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## Western Refining Southwest LLC

A subsidiary of Marathon Petroleum Corporation

I-40 Exit 39

Jamestown, NM 87347

September 30, 2022

Mr. Rick Shean, Chief  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, NM 87505

**RE: Area of Concern 28 – Warehouse and Maintenance Shop Area, Area of Concern 29 – Equipment Yard and Drum Storage Area, and Area of Concern 30 – Laboratory Area Investigation Work Plan  
Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery  
EPA ID #NMD000333211**

Dear Mr. Shean:

Attached please find the Investigation Work Plan for Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area, AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory Area, as requested in the New Mexico Environment Department “Determination of Area of Concern (AOC) Entry to the Permit” letter, dated August 19, 2021.

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore at (505) 722-0205.



## Western Refining Southwest LLC

A subsidiary of Marathon Petroleum Corporation

I-40 Exit 39

Jamestown, NM 87347

### Certification

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

Sincerely,

Western Refining Southwest LLC, Marathon Gallup Refinery

A handwritten signature in cursive script that reads "John Moore".

Ruth Cade  
Vice President

Enclosure

cc: D. Cobrain, NMED HWB  
M. Suzuki, NMED HWB  
L. Barr, NMOCD  
M. Bracey, Marathon Petroleum Corporation  
K. Luka, Marathon Petroleum Corporation

L. King, EPA Region 6  
J. Moore, Marathon Gallup Refinery  
H. Jones, Trihydro Corporation

**Area of Concern 28 – Warehouse and  
Maintenance Shop Area**

**Area of Concern 29 – Equipment Yard and  
Drum Storage Area**

**Area of Concern 30 – Laboratory Investigation  
Work Plan**



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**Western Refining Southwest LLC  
(D/B/A Marathon Gallup Refinery)**

**Gallup, New Mexico**

*EPA ID# NMD000333211*

**September 30, 2022**



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## Executive Summary

Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) is submitting this Work Plan for soil investigation in the vicinity of Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area, AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory. The New Mexico Environment Department (NMED) requested further investigation for AOC 28, 29, and 30 in the “Determination of Area of Concern (AOC) Entry to the Permit” letter dated August 19, 2021 (NMED 2021).

This Work Plan proposes installation of 21 soil borings with collection of a maximum of 84 soil samples. Soil samples will be collected using a Geoprobe direct-push drill rig. All samples will be analyzed for volatile organic compounds, semi-volatile organic compounds, total petroleum hydrocarbons (TPH) – diesel range organics, TPH – gasoline range organics, TPH – motor oil range organics, 1,2-dichloroethane, 1,4-dioxane, Skinner List metals, total cyanide, total iron, and total manganese. The Refinery will prepare an investigation report summarizing the sampling results and investigation conclusions within 120 days of the receipt of the analytical data.



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## Executive Summary

Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) is submitting this Work Plan for soil investigation in the vicinity of Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area, AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory. The New Mexico Environment Department (NMED) requested further investigation for AOC 28, 29, and 30 in the “Determination of Area of Concern (AOC) Entry to the Permit” letter dated August 19, 2021 (NMED 2021).

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Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
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Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## List of Acronyms

%	percent
amsl	above mean sea level
AOC	Area of Concern
bgs	below ground surface
COC	chain of custody
DRO	diesel range organics
EPA	Environmental Protection Agency
ft	foot or feet
GRO	gasoline range organics
MRO	motor oil range organics
NMED	New Mexico Environment Department
PID	photoionization detector
QA/QC	quality assurance/quality control
Refinery	Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery
SSL	soil screening level
TPH	total petroleum hydrocarbons
SIM	Select Ion Monitoring
SVOC	semi-volatile organic compounds
VOC	volatile organic compounds



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## 1.0 Introduction

The Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Refinery property covers approximately 810 acres.

This Work Plan is for the investigation of soils of Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area, AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory as noted in Figure 1. The New Mexico Environment Department (NMED) requested further investigation in these AOCs in the “Determination of Area of Concern (AOC) Entry to the Permit” letter dated August 19, 2021 (NMED 2021). To date no known subsurface investigations have been completed

The “Determination of Area of Concern (AOC) Entry to the Permit” letter requests confirmation of absence of contamination for AOC 28, 29, and 30 (NMED 2021a). Any historical contamination for AOC 28, AOC 29, and AOC 30 was documented in the “Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area” (MPC 2020a), the “Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area” (MPC 2020b), and the “Assessment Report for AOC 30 – Laboratory Area” (MPC 2020c), respectively.

This Work Plan proposes a sampling plan to evaluate the absence of residual contamination in AOC 28, 29, and 30 (Figure 1). The sampling plan includes installation of 21 soil borings, and collection of a maximum of 84 soil samples. Soil samples will be collected using a Geoprobe direct-push drill rig. All samples will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) – diesel range organics (DRO), TPH – gasoline range organics (GRO), TPH – motor oil range organics (MRO), 1,2-dichloroethane, 1,4-dioxane, Skinner List metals, total cyanide, total iron, and total manganese. The results from this investigation will be used for future remedy evaluations.



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## 2.0 Site Conditions

The Refinery has been indefinitely idled since August 2020. Subsequently, all equipment and material used in AOC 30 has been removed. Historically, the Refinery generally processed crude oil transported to the facility by pipeline or tanker truck. During active operation, various process units were operated at the Refinery, including alkylation, blending gas, crude distillation, diesel hydro-treating, fluid catalytic cracker, gas conditioning, isomerization, naphtha hydro-treating, reformer, saturated gas, sulfur recovery, ammonium thiosulfate, and merox treater units. Refinery operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The activities previously conducted within AOC 28 include general site maintenance and equipment repair of transportable items, including pipe fitting and welding, inspection and repair of instrumentation, and electrical repairs. Materials used for maintenance, mechanical, and electrical support were stored within the various buildings, which have concrete floors (MPC 2020a). AOC 29 is currently used for storage of equipment and supplies (MPC 2020b). The laboratory (AOC 30) was used for on-site analysis to maintain quality control over the refinery process. No investigations on the surface or subsurface conditions have been conducted to date in AOC 28, AOC 29, or AOC 30.

### 2.1 Surface Conditions

Local topography consists of a gradually inclined down-slope from high ground in the southeast to a lowland fluvial plain in the northwest. The highest point on Refinery property is located at the southeast corner boundary (elevation approximately 7,040 feet [ft] above mean sea level [amsl]) and the lowest point is located at the northwest corner boundary (elevation approximately 6,860 ft amsl). The average elevation in the vicinity of AOC 28, 29, and 30 is approximately 6,960 ft amsl.

### 2.2 Subsurface Conditions

The shallow subsurface soil (alluvium) is comprised of clay and silt with some interbedded sand layers. Beneath the alluvium is the Petrified Forest Member of the Chinle Group, which primarily consists of interbedded mudstone, siltstone, and sandstone. The Alluvium/Chinle interface is as little as 15 ft below ground surface (bgs) to over 32 ft bgs.



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

### 3.0 Scope of Activities

The investigative activities proposed in this Work Plan will provide data and information on subsurface conditions in AOC 28, 29, and 30. Specifically, the investigation activities will evaluate the absence of residual contamination in AOC 28, 29, and 30. Pending NMED approval of this Work Plan, the Refinery anticipates investigation work to be completed during 2023.

Soil borings will be completed with a Geoprobe direct-push drill rig at 21 locations around AOC 28, 29, and 30 (Figure 2). Given historical facility operations, soil borings will be completed to a total depth of 10 ft bgs or until refusal, whichever occurs first. Soil borings will be screened in the field for presence of VOCs using a 10.6 eV photoionization detector (PID). Soil will be collected at 1-ft intervals for PID field-screening, beginning with a surface sample. Analytical samples will be collected from the surface (6-12 inches below ground surface), just above the water table (if encountered), the bottom of boring, and in the zone with the highest PID reading. Soil samples will be analyzed for VOCs by Environmental Protection Agency (EPA) Method 8260B; SVOCs by EPA Method 8270C; TPH-DRO, TPH-GRO, and TPH-MRO by EPA Method 8015B; 1,2-dichloroethane by EPA Method 8011; 1,4-dioxane by EPA Method 8270 Select Ion Monitoring (SIM); total cyanide by EPA Method SM4500-CN; Skinner List metals, total iron, and total manganese by EPA Method 6010B/6020. These constituents were selected based on a previous investigation of nearby AOCs. The results from this investigation will be used for future remedial evaluations. Analytical results will be compared to their respective NMED Residential, Industrial, and Construction Worker Soil Screening Levels (SSL) (NMED 2021b).



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
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## 4.0 Investigation Methods

Soils obtained will be visually inspected and classified in general accordance with American Society for Testing and Materials D2487 (Unified Soil Classification System) and D2488 (Description and Identification of Soils). Detailed boring logs will be compiled in the field by qualified staff. Samples will be field screened using a PID for evidence of VOCs, and PID results will be recorded on the boring logs.

### 4.1 Sample Collection Procedures

Samples will be collected in accordance with the “Standard Operating Procedure – Soil Sampling” (Appendix A). Details related to sample collection will be documented on the boring log field forms (Appendix B). General observations recorded on the field forms for each soil sample location will include sampling start and end times, weather, site conditions, sampling team members, and other personnel present. Sample-specific information will include field sample identification, time of sample collection, initial and final sample depth, collection method, sample type (i.e., composite or aliquot), soil classification and characteristics, any deviations from or clarification of sampling procedures, and other observations.

PID readings will be collected at 1-ft intervals, beginning with a surface sample (6 to 12 inches bgs). At each 1-ft interval, the sample will be collected from the sampling equipment and split into two aliquots. Aliquot #1 will be placed into a plastic bag and used for PID screening. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis. Aliquot #1 materials will not be submitted for laboratory analysis.

Aliquot #1 will be shaken gently to expose the soil to the air trapped in the container. Aliquot #1 will be allowed to rest while vapors equilibrate. Headspace vapors will be measured by inserting the probe of the PID in a small opening in Aliquot #1’s plastic bag. The maximum PID value will be recorded on the field boring log for each interval. Note that if samples are cold (i.e., below 32 degrees Fahrenheit), they will be warmed in a heated building and/or vehicle before screening.

After collecting the PID reading, samples will be selected from 6 to 12 inches bgs, just above the water table (if encountered), the bottom of the boring, and the interval will the highest PID reading. Aliquot #2 materials from the selected depths will be transferred into the appropriate sample container, labeled, and placed in a cooler containing bagged ice. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody (COC) form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory.

A summary of the proposed sampling activities is provided below:

1. Installation of 21 soil borings, visual screening/logging, as well as PID data collection at the surface (6-12 inches bgs) and then every 1 ft thereafter.
2. Soil samples will be collected for laboratory analysis from:
  - The surface (6 to 12 inches bgs)



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
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- Just above the water table (if encountered)
  - The bottom of boring
  - The zone with the highest PID reading.
3. Samples will be submitted to an accredited laboratory and analyzed for:
- VOCs by EPA Method 8260B
  - SVOCs by EPA Method 8270C
  - TPH-DRO, TPH-GRO and TPH-MRO by EPA Method 8015B
  - 1,2-dichloroethane by EPA Method 8011
  - 1,4-dioxane by EPA Method 8270 SIM
  - Total Cyanide by EPA Method SM4500-CN
  - Skinner List Metals, Total Iron, and Total Manganese by EPA Method 6010B/6020
4. Compare analytical soil data with applicable NMED Residential, Industrial, and Construction Worker SSLs (NMED 2021b).

#### 4.2 Data Quality and Validation

Quality assurance/quality control (QA/QC) samples will be collected during sampling to monitor the validity of the sample collection procedures. Field duplicates will be collected at a rate of 10 percent (%) or at a minimum of 1 per day. Equipment blanks will be collected from re-usable equipment at a rate of 1 per day. QA/QC samples will be recorded on the field forms and the COCs. One trip blank per cooler will accompany the samples to the laboratory. The field duplicates, equipment blank samples, and trip blanks will be submitted to the laboratory along with the soil samples. Equipment blanks will be analyzed for the same constituents as the soil samples; trip blanks will be analyzed for VOCs. All data will undergo Tier II data validation.

#### 4.3 Data Evaluation and Waste Management

The soil analytical results will be compared to applicable NMED Residential, Construction Worker, and Industrial SSLs. The results will be presented to NMED in a subsequent investigation report.

Soil recovered during sampling will be placed in drums, labeled, and stored on the 90-Day Pad. Waste characterization will be conducted prior to disposal. Waste characterization analysis will include testing for VOCs, SVOCs, and Resource Conservation and Recovery Act-8 Metals. Any wastes determined to be characteristically hazardous will be disposed of within 90 days.



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## 5.0 Schedule

Pending NMED approval, the Refinery anticipates the investigation to be completed during 2023. Once the investigation has been completed, the Refinery will prepare an investigation report summarizing the sampling results and investigation conclusions within 120 days of the receipt of the analytical data.



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## 6.0 References

- Marathon Petroleum Company (MPC). 2020a. Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211. September 20.
- MPC. 2020b. Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211. December 15.
- MPC. 2020c. Assessment Report for AOC 30 – Laboratory Area, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211. November 15.
- New Mexico Environment Department (NMED). 2021a. Determination of Area of Concern (AOC) Entry to the Permit, Western Refining Southwest Inc., Gallup Refinery, EPA ID #NMD000333211, HWB-WRG-MISC. August 19.
- NMED. 2021b. Risk Assessment Guidance for Site Investigations and Remediation, Volume 1 Soil Screening Guidance for Human Health Risk Assessments. November.







Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
AOC 29 – Equipment Yard and Drum Storage Area, and AOC 30 – Laboratory  
Investigation Work Plan

## Appendix A – Standard Operating Procedure – Soil Sampling



## memorandum

**To:** Sampling Team Members  
**From:** Project Manager  
**Date:** September 30, 2022  
**Re:** Standard Operating Procedure – Soil Sampling

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### 1.0 INTRODUCTION

Soil sampling related to site characterization and site clean-up is expected to involve source sampling of potentially impacted soils for characterization and profiling. Soil sampling is expected to occur around the Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) Process Area.

All personnel involved in soil sampling projects are required to review this Standard Operating Procedure (SOP) before sampling to ensure the continued generation of reliable data. This SOP is based on experience gained from collecting soil samples and the latest information available in guidance manuals. This SOP may be updated as additional experience and information are acquired.

### 2.0 PRE-FIELD ACTIVITIES

Several activities will be conducted prior to departure for the project site. A project team will be assigned, and the members will begin coordinating the sample collection event with the Refinery. Field equipment will be inventoried and organized. Access to the areas to be sampled will be confirmed, and provisions made to secure the necessary equipment for delivery to the project site.

### 3.0 PREPARATION

The Project Manager will review the relevant sampling and analysis plans and work plans to determine if any documents need to be brought to the site during monitoring. The Project Manager will also evaluate whether any changes have been made to the sampling and analytical procedures and notify the appropriate personnel.

The Sampling Team Members will review available surface water level data before leaving for the sampling site. This preparation ensures that the proper equipment and personnel are available at the site. All field screening equipment will be inspected prior to departure, ensuring that it is in proper working order. For soil sampling, the only field monitoring equipment used will be a photoionization detector (PID) and it will be calibrated and operated according to manufacturer's recommendations.

The PID will be checked to ensure that the PID has the appropriate lamp strength for the investigation. The lamp to be used in a PID is a 10.6 electron volt (eV) lamp, which will ionize compounds with ionization potentials from 8.0 eV to 10.6 eV. The range of 8.0 eV to 10.6 eV is representative of gasoline- and diesel-type constituents. For example, benzene, naphthalene, and toluene have ionization potentials of 9.25 eV, 8.13 eV, and 8.82 eV, respectively (see link below). A list of ionization potentials



Sampling Team Members  
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for a variety of compounds has been published by RAE systems, the manufacturer of the PID most used by Trihydro. The list can be found at the following link:  
<https://gastech.com/sites/default/files/RAE%20Systems%20Technical%20Note%20106%20v14%20Correction%20Factors.pdf>.

#### **4.0 EQUIPMENT**

The following equipment is recommended for soil sampling:

- Required personal protective equipment (PPE), listed in the site-specific health and safety plan (HASP)
- Soil sampling devices (e.g., hand auger, hand shovel, drill rig, etc.)
- Sampling beaker, bottles, labels, and preservatives
- Gloves
- Chain-of-custody/sample-analysis-request forms
- PID
- Global Positioning System (GPS) unit
- Opaque Cooler(s) and bagged ice or frozen Blue Ice
- Detergent or solvent for cleaning monitoring equipment
- Brushes dedicated for decontamination
- Decontamination containers dedicated for wash, rinse 1, and rinse 2
- Paper towels
- Trash bags
- Field logbook

#### **5.0 SAMPLE COLLECTION**

A critical aspect of any sampling program is selection and implementation of an appropriate sampling technique. Selection of equipment and technique should be appropriate for the volume of material required and the type of analysis to be performed. In general, the sampling equipment and technique will be chosen to minimize, to the extent possible, the amount of handling a sample will undergo prior to analysis. In many cases, the material to be sampled will be easy to access, and simple "grab" samples collected using a shovel, trowel, or drive sampler are appropriate. In other cases, such as underwater or heavily saturated samples, the soils may be difficult to access, and sampling will involve the use of specialized soil sampling equipment. Specific analytical requirements and sampling frequencies are specified in the work plan.



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Soil samples located in dry areas will be collected from representative locations using a decontaminated drive sampler equipped with clean brass or stainless steel sampling rings, a thin-walled tube sampler, or a shovel or hand trowel. The sampling device will be driven completely into the material manually or using a manually operated auger, drive hammer, or mallet. The sampling device will then be extracted from the material using a shovel or trowel as needed. If used, filled sampling rings or the thin-walled tube will then be removed from the sampling device and immediately sealed on both ends with teflon sheeting and plastic caps. Otherwise, the material will be placed directly from the trowel or other appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a teflon-lined lid.

If necessary, several cores may be collected from each location to provide adequate sample volume for the laboratory. The sample containers will be labeled with indelible ink. Filled sample containers will be wiped dry and placed in a cooler with ice (or equivalent) for storage at the time of collection. Enough ice and protective packing material should be used to cool the samples to 4 degrees Celsius and ensure that the container remains intact prior to final packing and shipment.

Field screening may involve the use of a PID. In this case, the sample will be split into two aliquots. The bag containing Aliquot #1 will be sealed and shaken gently to expose the soil to the air trapped in the container. The sealed container will be allowed to rest while vapors equilibrate. Vapors present within the sample bag's headspace will be measured by inserting the probe of the instrument in a small opening in the bag. The PID value and the ambient air temperature will be recorded on the field boring log for each interval. Aliquot #1 used strictly for PID screening only. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

The Aliquot #2 materials that correspond to the sample depths selected for laboratory analysis will be transferred into the appropriate glass sample jar, labeled, and placed in a cooler. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory. Note that if samples are cold (i.e., below 32 degrees Fahrenheit) they will be sealed in airtight bags and warmed in a heated building and/or vehicle before screening. All samples shall be screened as close to the same ambient temperature as possible to obtain consistent results.

Sampling devices will be decontaminated between sampling locations using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses. Sample locations will be recorded with a GPS unit to accurately map the sampling locations.

Field logbooks, soil sampling field log, and photograph logs will provide a written record of field data gathered, field observations, field equipment calibrations, the samples collected for analysis, and sample



Sampling Team Members  
September 30, 2022  
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custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

697-086-002



Area of Concern (AOC) 28 – Warehouse and Maintenance Shop Area,  
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## Appendix B – Example Boring Log



**Lithology Log**

Sheet \_\_\_ of \_\_\_

LOCID

Project Name		Project Number		Site ID	
Drilling Company		Driller		Ground Elevation	
Drilling Equipment		Drilling Method		Borehole Diameter	
Type of Sampling Device		Date/Time Drilling Started		Date/Time Total Depth Reached	
Sample Hammer		Water Level (bgs)		First	
Type		Driving Wt.		Drop	
Weather		Geologist/Engineer		Checked by/Date	
Site Conditions		Other Personnel Present			
Location Description (include sketch in field logbook)					

Depth	Interval	Recovery	Blow Counts	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name &amp; notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	ASTM Code	Lithology	Water Content	Estimate % of			Remarks <small>(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)</small>
								Gr	Sa	Fi	



**Lithology Log (continued)**

Sheet \_\_\_ of \_\_\_

LOCID

Depth	Interval	Recovery	Blow Counts	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name &amp; notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	ASTM Code	Lithology	Water Content	Estimate % of			Remarks <small>(Include all sample types &amp; depth, odor, organic vapor measurements, etc.)</small>
								Gr	Sa	Fi	

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**  
 811 S. First St., Artesia, NM 88210  
 Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 144531

**CONDITIONS**

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 144531
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

**CONDITIONS**

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes-Only	11/23/2022