep Date:	5/4/2015	Analysis Date:	5/7/2015	SeqNo:	772520	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		79.4	26.4	129			
Surr: Phenol-d5	2.7		3.330		80.7	34.8	118			
Surr: 2,4,6-Tribromophenol	2.5		3.330		75.6	26.8	128			
Surr: Nitrobenzene-d5	1.3		1.670		76.1	35.8	124			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.2	24.5	139			
Surr: 4-Terphenyl-d14	1.5		1.670		88.4	29.4	129			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	Ics-19026		SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles				
Client ID:	LCSS		Batch ID: 19026			RunNo: 26053				
Prep Date:	5/4/2015		Analysis Date: 5/7/2015			SeqNo: 772521		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.20	1.670	0	88.6	45.8	114			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	86.8	52.3	122			
2-Chlorophenol	2.6	0.20	3.330	0	77.2	49.9	115			
1,4-Dichlorobenzene	1.4	0.20	1.670	0	84.4	43.7	107			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	77.6	36	106			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	81.3	39.5	110			
4-Nitrophenol	3.0	0.25	3.330	0	90.2	45.1	121			
Pentachlorophenol	2.5	0.40	3.330	0	73.7	23.7	111			
Phenol	2.9	0.20	3.330	0	86.4	52.7	119			
Pyrene	1.3	0.20	1.670	0	76.9	50.4	116			
1,2,4-Trichlorobenzene	1.6	0.20	1.670	0	98.3	40.1	114			
Surr: 2-Fluorophenol	2.6		3.330		78.7	26.4	129			
Surr: Phenol-d5	2.7		3.330		81.5	34.8	118			
Surr: 2,4,6-Tribromophenol	3.0		3.330		91.3	26.8	128			
Surr: Nitrobenzene-d5	1.4		1.670		83.7	35.8	124			
Surr: 2-Fluorobiphenyl	1.5		1.670		90.8	24.5	139			
Surr: 4-Terphenyl-d14	1.5		1.670		87.3	29.4	129			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19078		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 19078		RunNo: 26010					
Prep Date:	5/6/2015		Analysis Date: 5/6/2015		SeqNo: 771069		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033								

Sample ID	LCS-19078			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	19078		RunNo:	26010			
Prep Date:	5/6/2015			Analysis Date:	5/6/2015		SeqNo:	771070		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1667	0	103	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	MB-19080		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	19080		RunNo:	26050			
Prep Date:	5/6/2015		Analysis Date:	5/7/2015		SeqNo:	772227		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	1.1	2.5								J
Lead	0.13	0.25								J
Manganese	ND	0.10								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.74	2.5								J

Sample ID	LCS-19080		SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	LCSS		Batch ID:	19080		RunNo:	26050			
Prep Date:	5/6/2015		Analysis Date:	5/7/2015		SeqNo:	772228		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	26	2.5	25.00	0	103	80	120			
Arsenic	25	2.5	25.00	0	101	80	120			
Barium	25	0.10	25.00	0	100	80	120			
Beryllium	27	0.15	25.00	0	107	80	120			
Cadmium	25	0.10	25.00	0	101	80	120			
Chromium	25	0.30	25.00	0	102	80	120			
Cobalt	25	0.30	25.00	0	99.2	80	120			
Iron	26	2.5	25.00	0	103	80	120			
Lead	25	0.25	25.00	0	101	80	120			
Manganese	25	0.10	25.00	0	101	80	120			
Nickel	25	0.50	25.00	0	99.2	80	120			
Selenium	25	2.5	25.00	0	99.4	80	120			
Silver	5.4	0.25	5.000	0	107	80	120			
Vanadium	26	2.5	25.00	0	105	80	120			
Zinc	26	2.5	25.00	0	103	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID 5mL rb	SampType: MBLK		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: PBS	Batch ID: R25941		RunNo: 25941							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 770909		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	470		500.0		93.3	67.4	150			

Sample ID 2.5ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: LCSS	Batch ID: R25941		RunNo: 25941							
Prep Date:	Analysis Date: 5/4/2015		SeqNo: 770910		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.6	79.9	135			
Surr: BFB	470		500.0		93.3	67.4	150			

Sample ID 1505003-001B MS	SampType: MS		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: SWMU 10-5 (0-2')	Batch ID: R25941		RunNo: 25941							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 770912		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	3.1	15.53	2.485	108	65.2	156			
Surr: BFB	340		310.7		109	67.4	150			

Sample ID 1505003-001B MSD	SampType: MSD		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: SWMU 10-5 (0-2')	Batch ID: R25941		RunNo: 25941							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 770913		Units: mg/Kg-dry					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	3.1	15.53	2.485	103	65.2	156	4.31	20	
Surr: BFB	340		310.7		110	67.4	150	0	0	

Sample ID 5mL rb	SampType: MBLK		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: PBS	Batch ID: R25982		RunNo: 25982							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 771006		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	470		500.0		94.7	67.4	150			

Sample ID 2.5ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D Mod: Gasoline Range							
Client ID: LCSS	Batch ID: R25982		RunNo: 25982							
Prep Date:	Analysis Date: 5/5/2015		SeqNo: 771007		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1505003

08-Oct-15

Client: Western Refining Company

Project: SWMU 10

Sample ID	2.5ug gro lcs	SampType:	LCS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS	Batch ID:	R25982	RunNo:	25982					
Prep Date:		Analysis Date:	5/5/2015	SeqNo:	771007	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.5	79.9	135			
Surr: BFB	460		500.0		92.6	67.4	150			

Sample ID	1505003-005B MS	SampType:	MS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	SWMU 10-5 (22-24')	Batch ID:	R25982	RunNo:	25982					
Prep Date:		Analysis Date:	5/5/2015	SeqNo:	771030	Units:	mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	3.5	17.27	0	88.7	65.2	156			
Surr: BFB	380		345.4		111	67.4	150			

Sample ID	1505003-005B MSD	SampType:	MSD	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	SWMU 10-5 (22-24')	Batch ID:	R25982	RunNo:	25982					
Prep Date:		Analysis Date:	5/5/2015	SeqNo:	771031	Units:	mg/Kg-dry			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	14	3.5	17.27	0	83.7	65.2	156	5.75	20	
Surr: BFB	380		345.4		109	67.4	150	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1505003

RcptNo: 1

Received by/date:

[Signature] 04/30/15

Logged By: Lindsay Mangin

4/30/2015 3:50:00 PM

[Signature]

Completed By: Lindsay Mangin

5/1/2015 6:34:19 AM

[Signature]

Reviewed By:

[Signature] 05/10/15

Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☒

No ☐

Not Present ☐

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Client

Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of >0° C to 6.0°C

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☐

No ☐

No VOA Vials ☒

11. Were any sample containers received broken?

Yes ☐

No ☒

12. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

13. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

14. Is it clear what analyses were requested?

Yes ☒

No ☐

15. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

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

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?

Yes ☐

No ☐

NA ☒

Person Notified:

Date

By Whom:

Via:

☐ eMail

☐ Phone

☐ Fax

☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

WESTERN REFINING SOUTHWEST, INC.
GALLUP REFINERY - SWMU 10
METALS AND CYANIDE ANALYSES FOR SOIL SAMPLES

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 Method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020



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

October 08, 2015

Cheryl Johnson
Western Refining Company
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0231
FAX

RE: SWMU 10

OrderNo.: 1505004

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 4/30/2015 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 11, 2015.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman'.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



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

Case Narrative

WO#: 1505004
Date: 10/8/2015

CLIENT: Western Refining Company
Project: SWMU 10

Analytical Notes Regarding Surrogate "S" Flags:

The surrogates were not recoverable in the following samples due to sample dilution and/or matrix interferences:

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 3:30:00 PM

Lab ID: 1505004-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	160	26	47		mg/Kg-dr	5	5/7/2015 7:22:44 PM	19040
Motor Oil Range Organics (MRO)	330	240	240		mg/Kg-dr	5	5/7/2015 7:22:44 PM	19040
Surr: DNOP	114	0	57.9-140		%REC	5	5/7/2015 7:22:44 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	11	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.034	0.0031	0.035	J	mg/Kg-dr	1	5/6/2015 3:40:56 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.9		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Arsenic	1.4	0.68	5.7	J	mg/Kg-dr	2	5/7/2015 1:41:14 PM	19081
Barium	460	0.068	0.23		mg/Kg-dr	2	5/7/2015 1:41:14 PM	19081
Beryllium	0.71	0.0085	0.17		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Cadmium	ND	0.032	0.11		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Chromium	14	0.069	0.34		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Cobalt	3.8	0.043	0.34		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Iron	10000	69	290		mg/Kg-dr	100	5/7/2015 11:10:57 AM	19081
Lead	3.8	0.13	0.29		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Manganese	440	0.13	0.23		mg/Kg-dr	2	5/7/2015 1:41:14 PM	19081
Nickel	6.5	0.15	0.57		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Silver	ND	0.034	0.29		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Vanadium	17	0.038	2.9		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
Zinc	29	0.74	2.9		mg/Kg-dr	1	5/7/2015 1:39:46 PM	19081
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Acenaphthylene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Aniline	ND	0.097	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Anthracene	ND	0.095	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Azobenzene	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benz(a)anthracene	ND	0.088	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzo(a)pyrene	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzoic acid	ND	0.064	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Benzyl alcohol	ND	0.099	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
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	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 3:30:00 PM

Lab ID: 1505004-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.086	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Butyl benzyl phthalate	ND	0.14	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Carbazole	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Chloro-3-methylphenol	ND	0.11	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Chloroaniline	ND	0.10	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Chloronaphthalene	ND	0.12	0.28		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Chlorophenol	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Chrysene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Di-n-butyl phthalate	ND	0.13	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Di-n-octyl phthalate	ND	0.12	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Dibenz(a,h)anthracene	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Dibenzofuran	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
1,3-Dichlorobenzene	ND	0.099	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
3,3'-Dichlorobenzidine	ND	0.086	0.28		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Diethyl phthalate	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Dimethyl phthalate	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4-Dichlorophenol	ND	0.11	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4-Dimethylphenol	ND	0.088	0.34		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.061	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4-Dinitrophenol	ND	0.047	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,6-Dinitrotoluene	ND	0.12	0.56		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Fluoranthene	ND	0.14	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Fluorene	ND	0.15	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Hexachlorobenzene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Hexachlorobutadiene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Hexachlorocyclopentadiene	ND	0.078	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Hexachloroethane	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Isophorone	ND	0.12	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
1-Methylnaphthalene	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Methylnaphthalene	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Methylphenol	ND	0.11	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026

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

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Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (0-2')

Project: SWMU 10

Collection Date: 4/29/2015 3:30:00 PM

Lab ID: 1505004-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Naphthalene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Nitroaniline	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
3-Nitroaniline	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Nitroaniline	ND	0.10	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Nitrobenzene	ND	0.12	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2-Nitrophenol	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
4-Nitrophenol	ND	0.096	0.28		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Pentachlorophenol	ND	0.070	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Phenanthrene	ND	0.12	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Phenol	ND	0.10	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Pyrene	ND	0.14	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Pyridine	ND	0.094	0.45		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
1,2,4-Trichlorobenzene	ND	0.11	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4,5-Trichlorophenol	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
2,4,6-Trichlorophenol	ND	0.13	0.22		mg/Kg-dr	1	5/8/2015 7:50:14 PM	19026
Surr: 2-Fluorophenol	61.2		26.4-129		%REC	1	5/8/2015 7:50:14 PM	19026
Surr: Phenol-d5	64.4		34.8-118		%REC	1	5/8/2015 7:50:14 PM	19026
Surr: 2,4,6-Tribromophenol	66.9		26.8-128		%REC	1	5/8/2015 7:50:14 PM	19026
Surr: Nitrobenzene-d5	61.0		35.8-124		%REC	1	5/8/2015 7:50:14 PM	19026
Surr: 2-Fluorobiphenyl	66.9		24.5-139		%REC	1	5/8/2015 7:50:14 PM	19026
Surr: 4-Terphenyl-d14	72.6		29.4-129		%REC	1	5/8/2015 7:50:14 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.00118	0.000434	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Toluene	0.00263	0.000200	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Ethylbenzene	0.000703	0.000324	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Xylenes, Total	0.00182	0.00115	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000807	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2,4-Trimethylbenzene	0.000770	0.000503	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,3,5-Trimethylbenzene	0.000347	0.000338	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000516	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000230	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Naphthalene	ND	0.000629	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1-Methylnaphthalene	ND	0.000756	0.00385		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
2-Methylnaphthalene	ND	0.000752	0.00385		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Acetone	0.0237	0.00120	0.00963		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Bromobenzene	ND	0.000536	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

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Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Bromodichloromethane	ND	0.000260	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Bromoform	ND	0.000499	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Bromomethane	ND	0.00114	0.00289		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
2-Butanone	0.00407	0.000616	0.00963	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Carbon tetrachloride	ND	0.000348	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Chlorobenzene	ND	0.000195	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Chloroethane	ND	0.00193	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Chloroform	ND	0.000397	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Chloromethane	ND	0.000227	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
2-Chlorotoluene	ND	0.000376	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Carbon disulfide	ND	0.000871	0.00963		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
4-Chlorotoluene	ND	0.000371	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
cis-1,2-DCE	ND	0.000509	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
cis-1,3-Dichloropropene	ND	0.00193	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000566	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Dibromochloromethane	ND	0.000216	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Dibromomethane	ND	0.00109	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2-Dichlorobenzene	ND	0.000427	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,3-Dichlorobenzene	ND	0.000326	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,4-Dichlorobenzene	ND	0.000302	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Dichlorodifluoromethane	ND	0.000786	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1-Dichloroethane	ND	0.000450	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1-Dichloroethene	ND	0.000321	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2-Dichloropropane	ND	0.000411	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,3-Dichloropropane	ND	0.000300	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
2,2-Dichloropropane	ND	0.000334	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1-Dichloropropene	ND	0.000353	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Hexachlorobutadiene	ND	0.000388	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Isopropylbenzene	ND	0.000447	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
4-Isopropyltoluene	ND	0.000747	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Methylene chloride	0.000606	0.000476	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
n-Butylbenzene	ND	0.000790	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
2-Hexanone	0.000886	0.000400	0.00963	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
n-Propylbenzene	ND	0.000360	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
sec-Butylbenzene	0.000645	0.000486	0.00193	J	mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Styrene	ND	0.000319	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
4-Methyl-2-pentanone	ND	0.000813	0.00963		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
tert-Butylbenzene	ND	0.000295	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000313	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032

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Collection Date: 4/29/2015 3:30:00 PM

Lab ID: 1505004-001

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.000423	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Tetrachloroethene (PCE)	ND	0.000382	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
trans-1,2-DCE	ND	0.000311	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
trans-1,3-Dichloropropene	ND	0.000252	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2,3-Trichlorobenzene	ND	0.000704	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2,4-Trichlorobenzene	ND	0.000721	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1,1-Trichloroethane	ND	0.000274	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,1,2-Trichloroethane	ND	0.00193	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Trichloroethene (TCE)	ND	0.000383	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Trichlorofluoromethane	ND	0.000389	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
1,2,3-Trichloropropane	ND	0.000676	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Vinyl chloride	ND	0.000220	0.00193		mg/Kg-dr	1	5/6/2015 7:20:30 PM	19032
Surr: 1,2-Dichloroethane-d4	96.7	0	70-130		%REC	1	5/6/2015 7:20:30 PM	19032
Surr: 4-Bromofluorobenzene	95.2	0	70-130		%REC	1	5/6/2015 7:20:30 PM	19032
Surr: Dibromofluoromethane	102	0	70-130		%REC	1	5/6/2015 7:20:30 PM	19032
Surr: Toluene-d8	95.0	0	70-130		%REC	1	5/6/2015 7:20:30 PM	19032
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	ND	0.85	3.4		mg/Kg-dr	1	5/6/2015 12:29:48 AM	R25982
Surr: BFB	111	0	67.4-150		%REC	1	5/6/2015 12:29:48 AM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 3:40:00 PM

Lab ID: 1505004-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	4100	54	98		mg/Kg-dr	10	5/7/2015 4:40:23 PM	19040
Motor Oil Range Organics (MRO)	690	490	490		mg/Kg-dr	10	5/7/2015 4:40:23 PM	19040
Surr: DNOP	0	0	57.9-140	S	%REC	10	5/7/2015 4:40:23 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	21	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0082	0.0037	0.042	J	mg/Kg-dr	1	5/6/2015 3:42:49 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.7	3.2		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Arsenic	1.9	0.37	3.2	J	mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Barium	390	0.076	0.26		mg/Kg-dr	2	5/7/2015 1:44:10 PM	19081
Beryllium	0.98	0.0094	0.19		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Cadmium	ND	0.035	0.13		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Chromium	9.9	0.077	0.38		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Cobalt	4.8	0.048	0.38		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Iron	14000	77	320		mg/Kg-dr	100	5/7/2015 11:12:19 AM	19081
Lead	3.5	0.14	0.32		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Manganese	310	0.075	0.13		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Nickel	8.3	0.16	0.64		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Selenium	ND	2.0	3.2		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Silver	ND	0.038	0.32		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Vanadium	20	0.043	3.2		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
Zinc	16	0.82	3.2		mg/Kg-dr	1	5/7/2015 1:42:38 PM	19081
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Acenaphthylene	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Aniline	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Anthracene	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Azobenzene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benz(a)anthracene	ND	0.092	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzo(a)pyrene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzoic acid	ND	0.067	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Benzyl alcohol	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 3:40:00 PM

Lab ID: 1505004-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.090	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Butyl benzyl phthalate	ND	0.14	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Carbazole	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Chloro-3-methylphenol	ND	0.12	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Chloroaniline	ND	0.11	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Chloronaphthalene	ND	0.13	0.29		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Chlorophenol	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Chrysene	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Di-n-butyl phthalate	ND	0.13	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Di-n-octyl phthalate	ND	0.13	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Dibenz(a,h)anthracene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Dibenzofuran	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
1,3-Dichlorobenzene	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
3,3'-Dichlorobenzidine	ND	0.090	0.29		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Diethyl phthalate	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Dimethyl phthalate	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4-Dichlorophenol	ND	0.12	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4-Dimethylphenol	ND	0.092	0.35		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.064	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4-Dinitrophenol	ND	0.049	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,6-Dinitrotoluene	ND	0.13	0.59		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Fluoranthene	ND	0.14	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Fluorene	0.22	0.16	0.24	J	mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Hexachlorobenzene	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Hexachlorobutadiene	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Hexachlorocyclopentadiene	ND	0.081	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Hexachloroethane	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Isophorone	ND	0.13	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
1-Methylnaphthalene	3.6	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Methylnaphthalene	0.42	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Methylphenol	ND	0.12	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 3:40:00 PM

Lab ID: 1505004-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Naphthalene	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Nitroaniline	ND	0.13	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
3-Nitroaniline	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Nitroaniline	ND	0.11	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Nitrobenzene	ND	0.12	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2-Nitrophenol	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
4-Nitrophenol	ND	0.10	0.29		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Pentachlorophenol	ND	0.073	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Phenanthrene	0.80	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Phenol	ND	0.11	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Pyrene	ND	0.15	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Pyridine	ND	0.099	0.47		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4,5-Trichlorophenol	ND	0.14	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
2,4,6-Trichlorophenol	ND	0.14	0.24		mg/Kg-dr	1	5/8/2015 8:18:21 PM	19026
Surr: 2-Fluorophenol	72.0		26.4-129		%REC	1	5/8/2015 8:18:21 PM	19026
Surr: Phenol-d5	71.2		34.8-118		%REC	1	5/8/2015 8:18:21 PM	19026
Surr: 2,4,6-Tribromophenol	40.6		26.8-128		%REC	1	5/8/2015 8:18:21 PM	19026
Surr: Nitrobenzene-d5	73.1		35.8-124		%REC	1	5/8/2015 8:18:21 PM	19026
Surr: 2-Fluorobiphenyl	67.6		24.5-139		%REC	1	5/8/2015 8:18:21 PM	19026
Surr: 4-Terphenyl-d14	80.2		29.4-129		%REC	1	5/8/2015 8:18:21 PM	19026
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Benzene	ND	0.0049	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Toluene	ND	0.0039	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Ethylbenzene	0.0041	0.0030	0.033	J	mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Methyl tert-butyl ether (MTBE)	ND	0.0046	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2,4-Trimethylbenzene	ND	0.0016	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,3,5-Trimethylbenzene	0.11	0.0022	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2-Dichloroethane (EDC)	ND	0.013	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2-Dibromoethane (EDB)	ND	0.0026	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Naphthalene	ND	0.0078	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1-Methylnaphthalene	2.9	0.020	0.13		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
2-Methylnaphthalene	0.69	0.022	0.13		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Acetone	ND	0.024	0.49		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Bromobenzene	ND	0.0024	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Bromodichloromethane	ND	0.0027	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 3:40:00 PM

Lab ID: 1505004-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Bromoform	ND	0.0026	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Bromomethane	ND	0.0063	0.098		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
2-Butanone	ND	0.021	0.33		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Carbon disulfide	ND	0.024	0.33		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Carbon tetrachloride	ND	0.0032	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Chlorobenzene	ND	0.0025	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Chloroethane	ND	0.025	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Chloroform	ND	0.0034	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Chloromethane	ND	0.0038	0.098		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
2-Chlorotoluene	ND	0.0037	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
4-Chlorotoluene	ND	0.0025	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
cis-1,2-DCE	ND	0.0041	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
cis-1,3-Dichloropropene	ND	0.0023	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2-Dibromo-3-chloropropane	ND	0.0056	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Dibromochloromethane	ND	0.0025	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Dibromomethane	ND	0.0034	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2-Dichlorobenzene	ND	0.0020	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,3-Dichlorobenzene	ND	0.0039	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,4-Dichlorobenzene	ND	0.0041	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Dichlorodifluoromethane	ND	0.0082	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1-Dichloroethane	ND	0.013	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1-Dichloroethene	ND	0.0023	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2-Dichloropropane	ND	0.0018	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,3-Dichloropropane	ND	0.0045	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
2,2-Dichloropropane	ND	0.0048	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1-Dichloropropene	ND	0.0049	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Hexachlorobutadiene	ND	0.0045	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
2-Hexanone	ND	0.0080	0.33		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Isopropylbenzene	ND	0.0028	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
4-Isopropyltoluene	ND	0.0023	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
4-Methyl-2-pentanone	ND	0.0057	0.33		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Methylene chloride	ND	0.013	0.098		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
n-Butylbenzene	ND	0.0028	0.098		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
n-Propylbenzene	ND	0.0024	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
sec-Butylbenzene	ND	0.0047	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Styrene	ND	0.0060	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
tert-Butylbenzene	ND	0.0037	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1,1,2-Tetrachloroethane	ND	0.0027	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1,2,2-Tetrachloroethane	ND	0.0040	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (2-4')

Project: SWMU 10

Collection Date: 4/29/2015 3:40:00 PM

Lab ID: 1505004-002

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: cadg	
Tetrachloroethene (PCE)	ND	0.0028	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
trans-1,2-DCE	ND	0.0021	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
trans-1,3-Dichloropropene	ND	0.0059	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2,3-Trichlorobenzene	ND	0.0070	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2,4-Trichlorobenzene	ND	0.0060	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1,1-Trichloroethane	ND	0.0050	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,1,2-Trichloroethane	ND	0.0039	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Trichloroethene (TCE)	ND	0.0032	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Trichlorofluoromethane	ND	0.0099	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
1,2,3-Trichloropropane	ND	0.0055	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Vinyl chloride	ND	0.013	0.033		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Xylenes, Total	ND	0.0091	0.065		mg/Kg-dr	1	5/5/2015 3:52:38 AM	19008
Surr: Dibromofluoromethane	96.7		70-130		%REC	1	5/5/2015 3:52:38 AM	19008
Surr: 1,2-Dichloroethane-d4	93.4		70-130		%REC	1	5/5/2015 3:52:38 AM	19008
Surr: Toluene-d8	93.2		70-130		%REC	1	5/5/2015 3:52:38 AM	19008
Surr: 4-Bromofluorobenzene	91.5		70-130		%REC	1	5/5/2015 3:52:38 AM	19008
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	25	0.82	3.3		mg/Kg-dr	1	5/5/2015 3:52:38 AM	R25941
Surr: BFB	113	0	67.4-150		%REC	1	5/5/2015 3:52:38 AM	R25941

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (6-8')

Project: SWMU 10

Collection Date: 4/29/2015 3:50:00 PM

Lab ID: 1505004-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.5	9.9		mg/Kg-dr	1	5/5/2015 6:50:28 PM	19040
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg-dr	1	5/5/2015 6:50:28 PM	19040
Surr: DNOP	101	0	57.9-140		%REC	1	5/5/2015 6:50:28 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	16	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.017	0.0033	0.038	J	mg/Kg-dr	1	5/6/2015 3:44:32 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.6	2.9		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Arsenic	1.2	0.35	2.9	J	mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Barium	140	0.035	0.12		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Beryllium	0.84	0.0087	0.18		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Cadmium	ND	0.033	0.12		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Chromium	7.2	0.071	0.35		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Cobalt	4.0	0.045	0.35		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Iron	12000	71	290		mg/Kg-dr	100	5/7/2015 11:13:42 AM	19081
Lead	2.2	0.13	0.29		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Manganese	270	0.069	0.12		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Nickel	6.8	0.15	0.59		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Silver	ND	0.035	0.29		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Vanadium	15	0.039	2.9		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
Zinc	13	0.76	2.9		mg/Kg-dr	1	5/7/2015 1:45:34 PM	19081
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Acenaphthylene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Aniline	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Anthracene	ND	0.098	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Azobenzene	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benz(a)anthracene	ND	0.090	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzo(a)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzoic acid	ND	0.066	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Benzyl alcohol	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (6-8')

Project: SWMU 10

Collection Date: 4/29/2015 3:50:00 PM

Lab ID: 1505004-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.088	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Butyl benzyl phthalate	ND	0.14	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Carbazole	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Chloro-3-methylphenol	ND	0.11	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Chloroaniline	ND	0.11	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Chloronaphthalene	ND	0.12	0.29		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Chlorophenol	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Chrysene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Di-n-butyl phthalate	ND	0.13	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Di-n-octyl phthalate	ND	0.13	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Dibenz(a,h)anthracene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Dibenzofuran	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
1,3-Dichlorobenzene	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
3,3'-Dichlorobenzidine	ND	0.089	0.29		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Diethyl phthalate	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Dimethyl phthalate	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4-Dichlorophenol	ND	0.11	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4-Dimethylphenol	ND	0.090	0.35		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.063	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4-Dinitrophenol	ND	0.048	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,6-Dinitrotoluene	ND	0.13	0.58		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Fluoranthene	ND	0.14	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Fluorene	ND	0.16	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Hexachlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Hexachlorobutadiene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Hexachlorocyclopentadiene	ND	0.080	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Hexachloroethane	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Isophorone	ND	0.12	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
1-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Methylphenol	ND	0.12	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (6-8')

Project: SWMU 10

Collection Date: 4/29/2015 3:50:00 PM

Lab ID: 1505004-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Nitroaniline	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
3-Nitroaniline	ND	0.11	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Nitroaniline	ND	0.10	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Nitrobenzene	ND	0.12	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2-Nitrophenol	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
4-Nitrophenol	ND	0.099	0.29		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Pentachlorophenol	ND	0.072	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Phenanthrene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Phenol	ND	0.10	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Pyrene	ND	0.15	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Pyridine	ND	0.097	0.46		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4,5-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
2,4,6-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/8/2015 5:58:11 PM	19026
Surr: 2-Fluorophenol	45.2		26.4-129		%REC	1	5/8/2015 5:58:11 PM	19026
Surr: Phenol-d5	46.5		34.8-118		%REC	1	5/8/2015 5:58:11 PM	19026
Surr: 2,4,6-Tribromophenol	41.3		26.8-128		%REC	1	5/8/2015 5:58:11 PM	19026
Surr: Nitrobenzene-d5	43.7		35.8-124		%REC	1	5/8/2015 5:58:11 PM	19026
Surr: 2-Fluorobiphenyl	42.4		24.5-139		%REC	1	5/8/2015 5:58:11 PM	19026
Surr: 4-Terphenyl-d14	55.3		29.4-129		%REC	1	5/8/2015 5:58:11 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.00190	0.000345	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Toluene	0.00162	0.000159	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Ethylbenzene	0.000421	0.000258	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Xylenes, Total	0.00118	0.000914	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Methyl tert-butyl ether (MTBE)	0.00139	0.000643	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2,4-Trimethylbenzene	0.000406	0.000401	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,3,5-Trimethylbenzene	ND	0.000269	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2-Dichloroethane (EDC)	ND	0.000411	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2-Dibromoethane (EDB)	ND	0.000183	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Naphthalene	ND	0.000501	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1-Methylnaphthalene	ND	0.000602	0.00307		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
2-Methylnaphthalene	ND	0.000599	0.00307		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Acetone	0.00619	0.000957	0.00766	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Bromobenzene	ND	0.000426	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (6-8')

Project: SWMU 10

Collection Date: 4/29/2015 3:50:00 PM

Lab ID: 1505004-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Bromodichloromethane	ND	0.000207	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Bromoform	ND	0.000397	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Bromomethane	ND	0.000906	0.00230		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
2-Butanone	0.00153	0.000491	0.00766	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Carbon tetrachloride	ND	0.000277	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Chlorobenzene	ND	0.000155	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Chloroethane	ND	0.00153	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Chloroform	ND	0.000316	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Chloromethane	ND	0.000181	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
2-Chlorotoluene	ND	0.000299	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Carbon disulfide	ND	0.000694	0.00766		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
4-Chlorotoluene	ND	0.000295	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
cis-1,2-DCE	ND	0.000405	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
cis-1,3-Dichloropropene	ND	0.00153	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2-Dibromo-3-chloropropane	ND	0.000450	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Dibromochloromethane	ND	0.000172	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Dibromomethane	ND	0.000870	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2-Dichlorobenzene	ND	0.000340	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,3-Dichlorobenzene	ND	0.000260	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,4-Dichlorobenzene	ND	0.000241	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Dichlorodifluoromethane	ND	0.000626	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1-Dichloroethane	ND	0.000358	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1-Dichloroethene	ND	0.000256	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2-Dichloropropane	ND	0.000327	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,3-Dichloropropane	ND	0.000239	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
2,2-Dichloropropane	ND	0.000266	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1-Dichloropropene	ND	0.000281	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Hexachlorobutadiene	ND	0.000309	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Isopropylbenzene	ND	0.000356	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
4-Isopropyltoluene	ND	0.000595	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Methylene chloride	0.000529	0.000379	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
n-Butylbenzene	ND	0.000629	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
2-Hexanone	0.000559	0.000319	0.00766	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
n-Propylbenzene	ND	0.000287	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
sec-Butylbenzene	0.000667	0.000387	0.00153	J	mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Styrene	ND	0.000254	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
4-Methyl-2-pentanone	ND	0.000647	0.00766		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
tert-Butylbenzene	ND	0.000235	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1,1,2-Tetrachloroethane	ND	0.000249	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (6-8')

Project: SWMU 10

Collection Date: 4/29/2015 3:50:00 PM

Lab ID: 1505004-003

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.000337	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Tetrachloroethene (PCE)	ND	0.000304	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
trans-1,2-DCE	ND	0.000248	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
trans-1,3-Dichloropropene	ND	0.000200	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2,3-Trichlorobenzene	ND	0.000561	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2,4-Trichlorobenzene	ND	0.000574	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1,1-Trichloroethane	ND	0.000218	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,1,2-Trichloroethane	ND	0.00153	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Trichloroethene (TCE)	ND	0.000305	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Trichlorofluoromethane	ND	0.000310	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
1,2,3-Trichloropropane	ND	0.000538	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Vinyl chloride	ND	0.000175	0.00153		mg/Kg-dr	1	5/7/2015 10:11:12 AM	19107
Surr: 1,2-Dichloroethane-d4	98.7	0	70-130		%REC	1	5/7/2015 10:11:12 AM	19107
Surr: 4-Bromofluorobenzene	110	0	70-130		%REC	1	5/7/2015 10:11:12 AM	19107
Surr: Dibromofluoromethane	99.5	0	70-130		%REC	1	5/7/2015 10:11:12 AM	19107
Surr: Toluene-d8	93.0	0	70-130		%REC	1	5/7/2015 10:11:12 AM	19107
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	ND	0.82	3.2		mg/Kg-dr	1	5/5/2015 1:26:29 PM	R25982
Surr: BFB	106	0	67.4-150		%REC	1	5/5/2015 1:26:29 PM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (18-20')

Project: SWMU 10

Collection Date: 4/29/2015 4:00:00 PM

Lab ID: 1505004-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	ND	5.4	9.7		mg/Kg-dr	1	5/5/2015 7:17:27 PM	19040
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg-dr	1	5/5/2015 7:17:27 PM	19040
Surr: DNOP	105	0	57.9-140		%REC	1	5/5/2015 7:17:27 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	13	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.0040	0.0035	0.040	J	mg/Kg-dr	1	5/6/2015 3:46:17 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.9		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Arsenic	1.9	0.34	2.9	J	mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Barium	230	0.034	0.11		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Beryllium	1.0	0.0085	0.17		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Cadmium	ND	0.032	0.11		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Chromium	15	0.069	0.34		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Cobalt	7.4	0.043	0.34		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Iron	21000	69	290		mg/Kg-dr	100	5/7/2015 11:15:06 AM	19081
Lead	1.7	0.12	0.29		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Manganese	770	0.34	0.57		mg/Kg-dr	5	5/8/2015 2:33:57 PM	19081
Nickel	16	0.15	0.57		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Selenium	ND	1.8	2.9		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Silver	ND	0.034	0.29		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Vanadium	22	0.038	2.9		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
Zinc	22	0.74	2.9		mg/Kg-dr	1	5/7/2015 1:48:21 PM	19081
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Acenaphthylene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Aniline	ND	0.099	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Anthracene	ND	0.097	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Azobenzene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benz(a)anthracene	ND	0.089	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzo(a)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzo(b)fluoranthene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzo(g,h,i)perylene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzo(k)fluoranthene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzoic acid	ND	0.065	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Benzyl alcohol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Bis(2-chloroethoxy)methane	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (18-20')

Project: SWMU 10

Collection Date: 4/29/2015 4:00:00 PM

Lab ID: 1505004-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Bis(2-chloroisopropyl)ether	ND	0.087	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Bis(2-ethylhexyl)phthalate	ND	0.13	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Bromophenyl phenyl ether	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Butyl benzyl phthalate	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Carbazole	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Chloro-3-methylphenol	ND	0.11	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Chloroaniline	ND	0.11	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Chloronaphthalene	ND	0.12	0.28		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Chlorophenol	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Chlorophenyl phenyl ether	ND	0.17	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Chrysene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Di-n-butyl phthalate	ND	0.13	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Di-n-octyl phthalate	ND	0.13	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Dibenz(a,h)anthracene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Dibenzofuran	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
1,2-Dichlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
1,3-Dichlorobenzene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
1,4-Dichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
3,3'-Dichlorobenzidine	ND	0.088	0.28		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Diethyl phthalate	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Dimethyl phthalate	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4-Dichlorophenol	ND	0.11	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4-Dimethylphenol	ND	0.089	0.34		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4,6-Dinitro-2-methylphenol	ND	0.062	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4-Dinitrophenol	ND	0.047	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4-Dinitrotoluene	ND	0.10	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,6-Dinitrotoluene	ND	0.13	0.57		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Fluoranthene	ND	0.14	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Fluorene	ND	0.15	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Hexachlorobenzene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Hexachlorobutadiene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Hexachlorocyclopentadiene	ND	0.079	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Hexachloroethane	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Indeno(1,2,3-cd)pyrene	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Isophorone	ND	0.12	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
1-Methylnaphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Methylnaphthalene	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Methylphenol	ND	0.11	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (18-20')

Project: SWMU 10

Collection Date: 4/29/2015 4:00:00 PM

Lab ID: 1505004-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
N-Nitrosodi-n-propylamine	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
N-Nitrosodiphenylamine	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Naphthalene	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Nitroaniline	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
3-Nitroaniline	ND	0.11	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Nitroaniline	ND	0.10	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Nitrobenzene	ND	0.12	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2-Nitrophenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
4-Nitrophenol	ND	0.098	0.28		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Pentachlorophenol	ND	0.071	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Phenanthrene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Phenol	ND	0.10	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Pyrene	ND	0.15	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Pyridine	ND	0.096	0.46		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
1,2,4-Trichlorobenzene	ND	0.12	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4,5-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
2,4,6-Trichlorophenol	ND	0.13	0.23		mg/Kg-dr	1	5/7/2015 8:41:44 PM	19026
Surr: 2-Fluorophenol	73.9		26.4-129		%REC	1	5/7/2015 8:41:44 PM	19026
Surr: Phenol-d5	73.0		34.8-118		%REC	1	5/7/2015 8:41:44 PM	19026
Surr: 2,4,6-Tribromophenol	68.8		26.8-128		%REC	1	5/7/2015 8:41:44 PM	19026
Surr: Nitrobenzene-d5	70.5		35.8-124		%REC	1	5/7/2015 8:41:44 PM	19026
Surr: 2-Fluorobiphenyl	74.9		24.5-139		%REC	1	5/7/2015 8:41:44 PM	19026
Surr: 4-Terphenyl-d14	83.9		29.4-129		%REC	1	5/7/2015 8:41:44 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.0204	0.000418	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Toluene	0.0127	0.000193	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Ethylbenzene	0.00291	0.000312	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Xylenes, Total	0.00975	0.00111	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000777	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2,4-Trimethylbenzene	0.00277	0.000484	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,3,5-Trimethylbenzene	0.00184	0.000325	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000497	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000222	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Naphthalene	0.000742	0.000606	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1-Methylnaphthalene	ND	0.000728	0.00371		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
2-Methylnaphthalene	ND	0.000724	0.00371		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Acetone	0.00180	0.00116	0.00927	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Bromobenzene	ND	0.000516	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (18-20')

Project: SWMU 10

Collection Date: 4/29/2015 4:00:00 PM

Lab ID: 1505004-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Bromodichloromethane	ND	0.000250	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Bromoform	ND	0.000480	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Bromomethane	ND	0.00110	0.00278		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
2-Butanone	ND	0.000594	0.00927		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Carbon tetrachloride	ND	0.000336	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Chlorobenzene	ND	0.000188	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Chloroethane	ND	0.00185	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Chloroform	ND	0.000382	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Chloromethane	ND	0.000219	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
2-Chlorotoluene	ND	0.000362	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Carbon disulfide	ND	0.000839	0.00927		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
4-Chlorotoluene	ND	0.000357	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
cis-1,2-DCE	ND	0.000490	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
cis-1,3-Dichloropropene	ND	0.00185	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000545	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Dibromochloromethane	ND	0.000208	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Dibromomethane	ND	0.00105	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2-Dichlorobenzene	ND	0.000411	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,3-Dichlorobenzene	ND	0.000314	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,4-Dichlorobenzene	ND	0.000291	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Dichlorodifluoromethane	ND	0.000757	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1-Dichloroethane	ND	0.000433	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1-Dichloroethene	ND	0.000309	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2-Dichloropropane	ND	0.000396	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,3-Dichloropropane	ND	0.000289	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
2,2-Dichloropropane	ND	0.000322	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1-Dichloropropene	ND	0.000339	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Hexachlorobutadiene	ND	0.000374	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Isopropylbenzene	0.000482	0.000430	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
4-Isopropyltoluene	ND	0.000719	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Methylene chloride	0.000612	0.000458	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
n-Butylbenzene	ND	0.000761	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
2-Hexanone	ND	0.000386	0.00927		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
n-Propylbenzene	0.000510	0.000347	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
sec-Butylbenzene	0.000714	0.000468	0.00185	J	mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Styrene	ND	0.000307	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
4-Methyl-2-pentanone	ND	0.000783	0.00927		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
tert-Butylbenzene	ND	0.000284	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000302	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10-4 (18-20')

Project: SWMU 10

Collection Date: 4/29/2015 4:00:00 PM

Lab ID: 1505004-004

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.000408	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Tetrachloroethene (PCE)	ND	0.000367	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
trans-1,2-DCE	ND	0.000300	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
trans-1,3-Dichloropropene	ND	0.000242	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2,3-Trichlorobenzene	ND	0.000678	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2,4-Trichlorobenzene	ND	0.000695	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1,1-Trichloroethane	ND	0.000264	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,1,2-Trichloroethane	ND	0.00185	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Trichloroethene (TCE)	ND	0.000368	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Trichlorofluoromethane	ND	0.000375	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
1,2,3-Trichloropropane	ND	0.000651	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Vinyl chloride	ND	0.000212	0.00185		mg/Kg-dr	1	5/6/2015 7:49:48 PM	19032
Surr: 1,2-Dichloroethane-d4	98.0	0	70-130		%REC	1	5/6/2015 7:49:48 PM	19032
Surr: 4-Bromofluorobenzene	99.5	0	70-130		%REC	1	5/6/2015 7:49:48 PM	19032
Surr: Dibromofluoromethane	104	0	70-130		%REC	1	5/6/2015 7:49:48 PM	19032
Surr: Toluene-d8	88.5	0	70-130		%REC	1	5/6/2015 7:49:48 PM	19032
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	ND	0.78	3.1		mg/Kg-dr	1	5/6/2015 12:58:35 AM	R25982
Surr: BFB	109	0	67.4-150		%REC	1	5/6/2015 12:58:35 AM	R25982

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 4/29/2015

Lab ID: 1505004-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: KJH	
Diesel Range Organics (DRO)	150	27	49		mg/Kg-dr	5	5/7/2015 9:10:40 PM	19040
Motor Oil Range Organics (MRO)	310	250	250		mg/Kg-dr	5	5/7/2015 9:10:40 PM	19040
Surr: DNOP	114	0	57.9-140		%REC	5	5/7/2015 9:10:40 PM	19040
PERCENT MOISTURE							Analyst: BCN	
Percent Moisture	12	1.0	1.0		wt%	1	5/4/2015 1:31:00 PM	R25960
EPA METHOD 7471: MERCURY							Analyst: MED	
Mercury	0.035	0.0034	0.039	J	mg/Kg-dr	1	5/6/2015 3:55:17 PM	19078
EPA METHOD 6010B: SOIL METALS							Analyst: ELS	
Antimony	ND	1.5	2.8		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Arsenic	2.7	0.65	5.5	J	mg/Kg-dr	2	5/7/2015 1:57:09 PM	19081
Barium	380	0.066	0.22		mg/Kg-dr	2	5/7/2015 1:57:09 PM	19081
Beryllium	0.59	0.0082	0.17		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Cadmium	ND	0.031	0.11		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Chromium	16	0.066	0.33		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Cobalt	3.4	0.042	0.33		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Iron	9100	66	280		mg/Kg-dr	100	5/7/2015 11:24:22 AM	19081
Lead	3.6	0.12	0.28		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Manganese	490	0.13	0.22		mg/Kg-dr	2	5/7/2015 1:57:09 PM	19081
Nickel	5.6	0.14	0.55		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Selenium	ND	1.7	2.8		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Silver	ND	0.033	0.28		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Vanadium	21	0.037	2.8		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
Zinc	24	0.71	2.8		mg/Kg-dr	1	5/7/2015 1:55:41 PM	19081
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Acenaphthylene	ND	2.8	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Aniline	ND	2.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Anthracene	ND	2.3	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Azobenzene	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benz(a)anthracene	ND	2.2	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzo(a)pyrene	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzo(b)fluoranthene	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzo(g,h,i)perylene	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzo(k)fluoranthene	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzoic acid	ND	1.6	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Benzyl alcohol	ND	2.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Bis(2-chloroethoxy)methane	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 4/29/2015

Lab ID: 1505004-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Bis(2-chloroethyl)ether	ND	2.7	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Bis(2-chloroisopropyl)ether	ND	2.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Bis(2-ethylhexyl)phthalate	ND	3.1	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Bromophenyl phenyl ether	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Butyl benzyl phthalate	ND	3.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Carbazole	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Chloro-3-methylphenol	ND	2.7	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Chloroaniline	ND	2.5	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Chloronaphthalene	ND	2.9	6.9		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Chlorophenol	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Chlorophenyl phenyl ether	ND	4.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Chrysene	ND	2.8	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Di-n-butyl phthalate	ND	3.1	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Di-n-octyl phthalate	ND	3.1	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Dibenz(a,h)anthracene	ND	3.0	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Dibenzofuran	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
1,2-Dichlorobenzene	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
1,3-Dichlorobenzene	ND	2.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
1,4-Dichlorobenzene	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
3,3'-Dichlorobenzidine	ND	2.1	6.9		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Diethyl phthalate	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Dimethyl phthalate	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4-Dichlorophenol	ND	2.8	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4-Dimethylphenol	ND	2.2	8.3		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4,6-Dinitro-2-methylphenol	ND	1.5	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4-Dinitrophenol	ND	1.1	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4-Dinitrotoluene	ND	2.5	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,6-Dinitrotoluene	ND	3.1	14		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Fluoranthene	ND	3.3	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Fluorene	ND	3.7	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Hexachlorobenzene	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Hexachlorobutadiene	ND	2.7	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Hexachlorocyclopentadiene	ND	1.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Hexachloroethane	ND	2.4	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Indeno(1,2,3-cd)pyrene	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Isophorone	ND	2.9	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
1-Methylnaphthalene	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Methylnaphthalene	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Methylphenol	ND	2.8	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	R RPD outside accepted recovery limits	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 4/29/2015

Lab ID: 1505004-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
3+4-Methylphenol	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
N-Nitrosodi-n-propylamine	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
N-Nitrosodiphenylamine	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Naphthalene	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Nitroaniline	ND	3.1	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
3-Nitroaniline	ND	2.6	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Nitroaniline	ND	2.5	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Nitrobenzene	ND	2.8	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2-Nitrophenol	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
4-Nitrophenol	ND	2.4	6.9		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Pentachlorophenol	ND	1.7	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Phenanthrene	ND	2.9	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Phenol	ND	2.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Pyrene	ND	3.5	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Pyridine	ND	2.3	11		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
1,2,4-Trichlorobenzene	ND	2.8	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4,5-Trichlorophenol	ND	3.2	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
2,4,6-Trichlorophenol	ND	3.2	5.5		mg/Kg-dr	1	5/8/2015 8:46:25 PM	19026
Surr: 2-Fluorophenol	0		26.4-129	S	%REC	1	5/8/2015 8:46:25 PM	19026
Surr: Phenol-d5	0		34.8-118	S	%REC	1	5/8/2015 8:46:25 PM	19026
Surr: 2,4,6-Tribromophenol	0		26.8-128	S	%REC	1	5/8/2015 8:46:25 PM	19026
Surr: Nitrobenzene-d5	0		35.8-124	S	%REC	1	5/8/2015 8:46:25 PM	19026
Surr: 2-Fluorobiphenyl	0		24.5-139	S	%REC	1	5/8/2015 8:46:25 PM	19026
Surr: 4-Terphenyl-d14	0		29.4-129	S	%REC	1	5/8/2015 8:46:25 PM	19026
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Benzene	0.00104	0.000359	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Toluene	0.00232	0.000166	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Ethylbenzene	0.000638	0.000268	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Xylenes, Total	0.00171	0.000951	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Methyl tert-butyl ether (MTBE)	ND	0.000668	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2,4-Trimethylbenzene	0.000972	0.000417	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,3,5-Trimethylbenzene	0.000422	0.000280	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2-Dichloroethane (EDC)	ND	0.000427	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2-Dibromoethane (EDB)	ND	0.000191	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Naphthalene	ND	0.000521	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1-Methylnaphthalene	ND	0.000626	0.00319		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
2-Methylnaphthalene	ND	0.000623	0.00319		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Acetone	0.0166	0.000995	0.00797		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Bromobenzene	ND	0.000443	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Western Refining Company**Client Sample ID:** SWMU 10 DUP01**Project:** SWMU 10**Collection Date:** 4/29/2015**Lab ID:** 1505004-005**Matrix:** SOIL**Received Date:** 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
Bromodichloromethane	ND	0.000215	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Bromoform	ND	0.000413	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Bromomethane	ND	0.000942	0.00239		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
2-Butanone	0.00253	0.000510	0.00797	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Carbon tetrachloride	ND	0.000288	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Chlorobenzene	ND	0.000162	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Chloroethane	ND	0.00159	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Chloroform	ND	0.000328	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Chloromethane	ND	0.000188	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
2-Chlorotoluene	ND	0.000311	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Carbon disulfide	ND	0.000721	0.00797		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
4-Chlorotoluene	ND	0.000307	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
cis-1,2-DCE	ND	0.000422	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
cis-1,3-Dichloropropene	ND	0.00159	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2-Dibromo-3-chloropropane	ND	0.000468	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Dibromochloromethane	ND	0.000179	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Dibromomethane	ND	0.000905	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2-Dichlorobenzene	ND	0.000354	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,3-Dichlorobenzene	ND	0.000270	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,4-Dichlorobenzene	ND	0.000250	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Dichlorodifluoromethane	ND	0.000651	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1-Dichloroethane	ND	0.000372	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1-Dichloroethene	ND	0.000266	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2-Dichloropropane	ND	0.000341	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,3-Dichloropropane	ND	0.000248	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
2,2-Dichloropropane	ND	0.000277	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1-Dichloropropene	ND	0.000292	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Hexachlorobutadiene	ND	0.000322	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Isopropylbenzene	ND	0.000370	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
4-Isopropyltoluene	ND	0.000619	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Methylene chloride	0.000510	0.000394	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
n-Butylbenzene	ND	0.000654	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
2-Hexanone	0.000653	0.000332	0.00797	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
n-Propylbenzene	ND	0.000298	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
sec-Butylbenzene	0.000534	0.000403	0.00159	J	mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Styrene	ND	0.000264	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
4-Methyl-2-pentanone	ND	0.000673	0.00797		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
tert-Butylbenzene	ND	0.000244	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1,1,2-Tetrachloroethane	ND	0.000259	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1505004

Date Reported: 10/8/2015

CLIENT: Western Refining Company

Client Sample ID: SWMU 10 DUP01

Project: SWMU 10

Collection Date: 4/29/2015

Lab ID: 1505004-005

Matrix: SOIL

Received Date: 4/30/2015 3:50:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.000350	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Tetrachloroethene (PCE)	ND	0.000316	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
trans-1,2-DCE	ND	0.000258	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
trans-1,3-Dichloropropene	ND	0.000208	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2,3-Trichlorobenzene	ND	0.000583	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2,4-Trichlorobenzene	ND	0.000597	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1,1-Trichloroethane	ND	0.000227	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,1,2-Trichloroethane	ND	0.00159	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Trichloroethene (TCE)	ND	0.000317	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Trichlorofluoromethane	ND	0.000322	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
1,2,3-Trichloropropane	ND	0.000560	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Vinyl chloride	ND	0.000182	0.00159		mg/Kg-dr	1	5/6/2015 8:19:12 PM	19032
Surr: 1,2-Dichloroethane-d4	99.5	0	70-130		%REC	1	5/6/2015 8:19:12 PM	19032
Surr: 4-Bromofluorobenzene	106	0	70-130		%REC	1	5/6/2015 8:19:12 PM	19032
Surr: Dibromofluoromethane	102	0	70-130		%REC	1	5/6/2015 8:19:12 PM	19032
Surr: Toluene-d8	91.3	0	70-130		%REC	1	5/6/2015 8:19:12 PM	19032
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: cadg	
Gasoline Range Organics (GRO)	ND	0.86	3.4		mg/Kg-dr	1	5/6/2015 1:27:20 AM	R25982
Surr: BFB	106	0	67.4-150		%REC	1	5/6/2015 1:27:20 AM	R25982

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	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		