Western Refining Southwest LLC
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

July 30, 2023

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

RE: Response to Disapproval
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. Cobrain:

Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) is submitting this response to disapproval contained in the New Mexico Environment Department (NMED) "Disapproval, 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" letter dated March 29, 2023. A timeline of the report is as follows:

- Investigation Work Plan, submitted September 30, 2022
- *Disapproval*, received March 29, 2023

The response to comments is provided in Attachment A. This submittal includes two hard copies of the report and a CD with an electronic copy of the red-line, strike-out version of the report and the revised report (Attachment B). The electronic copies will also be submitted by email to NMED.

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

Timothy J. Peterkoski
Director of Environment and Climate Strategy
Marathon Petroleum Company LP

Enclosure

cc: L. Andress, NMED HWB
L. Tsinnajinnie, NMED
S. Wells, NMOCD
H. Jones, Trihydro Corporation
L. King, EPA Region 6
M. Suzuki, NMED
K. Luka, Marathon Petroleum Company
J. Moore, Marathon Gallup Refinery

ATTACHMENT A

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 1:	**Response 1:**
Section 1.0 (Introduction) states "The results from this investigation will be used for future remedy evaluations." This statement is premature, revise the statement to state that the results from this investigation will also be used for site characterization in addition to future remedy evaluations.	The text in Section 1.0 (Introduction) has been revised to state, "The results from this investigation will be used for site characterization in addition to future remedy evaluations." Additionally, Section 3.0, fourth paragraph has been revised to state, "The results from this investigation will be used for site characterization in addition to future remedial evaluations."
Comment 2:	**Response 2:**
Section 2.0 (Site Conditions) must also describe the current and historical site conditions associated with each of the AOCs included in the Work Plan, including stating which buildings and areas of the AOCs are still in use, and which are no longer in use. A thorough records search must be performed to determine historical and current activities at the AOCs, including but not limited to, chemicals historically and currently used and/or stored at the AOCs, historical and current waste disposal practices in the AOCs, historical and current areas of use (e.g., loading and unloading, sewer lines, interior and exterior drains). A physical inspection must also be performed to determine any areas of staining, locations of drains, depressions, and damage at the AOCs. The revised Work Plan must include the results of the historical records search and physical site inspections as well as their potential impact, as it relates to soil boring and sampling locations.	This Comment has been acknowledged and addressed. Section 2.1 has been revised to include 3 new subsections, which summarize the information requested in NMED Comments 2 and 3: • 2.1.1 "Surface and Building Conditions – AOC 28" • 2.1.2 "Surface and Building Conditions – AOC 29" • 2.1.3 "Surface and Building Conditions – AOC 30" Additionally, a new figure (Figure 3 entitled "AOC 28, AOC 29 and AOC 30 Surface Conditions") is included in Attachment B. This figure shows the ground surface material and its condition; areas of cracks, staining, subsidence; locations of floor drains and sinks; and current interior layouts.

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 3:	**Response 3:**
Section 2.1 (Surface Conditions) must also describe the surface conditions of each of the AOCs in detail. In the revised Work Plan describe the indoor surface conditions (e.g., historical and current interior layout and use(s) of buildings, cracks in and staining on floors, locations and condition of interior floor drains, sinks, and plumbing associated with current and historical activities). Also, in the revised Work Plan, describe the outdoor surface conditions (e.g., condition of gravel and/or paved lots, depressions, areas of staining, presence of exterior drains). Propose to collect samples the inside the buildings (e.g., locations of plumbing or lab drains inside AOC 30, locations of cracked and/or stained floors inside AOC 28) as necessary in the revised Work Plan as applicable. See Comment 2 above.	Section 2.1 has been revised to include 3 new subsections, which summarize the information requested in NMED Comments 2 and 3: • 2.1.1 "Surface and Building Conditions – AOC 28" • 2.1.2 "Surface and Building Conditions – AOC 29" • 2.1.3 "Surface and Building Conditions – AOC 30" Additionally, a new figure (Figure 3 entitled "AOC 28, AOC 29 and AOC 30 Surface Conditions") is included in Attachment B. This figure shows the ground surface material and its condition; areas of cracks, staining, subsidence; locations of floor drains and sinks; and current interior layouts. The Refinery respectfully disagrees that samples within the buildings are necessary at this time. Currently, if there were impacts below the buildings, there are no exposure pathways other than migration to groundwater. However, the Refinery has known impacts to groundwater, including the presence of separate phase hydrocarbons and an associated smear zone which can act as a long-term source to groundwater. For organic contaminants, vadose zone sources of hydrocarbons are expected to deplete before smear zone sources. The expectation for shorter longevity in the vadose zone can be attributed to several factors, including greater air saturation and less contaminant mass. Diffusive transport is faster in soils with higher air saturation (ITRC 2009), suggesting that mass removal

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
	of VOCs is faster in the vadose zone. The combination of less contaminant mass, faster transport rates, and high degradation potential suggest that shorter longevity in the vadose zone is a reasonable assumption. Therefore, it follows that soils overlying the smear zone many not require an interim response for the purpose of protecting groundwater. The Refinery proposes to conduct a holistic migration to groundwater analysis on a site-wide basis, which is outside the scope of this Work Plan. In addition, this Work Plan proposes soil boring locations around the perimeter of AOCs 28, 29, and 30 to confirm the absence of contamination, in line with NMED's "Determination of Area of Concern (AOC) Entry to the Permit" letter, dated August 19, 2021. Should the analytical results exceed applicable NMED industrial soil screening levels and there are other lines of evidence that indicate contamination (e.g., visual, olfactory, PID readings, etc.) in which AOCs 28, 29, and/or 30 is the source, the Refinery is proposing to collect samples from within the footprints of the buildings when the Refinery closes or when the buildings are demolished. Reference: ITRC. 2009. Evaluating Natural Source Zone Depletion at Sites with LNAPL. ITRC LNAPL Team. April.

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 4:	**Response 4:**
Section 2.2 (Subsurface Conditions) must also describe subsurface conditions associated with each AOC (e.g., do the existing structures have basements, are the buildings slab on grade, the locations of the historical and current utility lines). State if there were structures at the location of the AOCs prior to the current structures. If so, describe these structures, their purpose, and any use of chemicals used at or within these structures in the revised Work Plan. Propose to collect additional samples as necessary from the subsurface around the buildings (e.g., sewer lines or drains exiting AOC 30, areas of staining or damage in AOC 28) in the revised Work Plan as applicable. See Comments 2 and 3 above.	Section 2.2 has been revised to include 3 new subsections: • 2.2.1 "Subsurface Conditions – AOC 28" • 2.2.2 "Subsurface Conditions – AOC 29" • 2.2.3 "Subsurface Conditions – AOC 30" Section 2.2.1 states, "The buildings within the AOC 28 boundary are slab-on-grade construction and do not have basements. The original buildings within the AOC 28 boundary were constructed in 1957 and 1958 (MPC 2020a). Additions to the warehouse and the storage area occurred later, but the date of the construction is unknown (MPC 2020a). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 28 are included on Figure 2." Section 2.2.2 states, "The buildings within the AOC 29 boundary are slab-on-grade constructions and do not have basements. These buildings date back to at least 1962 and may have been constructed when the Refinery was built in the late 1950s (MPC 2020b). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 29 are included on Figure 2." Section 2.2.3 states, "The laboratory building is slab-on-grade construction and does not have a basement. The building is believed to have been in use since the late 1950s, and a records

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NMED Comments	Refinery Responses
	search did not indicate any previous structures within the AOC 30 boundary (MPC 2020c). Known sewer lines in the vicinity of AOC 30 are included on Figure 2." Three additional proposed boring locations were added to the revised Work Plan in response to NMED Comment 11. The revised Work Plan now proposes installation of 24 soil borings, which the Refinery believes to be sufficient sample density. With the previous operations of AOC 28, 29, and 30, and the condition of their respective buildings, the Refinery does not anticipate subsurface impacts in which AOC 28, 29, and/or 30 is the source. There is a possibility that there will be subsurface impacts from other areas of the Refinery (e.g., as identified with previous laser-induced fluorescence and groundwater sampling investigations). However, if areas of staining are identified during the investigation, they will be documented and summarized in the subsequent investigation report. Should the analytical results exceed applicable NMED industrial soil screening levels and there are other lines of evidence that indicate contamination (e.g., visual, olfactory, PID readings, etc.) in which AOCs 28, 29, and/or 30 is the source, the Refinery will discuss additional subsurface samples with NMED, as necessary, at that time.

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 5:	**Response 5:**
In Section 3.0 (Scope of Activities) the Permittee lists the analyses to be performed on soil samples and states "[t]hese constituents were selected based on a previous investigation of nearby AOCs." The selected analytical constituents must also be based on the historical information relevant to each of the AOCs. Revise the list analytical constituents, if necessary, and revise statement accordingly. See Comments, 2, 3, and 4 above.	Section 3.0, fourth paragraph has been revised to state: "The 'Determination of Area of Concern (AOC) Entry to the Permit' letter requests confirmation of absence of contamination for AOCs 28, 29, and 30 (NMED 2021a). As such, the Refinery proposes that soil samples 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-dicholorethane 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. The results for these selected analytical constituents will confirm or deny the absence of contamination in these AOCs."

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 6:	**Response 6:**
Section 3.0 of the revised Work Plan must include an explanation of how the list of analytes for samples were selected (i.e., historical information related to the use, storage, and disposal of chemicals in each AOC). This section must also describe how the soil boring locations were selected (e.g., historical information, visual evidence). In addition, Section 3.0 must include a table which provides the rationale for selecting the location of each of the proposed soil borings and provide identification numbers for all proposed soil boring locations in the revised Work Plan. See Comments 2, 3, and 4 above.	Section 3.0, second paragraph has been revised to state, "The list of proposed sample locations, and the rationale for selecting the location of each proposed soil boring is included as Table 1. Generally, soil borings were proposed along the boundaries of AOCs 28, 29, and 30. Given historical facility operations, there is no suspected contamination source within the footprints of AOCs 28, 29, and 30, based on flooring conditions and recent building inspections, conducted in June 2023." Table 1, which lists sample location rationale, has been added to the Work Plan; see Attachment B. Identification numbers for the proposed soil boring locations have been added to the revised Figure 2; see Attachment B.
Comment 7:	**Response 7:**
Section 4.1 (Sample Collection Procedures) states "[s]amples will be collected in accordance with the "Standard Operating Procedure – Soil Sampling" (Appendix A)." The information provided in Appendix A, Section 5.0 (Sample Collection) provides general information for soil sampling for different scenarios and does not provide details specific to the scope of work defined in the Work Plan. For example, collecting samples from a Geoprobe® direct push drill core sleeve is not described. However, other soil sampling techniques, not relevant to the Work Plan, are described, such as using a "drive sampler equipped with clean brass or stainless steel sampling rings". Revise Section 4.1 to describe the specific proposed sample	Section 4.1, second paragraph has been revised to include, "Soil samples will be collected from representative locations using Geoprobe® direct push drill rig equipped with disposable, thin-walled tube liners. The sampling device will be driven completely into the material using a Geoprobe® direct push drill rig. The material will be place directly from the liner into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2)." The "Standard Operating Procedure – Soil Sampling" has been moved from Appendix A to Appendix B. Appendix B, Section 5.0, second paragraph has been revised to state, "Soil samples

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NMED Comments	Refinery Responses
collection methods specific to this scope of work. In future work plans, the Permittee must describe exactly what they plan to do in the text of the work plan, rather that refer to general SOP's, in accordance with RCRA Permit Section IV.J.1 (Standard Operating Procedures).	located in dry areas will be collected from representative locations using a decontaminated drive sampler equipped with disposable, thin-walled tube liner. The sampling device will be driven completely into the material using Geoprobe® direct push drill rig. The material will be placed directly from the liner into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2). The jar will be filled completely to minimize headspace."

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 8:	**Response 8:**
Section 4.1 (Sample Collection Procedures) states "PID readings will be collected at 1-ft intervals, beginning with a surface sample (taken at 6 to 12 inches [below ground surface] 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 VOC laboratory analysis. Aliquot #1 materials will not be submitted for laboratory analysis." Pending selection for laboratory analysis, rather than placing Aliquot #2 sample materials into a plastic bag, and then into a cooler with ice, the sample material must be placed directly into the appropriate laboratory sample container(s) with the appropriate preservative(s) (e.g., extracted into an En Core® soil sampling device, placed in a volatile organic analysis (VOA) vial with the appropriate preservative) and then stored in a cooler with ice. This will ensure minimal volatilization of contaminants of concern pending selection for analysis.	The text in Section 4.1 (Sample Collection Procedures), fourth paragraph was revised to state, "Aliquot #2 will be placed into appropriate laboratory sample containers with appropriate preservative (e.g., methyl chloride), labeled, sealed, placed in a cooler, and stored on ice for potential laboratory analysis." The "Standard Operating Procedure – Soil Sampling" has been moved from Appendix A to Appendix B. Appendix B, Section 5.0, paragraph 4 has been revised to state, "Aliquot #2 will be placed into appropriate sample containers with appropriate preservative (e.g., methyl chloride), labeled, sealed, placed in a cooler, and stored on ice for potential laboratory analysis."
Comment 9:	**Response 9:**
Section 4.1 (Sample Collection Procedures) states that 21 soil borings will be installed. It also states that the soil samples will be collected from each boring for laboratory analysis from 1) the surface (6 to 12 inches bgs), 2) just above the water table (if encountered), 3) the bottom of boring, and 4) the zone with the highest PID reading. The Permittee must base sample collections on all field screening methods (e.g., visual, olfactory evidence, and PID), rather than solely on PID measurements. In addition,	The text in Section 4.1 was revised to include the contingency samples. It states, "2. Soil samples will be collected for laboratory analysis from: • The surface (6 to 12 inches bgs) • Just above the water table (if encountered) • The bottom of boring • The zone with the highest PID reading

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NMED Comments	Refinery Responses
add additional contingency samples for analysis to the Work Plan, in the event that areas of high levels of contaminants are encountered based on all field screening methods used.	• Other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered)". Additionally, Section 3.0, third paragraph, was revised to include, "Analytical samples will be collected from the surface (6-12 inches bgs), just above the water table (if encountered), the bottom of the boring, the zone with the highest PID reading, and other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered)."
Comment 10:	**Response 10:**
Appendix A (Standard Operating Procedure – Soil Sampling), Section 5.0 (Sample Collection), "Sampling devices will be decontaminated between sampling locations…" Revise Section 4.1 of the Work Plan to discuss decontamination procedures and clarify if sampling devices will be decontaminated between sample intervals (i.e., sample depth) within the same sampling location (i.e., boring location). See Comment 7 above.	Section 4.1, third paragraph has been revised to include, "Components of the Geoprobe® direct push drill rig that come into contact with soil (e.g., the cutting shoe) will be decontaminated between sampling locations; the drill rig will not be decontaminated between sampling intervals at the same location due to the acetate liners. The sampling equipment that is used will be decontaminated between boring locations using a four-stage decontamination system consisting of two detergent/water washes and two deionized water rinses."

New Mexico Environment Department (NMED) To Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Disapproval Letter for Area of Concern 28, Area of Concern 29, and Area of Concern 30 IWP (March 29, 2023)

NMED Comments	Refinery Responses
Comment 11:	**Response 11:**
Figure 2 (Proposed Sampling Locations AOC 28, AOC 29, and AOC 30 Investigation Work Plan) shows the locations of the proposed soil boring locations. Address the following in the revised Work Plan: a. Explain why no soil borings are proposed for AOC 30 on the north and east sides of the building and add additional borings as necessary. See Comments 2, 3, and 4 above. b. Add another boring in AOC 29. See Comments 2, 3, and 4 above. c. Add proposed soil boring location identification numbers to the revised Figure 2. See Comment 6 above.	a. Two additional borings were added to the north and east sides of the building; see revised Figure 2 in Attachment B. b. Another proposed soil boring location was added within the AOC 29 footprint. See revised Figure 2 in Attachment B. c. Identification numbers for the proposed soil boring locations have been added to revised Figure 2. See Attachment B.

ATTACHMENT B-1

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

Western Refining Southwest LLC

(D/B/A Marathon Gallup Refinery)

Gallup, New Mexico

EPA ID# NMD000333211

Revised July 30, 2023

~~September 30, 2022~~

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 241 ~~1~~ soil borings with collection of a maximum of 968 ~~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.

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List of Acronyms

%	percent
amsl	above mean sea level
AOC	Area of Concern
API	American Petroleum Institute
bgs	below ground surface
COC	chain of custody
DRO	diesel range organics
E&I	electrical and instrumentation
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

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) (Appendix A-1), the "Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area" (MPC 2020b) (Appendix A-2), and the "Assessment Report for AOC 30 – Laboratory Area" (MPC 2020c) (Appendix A-3), 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 241 ~~41~~ soil borings, and collection of a maximum of 968~~4~~ 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 site characterization in addition to future remedy evaluations.

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. Subsequent to the Refinery idling, all equipment and material used in AOC 30 has been removed. 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.

2.1.1 Surface and Building Conditions – AOC 28

AOC 28 includes the maintenance shop area (including the electrical and instrumentation [E&I] building, mechanical shop, and welding shop) and warehouses (main warehouse south of the welding shop [Warehouse #1] and the smaller warehouse north of the welding shop [Warehouse #2) (Figure 3). It should be noted that Figure 3 shows four warehouses, but Warehouses #3 and #4 are part of AOC 29, and are therefore discussed in Section 2.1.2. The structures in AOC 28 are not in use as the Refinery is currently idled but were historically used for general site maintenance and equipment repairs, including pipe fitting and welding, inspection and repair of instrumentation, and electrical repairs.

In the E&I building, the floor drain flows to the Refinery's contact wastewater system. The drain is located at the north end of the shop (Figure 3) and is clean and free of damage. There is also a sink in the E&I building located in the southwest end of the building. Currently this sink is not operational and has been taken out of service. Warehouse #1 does have a functioning sink located in the northeast corner of the building (Figure 3). The mechanical shop does not have a floor drain or below-grade sump; above-grade tanks are connected to the Refinery's contact wastewater system. Additional information

is included in the "Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area" (MPC 2020a) (Appendix A-1).

In general, the ground surface is in good condition throughout AOC 28; there are some minor hairline cracks in the asphalt and concrete south of the E&I building, mechanical building, and welding building, and north of Warehouse #1 (Figure 3). Given the age of the asphalt and concrete, the damage is considered minimal and acceptable. The interior concrete floors of these buildings remain in good condition. Warehouse #1 does have a small oil stain on the floor, but it is unknown how old the stain is. Given the good condition of these floors within the AOC 28 buildings, it is unlikely that the soil beneath the building foundations has impacts from activities conducted within AOC 28.

Currently, the E&I building, mechanical building, and welding building are used for equipment and parts storage and contain vacant offices. Warehouse #1 is the only building within AOC 28 which stores chemicals; these chemicals are used for the Refinery's daily operations (e.g., oils, lubricants, antifreeze, rock salt, etc.). All chemicals are properly stored in appropriate containers to prevent spills.

2.1.2 Surface and Building Conditions – AOC 29

AOC 29 includes the equipment yard and drum storage area, as well as two warehouse buildings. AOC 29 was used for storage of maintenance equipment and supplies, but is currently not actively in use as the Refinery is idled. No hazardous wastes are known to have been managed at AOC 29, and there are no documented spills at AOC 29. Additional information is included in the "Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area" (MPC 2020b) (Appendix A-2).

Warehouse #3 (the former firehouse) and Warehouse #4 do not have any floor drains (Figure 3). There are no area drains present in the equipment yard and drum storage area (Figure 3).

The ground surface on the interior and exterior of Warehouse #4 is in good condition and free of damage. While the ground surface surrounding the exterior of Warehouse #3 is in good condition, the interior of the warehouse has minor cracks that run throughout the concrete floor. The equipment storage yard has minor cracking in the asphalt, and there is a pothole (roughly 1 ft diameter) located near the center of the yard (Figure 3). The north end of the yard has a depression. The buildings within AOC 29 currently house equipment and parts for general maintenance. Warehouse #4 currently houses chemicals that were used for the Refinery's daily operations, but are now in storage given that the Refinery is idled (e.g., oils, lubricants, antifreeze, rock salt, etc.).

2.1.3 Surface and Building Conditions – AOC 30

AOC 30 includes the laboratory building, which is approximately 40 ft by 120 ft. The laboratory is currently not in use as the Refinery is idled, but was previously used for on-site analysis to maintain quality control over the Refinery process and to help ensure compliance with environmental regulations. The laboratory has a concrete floor with drains that connect to the Refinery's contact wastewater system.

The laboratory primarily handled petroleum products, water samples, or related materials when the Refinery was active; however, there are no petroleum products, water samples, chemicals, or other related materials currently stored in the laboratory. The materials that were generated in the laboratory can be categorized as follows: (1) hydrocarbon samples, (2) wastewater samples, (3) discharges from sinks in the laboratory, and (4) discharges from bottle washing systems in the laboratory. The hydrocarbon samples were normally disposed of in segregated drums located outside the laboratory. These drum contents were picked up periodically by a vacuum truck and sent to the Refinery slop system. The wastewater samples were discharged to the sewer and through the American Petroleum Institute (API) separator prior to discharge to the wastewater treatment plant. Discharges from the laboratory sinks were routed to the wastewater treatment plant via the API separator. Chemicals or reagents that could upset the wastewater treatment plant were managed separately. Additional information is included in the "Assessment Report for AOC 30 – Laboratory" (MPC 2020c) (Appendix A-3).

The interior floor of the laboratory is in good condition and the slab is free from any damage. The concrete and asphalt outside of the laboratory are in good condition as well. With the condition of the laboratory floors, it is unlikely that the soils beneath the foundation has been impacted from building operations.

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.

2.2.1 Subsurface Conditions – AOC 28

The buildings within the AOC 28 boundary are slab-on-grade construction and do not have basements. The original buildings within the AOC 28 boundary were constructed in 1957 and 1958 (MPC 2020a). Additions to the warehouse and the storage area occurred later, but the date of construction is unknown (MPC 2020a). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 28 are included on Figure 2.

2.2.2 Subsurface Conditions – AOC 29

The buildings within the AOC 29 boundary are slab-on-grade construction and do not have basements. These buildings date back to at least 1962 and may have been constructed when the Refinery was built in the late 1950s (MPC 2020b). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 29 are included on Figure 2.

2.2.3 Subsurface Conditions – AOC 30

The laboratory building is slab-on-grade construction and does not have a basement. The laboratory building is believed to have been in use since the late 1950s, and a records search did not indicate any previous structures within the AOC 30 boundary (MPC 2020c). Known sewer lines in the vicinity of AOC 30 are included on Figure 2.

3.0 Scope of Activities

The investigative activities proposed in this Work Plan will provide data and information on surface and 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 241 locations around AOC 28, 29, and 30 (Figure 2). The list of proposed sample locations, and the rationale for selecting the location of each proposed soil boring is included as Table 1. Generally, soil borings were proposed along the boundaries of AOCs 28, 29, and 30. Given historical facility operations, there is no suspected contamination source within the footprints of AOCs 28, 29, and 30, based on flooring conditions and recent building inspections, conducted in June 2023.

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 electron Volt 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, and other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered).

The "Determination of Area of Concern (AOC) Entry to the Permit" letter requests confirmation of absence of contamination of AOCs 28, 29, and 30 (NMED 2021a). As such, the Refinery proposes that 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. The results for these selected analytical constituents will confirm or deny the absence of contamination in these AOCs. These constituents were selected based on a previous investigation of nearby AOCs. The results from this investigation will be used for site characterization in addition to future remedial evaluations. Analytical results will be compared to their respective NMED Residential, Industrial, and Construction Worker Soil Screening Levels (SSL) (NMED 2021b).

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 BA). Details related to sample collection will be documented on the boring log field forms (Appendix CB). 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.

Soil samples will be collected from representative locations using a Geoprobe® direct push drill rig equipped with disposable, thin-walled tube liners. The sampling device will be driven completely into the material using a Geoprobe® direct push drill rig. The material will be placed directly from the liner into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2).

Components of the Geoprobe® direct push drill rig that come into contact with soil (e.g., the cutting shoe) will be decontaminated between sampling locations; the drill rig will not be decontaminated between sampling intervals at the same location due to the acetate liners. The sampling equipment that is used will be decontaminated between boring locations using a four-stage decontamination system consisting of two detergent/water washes and two deionized water rinses.

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 appropriate laboratory sample containers with appropriate preservative (e.g., methyl chloride), labeled, ~~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 containers ~~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 2~~4~~1 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)
    - Just above the water table (if encountered)
    - The bottom of boring
    - The zone with the highest PID reading~~.~~
    - Other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered)
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.

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.

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.

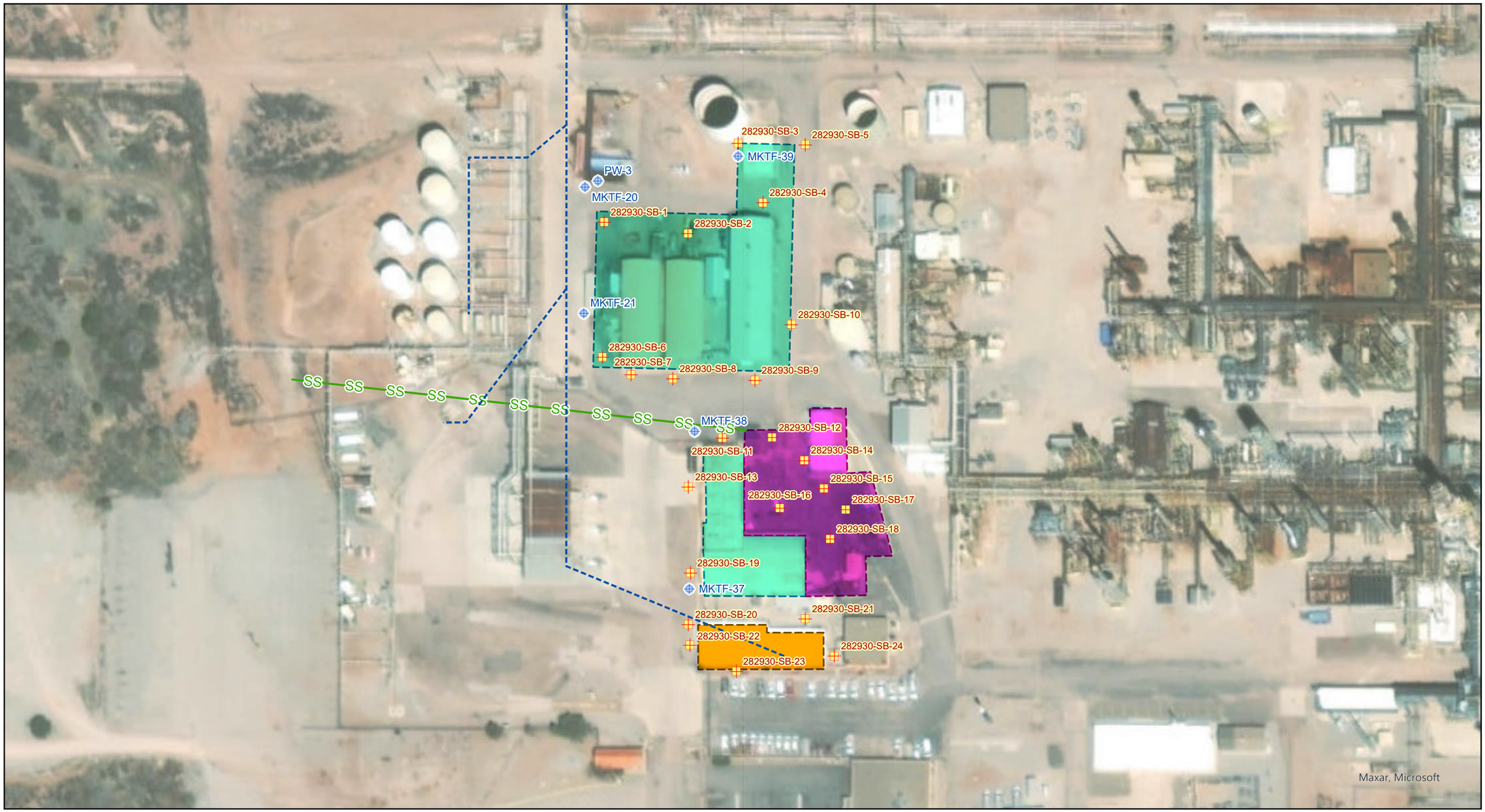
MPC. 2020b. Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211. December 15.

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.

Figures



EXPLANATION

- MONITORING WELL
- PROPOSED SOIL BORING
- PROCESS SEWER LINE
- SS — SANITARY SEWER LINE
- AOC 28 - WAREHOUSE AND MAINTENANCE SHOPS
- AOC 29 - EQUIPMENT YARD AND DRUM STORAGE AREA
- AOC 30 - LABORATORY

NOTE:

AOC - AREA OF CONCERN

N

0 100'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2

**PROPOSED SAMPLING LOCATIONS
AOC 28, AOC 29, AND AOC 30
INVESTIGATION WORK PLAN**

**WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

Drawn By: BR	Checked By: EH	Scale: 1" = 100'	Date: 6/12/23	File: 2_AOC28_SoilBorings

M:\TRIHYDRO\MARATHON\GIS\GALLUP\MAPPING\AOC\AOC 28- WAREHOUSE\MINAREA\20220217 IWP\GALLUP_AOC28_IWP.APRX

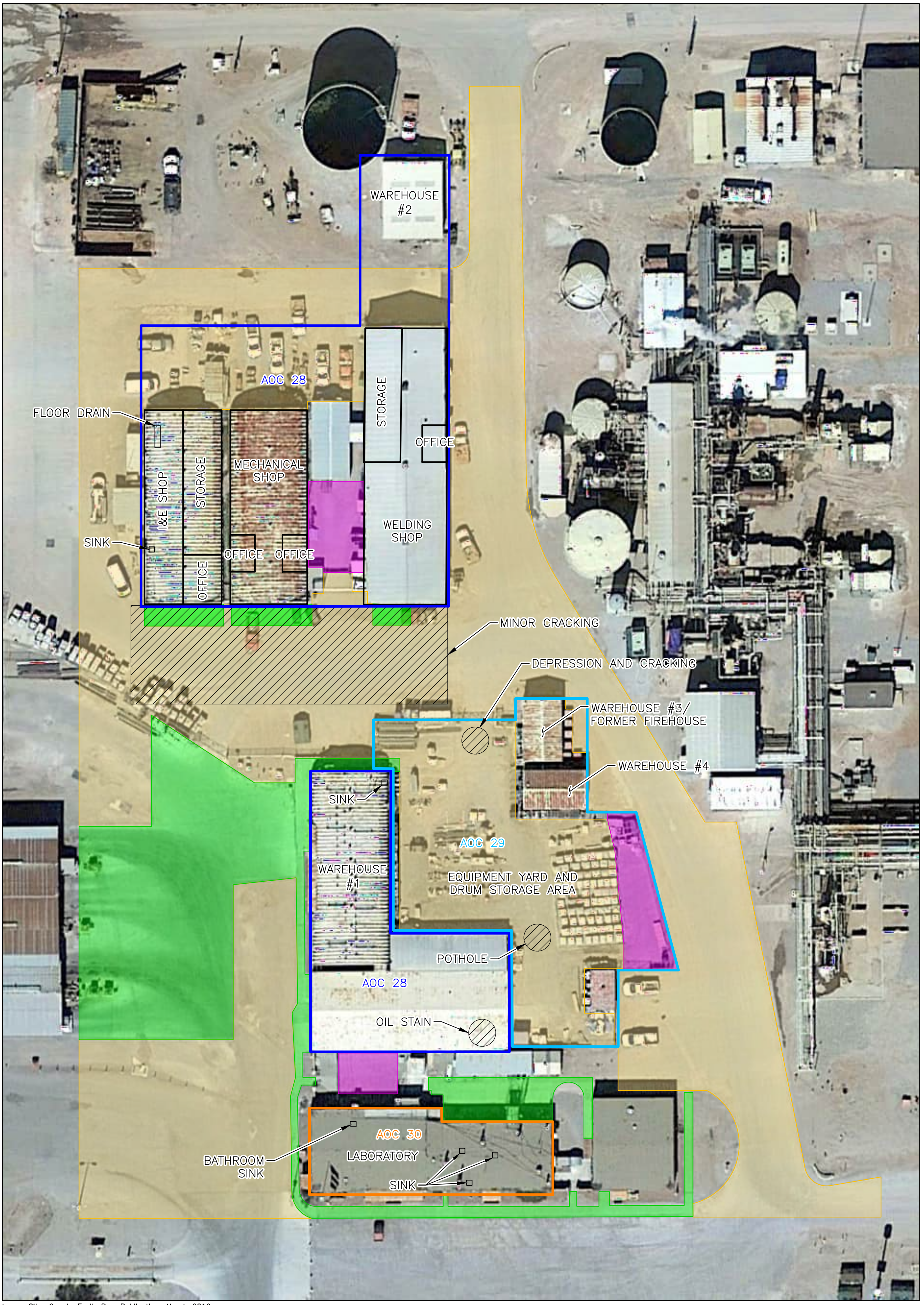


Image Cite: Google Earth Pro, Publication: March 2016

EXPLANATION

AOC 28
AOC 29
AOC 30

ASPHALT
CONCRETE
GRAVEL
AOC AREA OF CONCERN

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 3

AOC 28, AOC 29, AND AOC 30 SURFACE CONDITIONS

WESTERN REFINING SOUTH WEST LLC D/B/A MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: REP	Checked By: AW	Scale: 1" = 50'	Date: 6/9/2023	File: 697-AOC28-WHAREA_202306

Table

TABLE 1. PROPOSED SAMPLING LOCATION RATIONALE
AOC 28, AOC 29, AND AOC 30 INVESTIGATION WORK PLAN,
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Proposed Soil Boring Identification Number	Location Rationale
282930-SB-1	Perimeter around AOC 28 building(s)
282930-SB-2	Perimeter around AOC 28 building(s)
282930-SB-3	Perimeter around AOC 28 building(s)
282930-SB-4	Perimeter around AOC 28 building(s)
282930-SB-5	Perimeter around AOC 28 building(s)
282930-SB-6	Perimeter around AOC 28 building(s)
282930-SB-7	Perimeter around AOC 28 building(s)
282930-SB-8	Perimeter around AOC 28 building(s)
282930-SB-9	Perimeter around AOC 28 building(s)
282930-SB-10	Perimeter around AOC 28 building(s)
282930-SB-11	Perimeter around AOC 28 building(s)
282930-SB-12	Within AOC 29 laydown yard area
282930-SB-13	Perimeter around AOC 28 building(s)
282930-SB-14	Within AOC 29 laydown yard area
282930-SB-15	Within AOC 29 laydown yard area
282930-SB-16	Within AOC 29 laydown yard area
282930-SB-17	Within AOC 29 laydown yard area
282930-SB-18	Within AOC 29 laydown yard area
282930-SB-19	Perimeter around AOC 28 building(s)
282930-SB-20	Perimeter around AOC 30 Laboratory Building
282930-SB-21	Perimeter around AOC 30 Laboratory Building
282930-SB-22	Perimeter around AOC 30 Laboratory Building
282930-SB-23	Perimeter around AOC 30 Laboratory Building
282930-SB-24	Perimeter around AOC 30 Laboratory Building

AOC - Area of Concern

Appendix A – AOC Assessment Reports

Marathon Petroleum Company LP

September 10, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area
Marathon Petroleum Company LP, Gallup Refinery
(dba Western Refining Southwest, Inc.)
EPA ID# NMD000333211

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 28 (AOC 28) Warehouse and Maintenance Shop Area as required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore at 505-722-0205.

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,
Marathon Petroleum Company LP, Gallup Refinery

For R. Hanks

Robert S. Hanks
Refinery General Manager

Enclosure

cc C. Chavez NMOCD
J. Moore Marathon Gallup Refinery

92 Giant Crossing Road
Jamestown, NM 87347

AOC 28 – Warehouse and Maintenance Shop Area
Consent Order Assessment Report

(1) location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 (Site Location/Topo Map) for location of AOC 28. Area of Concern (AOC) 28 includes the Maintenance Shop Area [Instrumentation and Electrical (I&E) Building, Mechanical Shop, and Welding Shop] and Warehouses (Main Warehouse south of Welding Shop and small warehouse north of Welding Shop) (Figure 2).

(2) designation of type and function of unit(s);

The activities 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 are stored within the various buildings, which have concrete floors.

(3) dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

There are several larger maintenance buildings, two of which are approximately 40 feet by 100 feet, and the third is 40 feet by 140 feet. The two smaller buildings including the I & E shop and the mechanical shop. The largest building is the pipe fitting and welding shop. A fourth building, which is approximately 30 feet by 40 feet, is located to the north of the welding shop and it is used to store flammable materials. The main warehouse building is located south the Welding Shop and consists of an original building oriented north/south that is 40 feet wide by 100 feet long. A new addition lies to the south with an east/west orientation as is 40 feet wide by 100 feet long. See Figures 2 and 3. In addition, a facility drawing dating from the original construction of the refinery in 1957 is attached.

(4) dates that the unit(s) was operated;

Based on the attached site mechanical drawing from 1957, the welding shop, mechanical shop, I & E shop, and original warehouse building were constructed during the original refinery construction in 1957 - 1958. The southern addition to the warehouse and storage area to the north for flammable materials were added later but the exact dates are uncertain.

(5) all available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

Used oil is recovered for on-site processing. Industrial solvents are believed to have been used most likely in the mechanical shop. General non-hazardous plant trash likely would be been generated in the mechanical shop, I&E shop, and welding shop.

(7) all available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

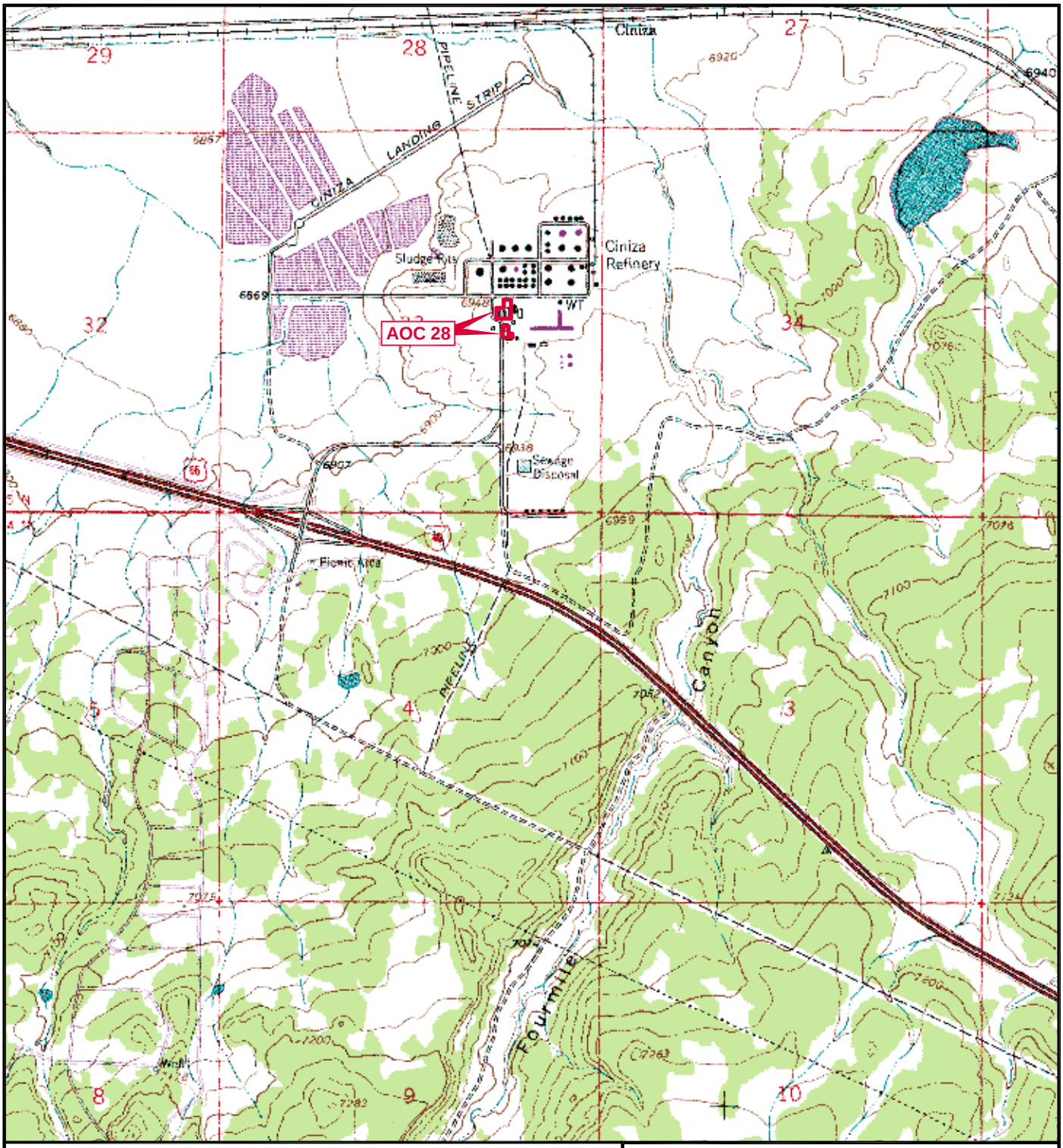
Instrumentation & Electrical (I&E) Shop – The floor drain/sump drains to the refinery Contact Waste Water System (SWMU 12). Water used in instrument testing is discharged to the drain. Periodically, a vacuum truck is used to unclog the drain. See the attached Photo 1.

Mechanical Shop – The shop does not have a floor drain or below grade sump. The above-grade neutralization and hot tanks are connected to the refinery Contact Waste Water System (SWMU 12). Periodically, a vacuum truck is used to unclog the drain. See the attached Photo 2.

Used oil is recovered for on-site processing. There was use of chlorinated cleaning solvents in the past and disposal onsite as documented in the May 12, 1981 memorandum (attached). The exact location of the disposal has not been determined, but may have occurred in the vicinity of the mechanical shop. According to NMED records, used oil and oil sludge was vacuumed from the site in October 2009 and January 2010 (Vacuum Truck Log sheets for Oct. 23, 2009, Jan. 18, 2010).

AOC 28 – Warehouse and Maintenance Shop Area

FIGURES



Map Source: USGS 7.5 min Quad, CINIZA, NEW MEXICO, 1962, Photorevised 1980.

N

0 2000

SCALE IN FEET

NEW MEXICO

SITE LOCATION

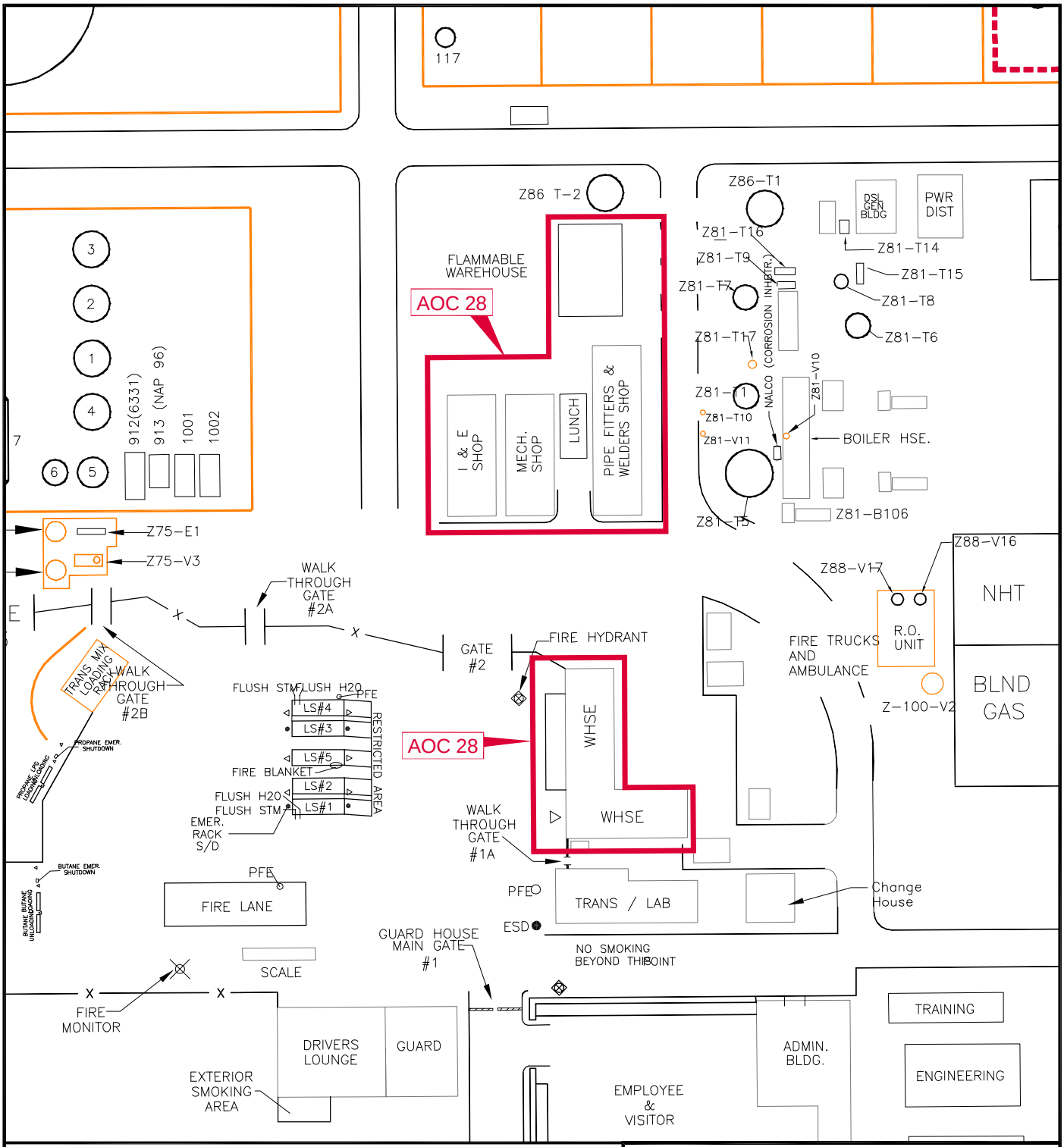
MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/30/20	FILE: Mathon-dA197

FIGURE 1
SITE LOCATION MAP
AOC 28 AREA

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759



MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/30/20	FILE: Mathon-dA198

FIGURE 2
SITE MAP
AOC 28 AREA

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

Aerial Source: Google Map, 03-18-2016.

N

0 100

SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/31/20	FILE: Mathon-dA199

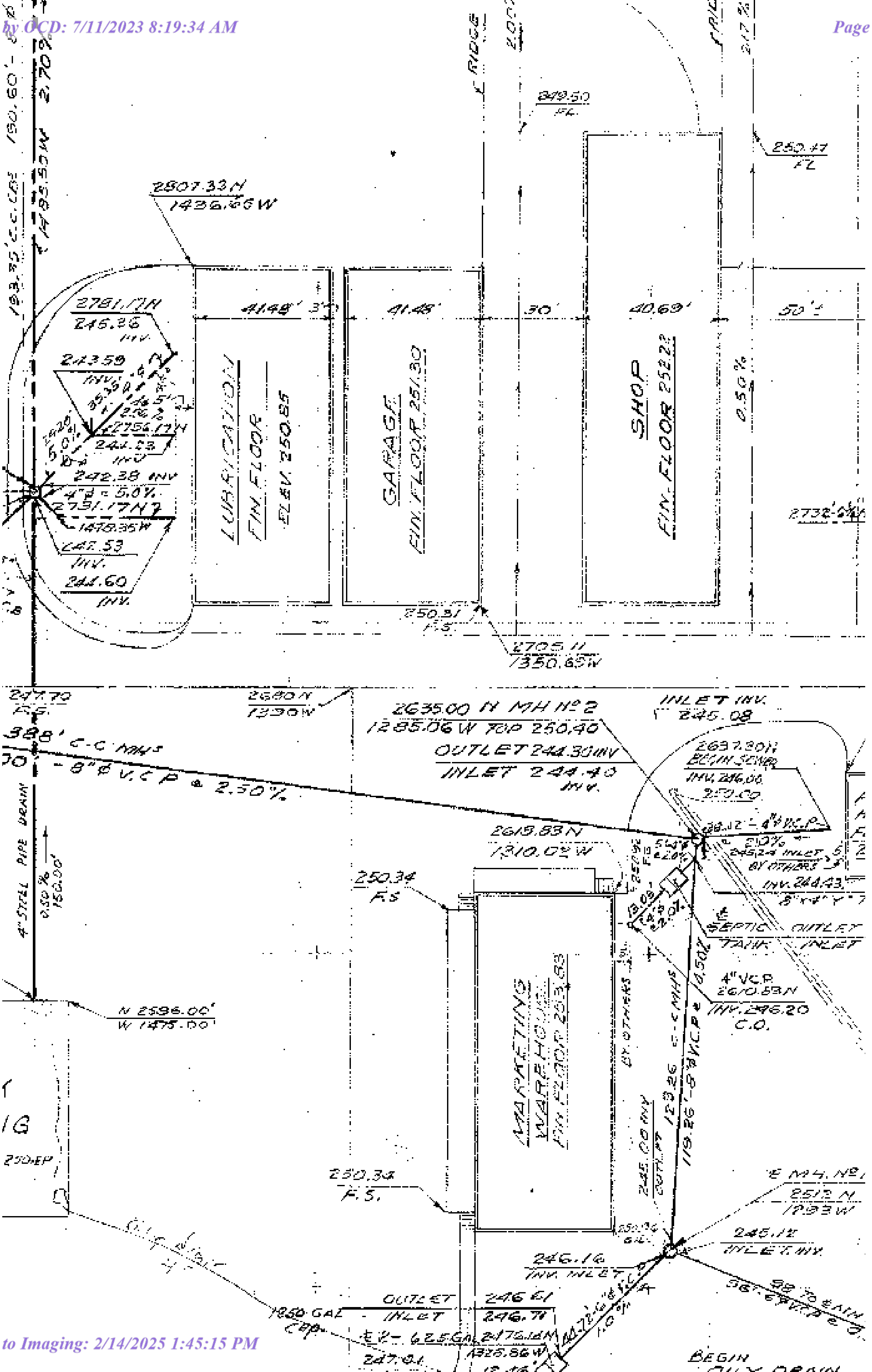
FIGURE 3
AERIAL IMAGE
AOC 28 AREA

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

AOC 28 – Warehouse and Maintenance Shop Area

ATTACHMENTS


LUBRICATION
FIN. FLOOR
ELEV. 250.85
GARAGE
FIN. FLOOR 251.30
SHOP
FIN. FLOOR 252.22
MARKETING
WAREHOUSE
FIN. FLOOR 253.83
41.48'
30'
40.69'
0.50%
249.50
FL.
250.47
FL
2807.33 N
1436.66 W
2781.17 N
245.26
INV.
243.59
INV.
2756.17 N
242.38 INV
4"⌀ = 5.0%
2731.17 N
1478.35 W
242.53
INV.
241.60
INV.
250.31
F.S.
2705 N
1350.65 W
247.70
F.S.
2680 N
1330 W
2635.00 N MH No 2
1285.06 W TOP 250.40
OUTLET 244.30 INV
INLET 244.40
INV.
INLET INV.
245.08
388' C-C MH'S
- 8"⌀ V.C.P. @ 2.50%
2697.30 N
BEGIN SEWER
INV. 246.00
2619.83 N
1310.02 W
250.34
F.S.
SEPTIC
TANK
OUTLET
INLET
4" V.C.P.
2610.83 N
INV. 246.20
C.O.
4" STEEL PIPE DRAIN
0.50%
150.00'
N 2596.00'
W 1475.00'
BY OTHERS
119.26' - 8"⌀ V.C.P. @ 0.50%
123.26 C-C MH'S
245.00 INV
250.34
F.S.
2512 N
1293 W
245.12
INLET INV.
246.16
INV. INLET
OUTLET
INLET
246.61
246.71
1850 GAL
CAP.
2 - 625 GAL
2476.14 N
1326.86 W
247.01
BEGIN
OILY DRAIN

AOC 28 Photo 1

I & E Shop Floor Drain (Sump)

2015/05/07

AOC 28 Photo 2

SM-32 (REV. 5-78)

11.01.C.07.4

Shell Oil Company
Interoffice Memorandum

MAY 12, 1981

FROM: SUPERINTENDENT OPERATIONS - CINIZA REFINERY

TO: MANAGER ENVIRONMENTAL CONSERVATION, OPERATIONS

SUBJECT: INVENTORY OF PAST HAZARDOUS SUBSTANCE HANDLING ACTIVITIES

Attached is a list of potentially hazardous wastes disposed of at Ciniza and a description of the wastes. Only wastes listed with a RCRA number are considered hazardous under current Federal regulations.

Also attached is a list of inactive hazardous waste sites; these are also identified on our RCRA permit application.

Please direct any requests for additional information to M.J. Sapp (SSN 434-3239).

C.D. Shook

MJS/bc

Attachments

cc: B.C. Bell
R.J. Trautner
File 11.04A

CINIZA REFINERY WASTE DISPOSAL

HAZARDOUS WASTE	TYPE	YEARS PRODUCED	AMOUNT	DISPOSAL	SOURCE
1. Acid Soluble Oil	corrosive, toxic heavy metals	1958-current	500 B/YR	V	E
2. API Overflow		1958-current	80 gpm	EP	CO
3a. API Separator	RCRA-K051	1958-1980	100 TON/YR	SP	IN
3b. API Separator	RCRA-K051	1980-current	100 TON/YR	LT	CO
4. Asbestos Insulation	RCRA-U013	1958-current	0.5 TON/YR	LF	IN
5. Defluorinator Bauxite	fluorides	1958-current	2 TON/YR	V	E
6a. Heat Exchanger Cleaning Sludge	RCRA-K050	1958-1980	unknown	V	IN
6b. Heat Exchanger Cleaning Sludge	RCRA-K050	1980-current	unknown	LT	CO
7. Hydrotreating Catalyst	cobalt-moly nickel	1970-current	50 TONS to date	V	E
8a. Leaded Tank Sludge	RCRA-K052	1965-1980	1 TON/YR	B	IR
8b. Leaded Tank Sludge	RCRA-K052	1980-current	1 TON/YR	LT	IR, CO
9a. Slop Oil Tank Sludge	RCRA-K049	1958-1980	2 TON/YR	SP	IN
9b. Slop Oil Tank Sludge	RCRA-K049	1980-current	2 TON/YR	LT	CO
10a. Softener Waste Water	RCRA-D002	1970-1980	40 TON/YR	EP	PR
10b. Softener Waste Water	RCRA-D002	1980-current	40 TON/YR	N	PR, CO
11a. Spent Caustic	-	1958-1965	25 TON/YR	S	PR
11b. Spent Caustic	-	1965-current	25 TON/YR	EP	PR
12a. Trichloroethane	RCRA-F001	1960-1980	0.5 TON/YR	P, EP	IN
12b. Trichloroethane	RCRA-F001	1980-current	0.5 TON/YR	S	CO

HAZARDOUS WASTE	TYPE	YEARS PRODUCED	AMOUNT	DISPOSAL	SOURCE
13. Alky Scrap Metal	fluorides	1958-current	5 TON/YR	LF	E
14. Waste Oil	waste oil	1958-1980	10 TON/YR	LT	E
15. KOH	pH, basic	1958-current	2 TON/YR	EP	E
16. Laboratory Chemicals	toxic, other	1958-current	200 LB/YR	LF, EP	E

DISPOSAL KEY

EP	evaporation ponds
N	neutralization
B	burial
LT	land treatment
LF	landfill
SP	sludge pit
P	poured out on ground
V	various
S	sold

SOURCE KEY

IN	interviews
PR	purchasing records
IR	inspection records
CO	current operation, refers to amount only
E	estimated

CINIZA REFINERY

INACTIVE HAZARDOUS WASTE DISPOSAL SITES

Evaporative Ponds - received unneutralized softener waste. Site active but not receiving hazardous waste.

Past Land Treatment Area - inactive, contains waste oils which might be designated hazardous waste.

Past Landfill Area - contains asbestos insulation, potentially other hazardous wastes.

Sludge Pits - contain API separator sludge, slop oil and possibly other materials. Current plans are to move this material to the land treatment area.

Alky Scrap Landfill - contains fluoride contaminated scrap from HF Alkylation Unit.

CINIZA REFINERY

WASTE DESCRIPTIONS

Asbestos is currently landfilled in compliance with federal regulations.

Heat Exchangers, prior to 1980, were cleaned in place, at various locations around the Refinery, no effort was made to collect the sludge.

Leaded tank bottoms were, until 1980, buried outside the tank manway. An analysis of leaded sludge from Tank 569 showed

Total Pb	690	ug/gm
EP Pb	0.08	mg/liter
Total Organic Pb	2.4	ug/gm

Slop oil bottoms and API separator sludge were placed in sludge pits until 1980. This material is currently disposed of by land-treatment.

Softener wastewater is acidic due to the excess HCl used during regeneration of the resin. Free HCl in the water will evaporate with the water.

Trichloroethane used as a degreasing solvent has in the past been disposed of by pouring it on the ground. This practice has been stopped and spent solvent will be returned to the manufacturer for recycling.

Other Waste

Acid soluble oil (ASO) is a waste product from the HF alkylation unit. ASO is a polymerization product which contains combined fluorides. In removing ASO from the system some HF acid is also removed. This material is neutralized with soda ash in the alkylation unit and drained to the process sewer. It is believed much of the ASO is removed as in emulsion from the API separator. In

the past ASO has been burned in the Alky furnace and burned from an open pit. Some ASO entered the ground from this pit.

Refinery API overflow, process waterwater, is not a hazardous waste. The residue which remains in the ponds after evaporation of the water may be considered hazardous in the future. An analysis of RCRA metals in the overflow is attached.

Bauxite (activated alumina) is used to remove fluorides from LPG in the alkylation unit. Spent bauxite has in the past been spread on refinery roads and landfilled.

Hydrotreating catalyst has been landfilled at various locations in the refinery. It may also have been spread on refinery roads. Current practice is to sell the catalyst for metals reclamation or to have the catalyst merchant regenerated.

Spent caustic now goes to the process sewer and is finally deposited by evaporation in the ponds. Prior to 1965 some spent caustic was sold.

Scrap metal from the alkylation unit is weathered to reduce fluoride contamination and then landfilled.

Waste oils of various types were placed in the old landtreatment area, including a substantial amount of waxy residue from the crude tank.

Potassium hydroxide (KOH) used in the Alky defluorinators is disposed of through the sewer to the evaporation ponds.

Laboratory Chemicals used in routine testing are normally disposed of through the sewer to the evaporation ponds. Outdated chemicals are occasionally disposed of in the landfill.

API SEPARATOR OVERFLOW ANALYSIS

TABLE 2

Ciniza Refinery Metals Results for Wastewater samples
Taken During July and August,1980.

Metal	New Well Raw Water 7/23/80 0830 hrs.	Pond 3 Inlet /Softener Waste 8/11/80 1000 hrs.	Cooling Water Tower Blowdown 7/23/80 0830 hrs.	API Separator Overflow 7/17/80 1330 hrs.	API Sepatrator Overflow 7/19/80 1300 hrs.	API Separator Overflow 7/23/80 0830 hrs.
Arsenic	0.003	0.031	0.013	0.004	0.005	0.015
Barium	0.014	0.068	0.022	0.22	0.094	0.105
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	0.026	13.	0.91	0.64	1.2
Lead	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Selenium	<0.001	0.097	0.025	0.015	0.018	0.024
Silver	<0.001	0.002	0.010	0.006	0.012	0.005

11.01.C.07.A

SM-32 (REV. 5-78)

Shell Oil Company
Interoffice Memorandum

August 5, 1980

FROM: SUPERINTENDENT OPERATIONS, CINIZA REFINERY

TO: MANAGER ENVIRONMENTAL CONSERVATION - OPERATIONS

SUBJECT: HAZARDOUS WASTE LIST

As requested in your memorandum of 7/7/80, attached is a copy of Ciniza's Solid and Hazardous Waste Inventory.

C.D. Shook

MJS/rr

cc B.C. Bell (w/o attachments)
Environmental File 11.04.A

SM-32 (F EV. 5-73)

Shell Oil Company
Interoffice Memorandum

July 29, 1980

FROM: SENIOR ENGINEER

TO: SUPERINTENDENT OPERATIONS

SUBJECT: REFINERY SOLID WASTE INVENTORY

Attached is the Ciniza Refinery Solid Waste Inventory. Approximate amounts are:

Aqueous Waste	140 gpm
Hydrocarbon Waste	800 B/yr
Chemicals	375 Mlb/yr
Other Solid Waste	400 Mlb/yr

The above list includes hazardous and nonhazardous wastes. Each waste in the inventory is classified as to type hazardous or nonhazardous, disposal method and approximate amount. This information was compiled with the assistance of Refinery department managers and supervisors.

M. J. Sapp

MJS/jg

Attachments

cc: B.C. Bell
B. Lewis
M.S. Mexal
J.J. Stokes
S.L. Yates
J.M. Villalobos
C.F. Yonker
Environmental File 11.01 C.04

CINIZA REFINERY SOLID WASTE INVENTORY SUMMARY

Aqueous Waste to Ponds

Hazardous	35
Nonhazardous	105
Total	140 gpm

Hydrocarbon Waste

ASO	500 B/year
Tank Bottom	100 B/year
Leaded Sludge	25 B/year
Asphalt	25 B/year
Solvent	20 B/year
API Sludge	50 B/year
Slop Oil Bottoms	10 B/year
Waste Motor Oil	25 B/year
	~800 B/year

Chemicals

Spent Caustic	100 Mlb/year
H.F. Acid in ASO	200 Mlb/year
Lab Reagents	0.5 Mlb/year
Nalco, all	50 Mlb/year
Soda Ash	25 Mlb/year
	~375 Mlb/year

Miscellaneous Solid Waste

Vessel Cleaning Sludge	1 Mlb/year
Trash	12 Mlb/year
Filters	1000 yr
Inert Support Media	2 Mlb/year
Catalyst	3 Mlb/year
Insulation	1 Mlb/year
Scrap Metal	380 Mlb/year
	~400 Mlb/year

CINIZA REFINERY SOLID WASTE INVENTORY

		Type/EPA#	Disposal	Amount
A.	Process Water Draws	(NH)	PS	1gpm*
B.	Desalter Brine	(NH)	PS	15 gpm
C.	H.F. Alkylation ASO	(H) D002	PS	500 B/year
D.	Cooling Tower Blowdown	(H) D007	PS	35 gpm
E.	Softner Waste Water	(NH)	PS	25 gpm
F.	Boiler Blowdown	(NH)	PS	35 gpm
G.	Spent Caustic	(H) D002	PS	100 Mlb/year
H.	Pump Leakage & Drains	(NH)	R	1 gpm*
J.	Heat Exchanger Sludge	(H) K050	PS	1000 lb/year*
K.	Sampling Blowdown	(NH)	R	1 gpm *
L.	Sanitary Sewer	(NH)	PS	5 gpm
M.	Hydrocarbon Spills	(NH)	PS	--
N.	Cleaned Drums	(NH)	S	
O.	Trash	(NH)	B	5 ton/year*
P.	Ceramic Catalyst Supports	(NH)	L	1000 lb/year*
Q.	Tank Bottoms	(NH)	LF	100 B/year
R.	CWT Filter, Anthracite	(H) D007	L	300 ft^3/year
S.	Support Media, Quartz Rock	(NH)	L	1000 lb/year *
T.	Filters	(NH)	L	1000 year
U.	Spent Catalyst		L	
	FCC	(NH)		normally sold
	Silica Gel	(NH)		500#/year
	Bauxite	(NH)		2000#/year
	Water Treating Resins	(NH)		50 ft 3/yr*

V.	Tank Water Draws	(NH)	PS	1 gpm*
W.	Leaded Sludge	(H) K052	L	25 B/year
X.	Insulation, Asbestos	(H) U013	L	500 #/year
	Non-Asbestos	(NH)	L	500 #/year*
Y.	Scrap Metal	(NH)	S	180 T/year
Z.	Alky Scrap Metal	(NH)	L	10 T/year
a.	Rubber Hoses	(NH)	L	
b.	Contaminated Earth	(H)	L	
c.	Hydrocarbon Samples	(NH)	R	10 gal/day
	Asphalt	(NH)	L PS	3 gal/day
d.	Acids			
	HF Hydrofluoric	(H) U134		Spills only
	H_2SO_4 Sulfuric	(H) D002		
	HCl Hydrochloric	(H) D002		
e.	Laboratory Reagents (1)		PS	500 lb/year*
	Acetone	(H) F003		
	Acetic Acid	(NH)		
	Isopropyl Alcohol	(NH)		
	Potassium Hydroxide	(H) D002		
	Silver Nitrate	(H) D011		
	Phenolphtalein	(NH)		
	Tetraethyl Lead	(H) P110		
	Oleic Acid	(NH)		
	Iodine	(NH)		
	Chloroform	(NH)		
	Ammonia	(NH)		
	Choromic Acid	(H) D002		
	White Oil	(NH)		
	Chloroethane	(H) F001		
	Trichloroethylene	(H) F002		
	Others			

1. To be considered hazardous, these materials must be disposed of in the pure state, after normal lab use in testing their disposal is

f.	Gasoline Additives	(H)(2)	LF	Spills
	Exxon Arco Chevron Union Mobil Conoco Gulf Shell Amoco Red Dye Ethyl 733-67 Bronze Dye			
	Tetra Ethyl Lead	(H) P110	LF	Spills
	Asphalt Additives	(H)(2)	LF	Spills
	Emery 17065			
	Process			
	Merox 1,2 Kontol Trichloroethane Nalco Dispersant Nalco Chromate Nalco Sulfite Nalco Biocide	(H)(2)	LF	Spills
g.	Condensate includes condensate used as wash water	(NH)	PS	25 gpm
h.	Used Oil Absorbant	(NH)	L	
j.	Laboratory Trash	(NH)	B	1 T/year*
k.	Solvents		PS	20 drum/yr
	Trichloroethane	(H) F001		
m.	Brine Spills	(NH)	PS	
n.	KOH Water Draw	(H) D002	PS	
p.	Ethylene Glycol antifreeze	(NH)	PS	4 drum/yr

2. Proprietary compound spills are to be disposed of as hazardous waste.

q.	Waste Lube Oil	(NH)	R	
r.	Oily Straw, API Separator	(NH)	B,L	
s.	API Separator Sludge	(H) K051	LF	50 B/year*
t.	Trash Burning Residue	(NH)	L	
u.	Soda Ash	(H) D002	PS	13 tons/year
v.	Slop Oil Tank Bottoms	(H) K049	LF	10 B/year*
w.	Waste Motor Oil	(NH)	LF	25 B/year*

KEY:

H - Hazardous
NH - Nonhazardous
PS - Process Sewer
B - Burned
L - Landfill
LF - Landfarm
R - Recovered
S - Sold
* - Estimated

Western Refining Southwest, Inc.
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

December 15, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: 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

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 29 (AOC 29) Equipment Yard and Drum Storage Area required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore of my staff at 505-879-7643.

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,
Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks
Refinery General Manager

Enclosures

cc D. Cobrain, NMED HWB
C. Chavez, NMOCD
G. McCartney, Marathon Petroleum Corporation
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

AOC 29 – Equipment Yard and Drum Storage Area

Consent Order Assessment Report

(1) Location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 for a topographic area of of Area of Concern (AOC) 29 and Figure 2 for the site location and aerial image. AOC 29 includes the Equipment Yard and Drum Storage Area.

(2) Designation of type and function of unit(s);

The area of AOC 29 is currently used for storage of equipment and supplies.

(3) Dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

Within AOC 29 there are two warehouse buildings, the old firehouse, and an exterior storage area. The area is approximately 11,700 square feet.

(4) Dates that the unit(s) was operated;

The warehouse buildings date back to at least 1962 and may have been constructed when the refinery was built in the late 1950s.

(5) All available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

No hazardous wastes are known to have been managed at AOC 29. Empty containers have been temporarily stored in the area pending disposal or recycling. Subsurface investigations regarding AOC 29 have not taken place.

(7) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

There are no documented spills at AOC 29. Observations to the area show a small area of staining. There is asphalt underneath for secondary containment and no releases should have impacted the soil or groundwater.

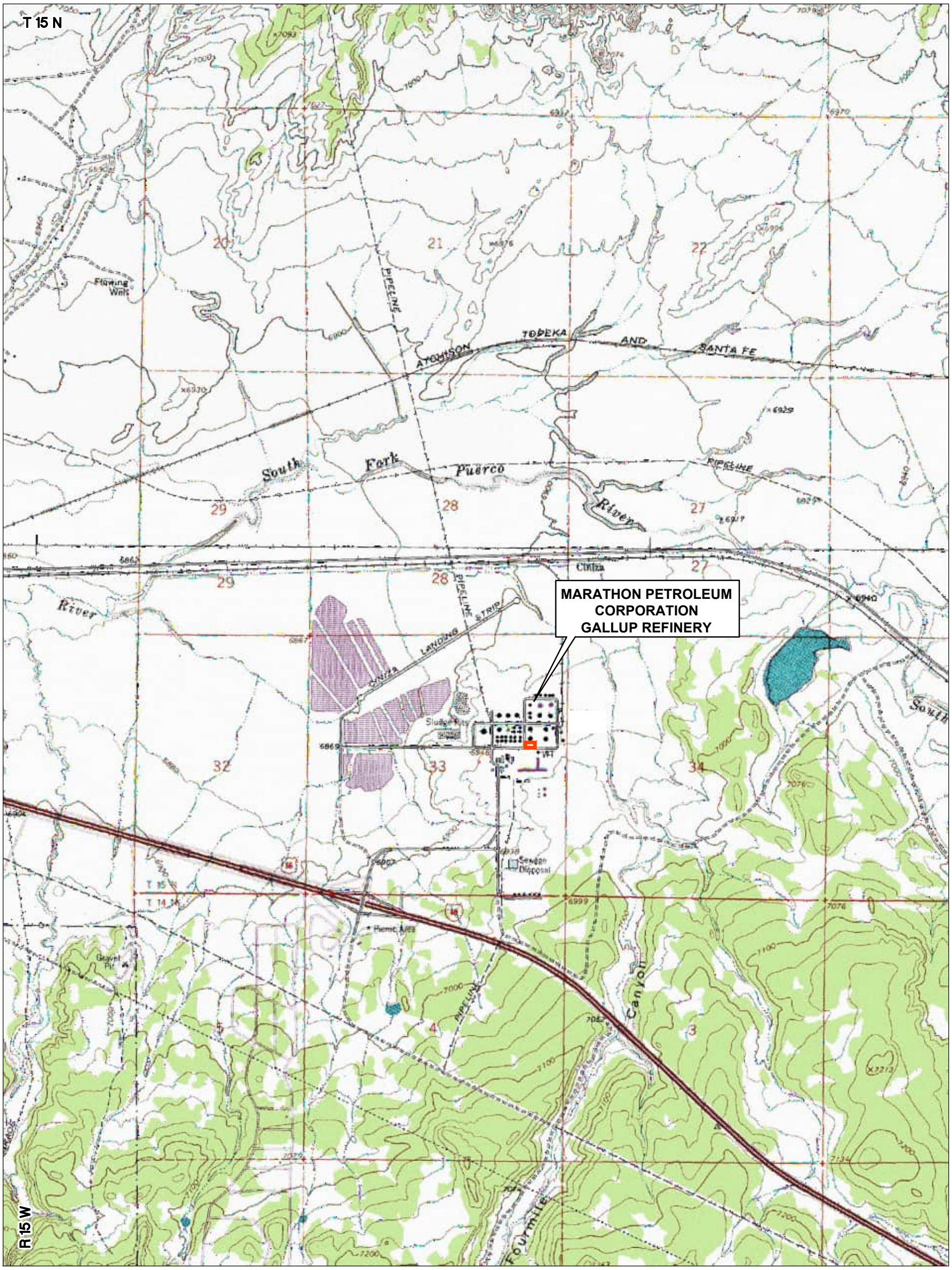


Image Cite: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, McKinley County, Publication: 2004

NOTE:
SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

EXPLANATION

AOC 29 (EQUIPMENT YARD AND DRUM STORAGE AREA)

AOC AREA OF CONCERN

N

0 2,000'

NEW MEXICO

QUADRANGLE LOCATION

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

AOC 29 (EQUIPMENT YARD AND DRUM STORAGE AREA)

**MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO**

Drawn By: REP	Checked By: CF	Scale: 1" = 2,000'	Date: 11/30/20	File: 697-SITELOC-202011

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Image Citation: Google Earth Pro Imagery, Publication: March 2016.

EXPLANATION

FENCE

BUILDING OR OTHER STRUCTURE

AOC AREA OF CONCERN

N

0 30'

20'

M:\TON\MARATHON\CAD\GALLUP_REPORTS\AOC\697-AOC-29

FIGURE 2

AOC 29 - EQUIPMENT YARD AND DRUM STORAGE AREA

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

Drawn By: REP	Checked By: CF	Scale: 1" = 20'	Date: 11/24/20	File: 697-AOC-29

Western Refining Southwest, Inc.
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

November 15, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department 2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: Assessment Report for AOC 30 – Laboratory
Marathon Petroleum Company LP, Gallup Refinery
(dba Western Refining Southwest, Inc.)
EPA ID# NMD000333211

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 30 (AOC 30) Laboratory Area required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore of my staff at 505-722-0205.

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,
Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks
Refinery General Manager

Enclosure

cc D. Cobrain, NMED HWB
C. Chavez NMOCD
J. Moore Marathon Gallup Refinery

AOC 30 – Laboratory Area

Consent Order Assessment Report

(1) Location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 (Site Location/Topo Map) for location of Area of Concern (AOC) 30. AOC 30 includes the Laboratory building.

(2) Designation of type and function of unit(s);

The laboratory is used for on-site analysis to maintain quality control over the refinery process and to help ensure compliance with environmental regulations. It primarily handles petroleum products or related materials and water samples.

(3) Dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

The building in which the laboratory is located is approximately 40 feet by 120 feet. The laboratory building has a concrete floor with drains that connect to the Contact Waste Water Collection System (Solid Waste Management Unit 12).

(4) Dates that the unit(s) was operated;

The laboratory is believed to have been in service since the 1950s or 1960s and operated until the refinery idled in 2020. When the refinery starts back up, the laboratory will be put back in use.

(5) All available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

The refinery laboratory analyzed both hydrocarbon and water samples. The materials that were generated in the laboratory can be categorized as follows:

- *spent/unused hydrocarbon samples;*
- *spent/unused wastewater samples;*
- *discharges from sinks in the laboratory; and*
- *discharges from bottle washing systems in the laboratory.*

The spent/unused hydrocarbon samples were normally disposed of in segregated drums located outside the laboratory. These drums contents were picked up periodically by a vacuum truck in the refinery and sent to the refinery slop system. The wastewater samples were discharged to the sewer and through the API separator prior to discharge to the wastewater treatment plan.

Discharges from the sinks in the laboratory were routed to the wastewater treatment plant via the API separator. With improvements in best management practices, care was taken to not discharge various chemicals or reagents (such as nitrobenzene) that would have caused problems in the wastewater treatment plants. Chemicals or reagents that could upset a wastewater treatment plant were managed separately, for example, disposed of in a separate drum and sent off-site for disposal.

(7) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

On October 26, 2005 two glass jars of cuprous chloride were observed in the laboratory building to be leaking. Cuprous chloride is a white to greyish crystalline powder and has a very low solubility in water. It is used as a desulfurizing agent in the refinery industry. The area of the spill was cleaned up, the leaking containers were properly disposed of, and the spilled material was placed in over-pack containers. The over-pack containers were shipped off-site for proper disposal. This area was already addressed and is acknowledged in NMED's letter on October 25, 2006 that no further action is required.

Image Citation: Google Earth Pro Imagery, Publication: March 2016.

EXPLANATION

FENCE

BUILDING OR OTHER STRUCTURE

AOC AREA OF CONCERN

N

0 30'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

AOC 30 - LABORATORY

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: CF	Scale: 1" = 30'	Date: 10/23/20	File: 697-AOC-30

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Appendix B - Standard Operating Procedure – Soil Sampling

memorandum

To: Sampling Team Members
From: Project Manager
Date: Revised July 30, 2023~~September 6, 2022~~
Re: Standard Operating Procedure – Soil Sampling

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

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.~~

Soil samples located in dry areas will be collected from representative locations using a decontaminated drive sampler equipped with disposable,~~clean brass or stainless steel sampling rings, a~~ thin-walled tube liner~~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.~~Geoprobe® direct push drill rig. ~~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~~ The material will be placed directly from the liner~~trowel or other appropriate sampling device~~ into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2). The jars 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. If necessary, additional cores will be collected from within 6 lateral inches of the original boring, and additional sample volume will be collected from the same depth interval as the original boring. It should be noted that samples collected in this manner will be collected as composite samples. 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~~will involve the use of a PID. ~~In this case, t~~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 appropriate sample containers with appropriate preservative (e.g., methyl chloride) ~~second plastic bag,~~, labeled, 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 boring~~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 custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

697-097-002

Appendix CB – Example Boring Log

ATTACHMENT B-2

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

Western Refining Southwest LLC

(D/B/A Marathon Gallup Refinery)

Gallup, New Mexico

EPA ID# NMD000333211

Revised July 30, 2023

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 24 soil borings with collection of a maximum of 96 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.

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List of Acronyms

%	percent
amsl	above mean sea level
AOC	Area of Concern
API	American Petroleum Institute
bgs	below ground surface
COC	chain of custody
DRO	diesel range organics
E&I	electrical and instrumentation
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

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) (Appendix A-1), the "Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area" (MPC 2020b) (Appendix A-2), and the "Assessment Report for AOC 30 – Laboratory Area" (MPC 2020c) (Appendix A-3), 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 24 soil borings, and collection of a maximum of 96 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 site characterization in addition to future remedy evaluations.

2.0 Site Conditions

The Refinery has been indefinitely idled since August 2020. 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. Subsequent to the Refinery idling, all equipment and material used in AOC 30 has been removed. 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.

2.1.1 Surface and Building Conditions – AOC 28

AOC 28 includes the maintenance shop area (including the electrical and instrumentation [E&I] building, mechanical shop, and welding shop) and warehouses (main warehouse south of the welding shop [Warehouse #1] and the smaller warehouse north of the welding shop [Warehouse #2) (Figure 3). It should be noted that Figure 3 shows four warehouses, but Warehouses #3 and #4 are part of AOC 29, and are therefore discussed in Section 2.1.2. The structures in AOC 28 are not in use as the Refinery is currently idled but were historically used for general site maintenance and equipment repairs, including pipe fitting and welding, inspection and repair of instrumentation, and electrical repairs.

In the E&I building, the floor drain flows to the Refinery's contact wastewater system. The drain is located at the north end of the shop (Figure 3) and is clean and free of damage. There is also a sink in the E&I building located in the southwest end of the building. Currently this sink is not operational and has been taken out of service. Warehouse #1 does have a functioning sink located in the northeast corner of the building (Figure 3). The mechanical shop does not have a floor drain or below-grade sump; above-grade tanks are connected to the Refinery's contact wastewater system. Additional information

is included in the "Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area" (MPC 2020a) (Appendix A-1).

In general, the ground surface is in good condition throughout AOC 28; there are some minor hairline cracks in the asphalt and concrete south of the E&I building, mechanical building, and welding building, and north of Warehouse #1 (Figure 3). Given the age of the asphalt and concrete, the damage is considered minimal and acceptable. The interior concrete floors of these buildings remain in good condition. Warehouse #1 does have a small oil stain on the floor, but it is unknown how old the stain is. Given the good condition of these floors within the AOC 28 buildings, it is unlikely that the soil beneath the building foundations has impacts from activities conducted within AOC 28.

Currently, the E&I building, mechanical building, and welding building are used for equipment and parts storage and contain vacant offices. Warehouse #1 is the only building within AOC 28 which stores chemicals; these chemicals are used for the Refinery's daily operations (e.g., oils, lubricants, antifreeze, rock salt, etc.). All chemicals are properly stored in appropriate containers to prevent spills.

2.1.2 Surface and Building Conditions – AOC 29

AOC 29 includes the equipment yard and drum storage area, as well as two warehouse buildings. AOC 29 was used for storage of maintenance equipment and supplies, but is currently not actively in use as the Refinery is idled. No hazardous wastes are known to have been managed at AOC 29, and there are no documented spills at AOC 29. Additional information is included in the "Assessment Report for AOC 29 – Equipment Yard and Drum Storage Area" (MPC 2020b) (Appendix A-2).

Warehouse #3 (the former firehouse) and Warehouse #4 do not have any floor drains (Figure 3). There are no area drains present in the equipment yard and drum storage area (Figure 3).

The ground surface on the interior and exterior of Warehouse #4 is in good condition and free of damage. While the ground surface surrounding the exterior of Warehouse #3 is in good condition, the interior of the warehouse has minor cracks that run throughout the concrete floor. The equipment storage yard has minor cracking in the asphalt, and there is a pothole (roughly 1 ft diameter) located near the center of the yard (Figure 3). The north end of the yard has a depression. The buildings within AOC 29 currently house equipment and parts for general maintenance. Warehouse #4 currently houses chemicals that were used for the Refinery's daily operations, but are now in storage given that the Refinery is idled (e.g., oils, lubricants, antifreeze, rock salt, etc.).

2.1.3 Surface and Building Conditions – AOC 30

AOC 30 includes the laboratory building, which is approximately 40 ft by 120 ft. The laboratory is currently not in use as the Refinery is idled, but was previously used for on-site analysis to maintain quality control over the Refinery process and to help ensure compliance with environmental regulations. The laboratory has a concrete floor with drains that connect to the Refinery's contact wastewater system.

The laboratory primarily handled petroleum products, water samples, or related materials when the Refinery was active; however, there are no petroleum products, water samples, chemicals, or other related materials currently stored in the laboratory. The materials that were generated in the laboratory can be categorized as follows: (1) hydrocarbon samples, (2) wastewater samples, (3) discharges from sinks in the laboratory, and (4) discharges from bottle washing systems in the laboratory. The hydrocarbon samples were normally disposed of in segregated drums located outside the laboratory. These drum contents were picked up periodically by a vacuum truck and sent to the Refinery slop system. The wastewater samples were discharged to the sewer and through the American Petroleum Institute (API) separator prior to discharge to the wastewater treatment plant. Discharges from the laboratory sinks were routed to the wastewater treatment plant via the API separator. Chemicals or reagents that could upset the wastewater treatment plant were managed separately. Additional information is included in the "Assessment Report for AOC 30 – Laboratory" (MPC 2020c) (Appendix A-3).

The interior floor of the laboratory is in good condition and the slab is free from any damage. The concrete and asphalt outside of the laboratory are in good condition as well. With the condition of the laboratory floors, it is unlikely that the soils beneath the foundation has been impacted from building operations.

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.

2.2.1 Subsurface Conditions – AOC 28

The buildings within the AOC 28 boundary are slab-on-grade construction and do not have basements. The original buildings within the AOC 28 boundary were constructed in 1957 and 1958 (MPC 2020a). Additions to the warehouse and the storage area occurred later, but the date of construction is unknown (MPC 2020a). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 28 are included on Figure 2.

2.2.2 Subsurface Conditions – AOC 29

The buildings within the AOC 29 boundary are slab-on-grade construction and do not have basements. These buildings date back to at least 1962 and may have been constructed when the Refinery was built in the late 1950s (MPC 2020b). No previous structures are known to have existed prior to these current structures. Known sewer lines in the vicinity of AOC 29 are included on Figure 2.

2.2.3 Subsurface Conditions – AOC 30

The laboratory building is slab-on-grade construction and does not have a basement. The laboratory building is believed to have been in use since the late 1950s, and a records search did not indicate any previous structures within the AOC 30 boundary (MPC 2020c). Known sewer lines in the vicinity of AOC 30 are included on Figure 2.

3.0 Scope of Activities

The investigative activities proposed in this Work Plan will provide data and information on surface and 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 24 locations around AOC 28, 29, and 30 (Figure 2). The list of proposed sample locations, and the rationale for selecting the location of each proposed soil boring is included as Table 1. Generally, soil borings were proposed along the boundaries of AOCs 28, 29, and 30. Given historical facility operations, there is no suspected contamination source within the footprints of AOCs 28, 29, and 30, based on flooring conditions and recent building inspections, conducted in June 2023.

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 electron Volt 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 bgs), just above the water table (if encountered), the bottom of boring, the zone with the highest PID reading, and other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered).

The "Determination of Area of Concern (AOC) Entry to the Permit" letter requests confirmation of absence of contamination of AOCs 28, 29, and 30 (NMED 2021a). As such, the Refinery proposes that soil samples 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. The results for these selected analytical constituents will confirm or deny the absence of contamination in these AOCs. The results from this investigation will be used for site characterization in addition to future remedial evaluations. Analytical results will be compared to their respective NMED Residential, Industrial, and Construction Worker Soil Screening Levels (SSL) (NMED 2021b).

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 B). Details related to sample collection will be documented on the boring log field forms (Appendix C). 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.

Soil samples will be collected from representative locations using a Geoprobe® direct push drill rig equipped with disposable, thin-walled tube liners. The sampling device will be driven completely into the material using a Geoprobe® direct push drill rig. The material will be placed directly from the liner into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2).

Components of the Geoprobe® direct push drill rig that come into contact with soil (e.g., the cutting shoe) will be decontaminated between sampling locations; the drill rig will not be decontaminated between sampling intervals at the same location due to the acetate liners. The sampling equipment that is used will be decontaminated between boring locations using a four-stage decontamination system consisting of two detergent/water washes and two deionized water rinses.

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 appropriate laboratory sample containers with appropriate preservative (e.g., methyl chloride), labeled, , 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 containers from the selected depths will be 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 24 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)
    - Just above the water table (if encountered)
    - The bottom of boring
    - The zone with the highest PID reading
    - Other intervals with evidence of high levels of contamination as determined by the field staff (e.g., visual, olfactory, and PID) (if encountered)
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.

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.

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.

Figures

EXPLANATION

- AOC 28 - WAREHOUSE AND MAINTENANCE SHOPS
- AOC 29 - EQUIPMENT YARD AND DRUM STORAGE AREA
- AOC 30 - LABORATORY

NOTE:

AOC - AREA OF CONCERN

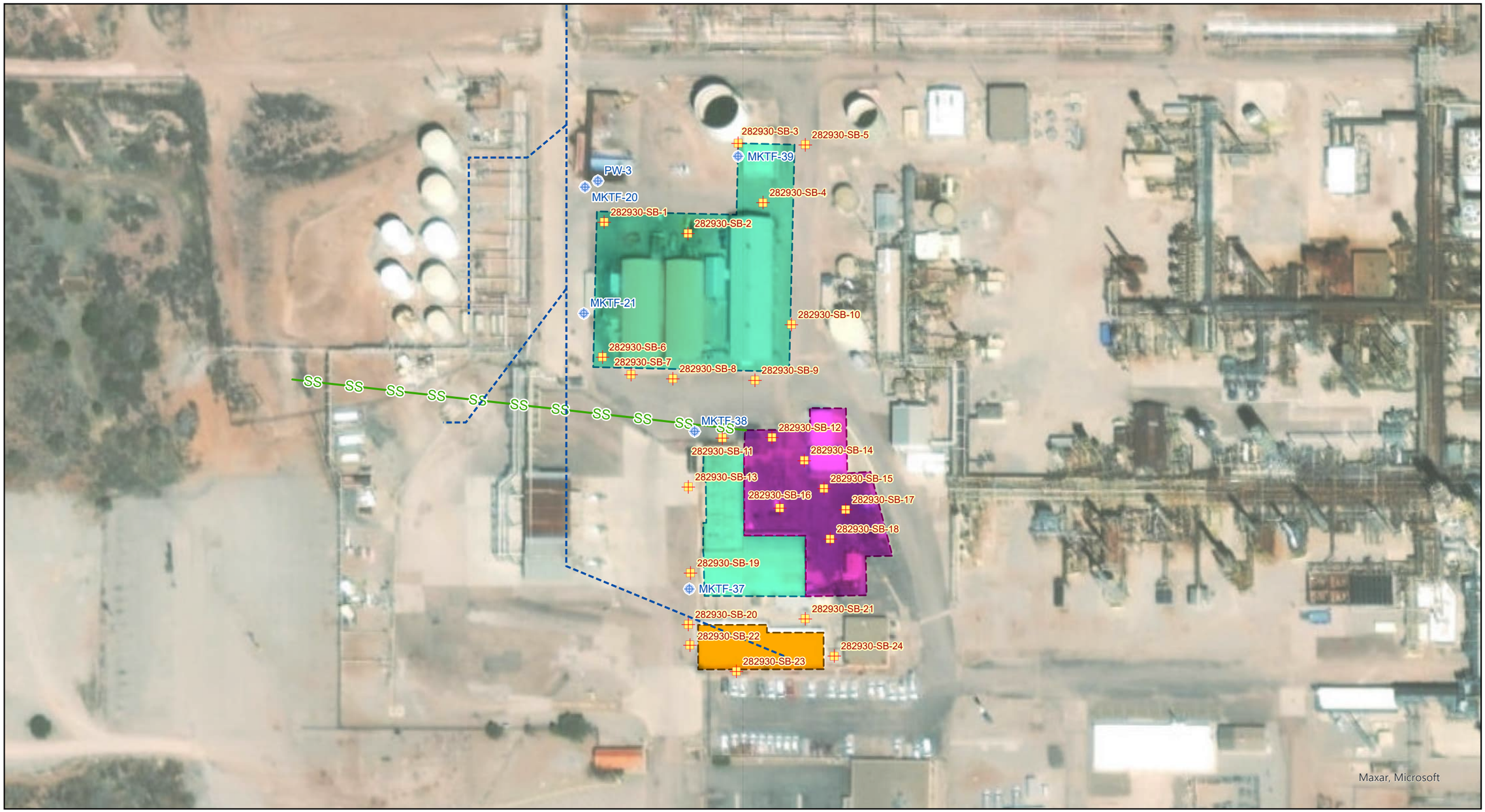
N

0 300'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1
SITE LOCATION
AOC 28, AOC 29, AND AOC 30
INVESTIGATION WORK PLAN
WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: BR	Checked By: EH	Scale: 1" = 300'	Date: 9/12/22	File: 1_AOC28_SiteLoc



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EXPLANATION

- MONITORING WELL
- PROPOSED SOIL BORING
- PROCESS SEWER LINE
- SS SANITARY SEWER LINE
- AOC 28 - WAREHOUSE AND MAINTENANCE SHOPS
- AOC 29 - EQUIPMENT YARD AND DRUM STORAGE AREA
- AOC 30 - LABORATORY

NOTE:

AOC - AREA OF CONCERN

N

0 100'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2

PROPOSED SAMPLING LOCATIONS
AOC 28, AOC 29, AND AOC 30
INVESTIGATION WORK PLAN

WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: BR	Checked By: EH	Scale: 1" = 100'	Date: 6/12/23	File: 2_AOC28_SoilBorings

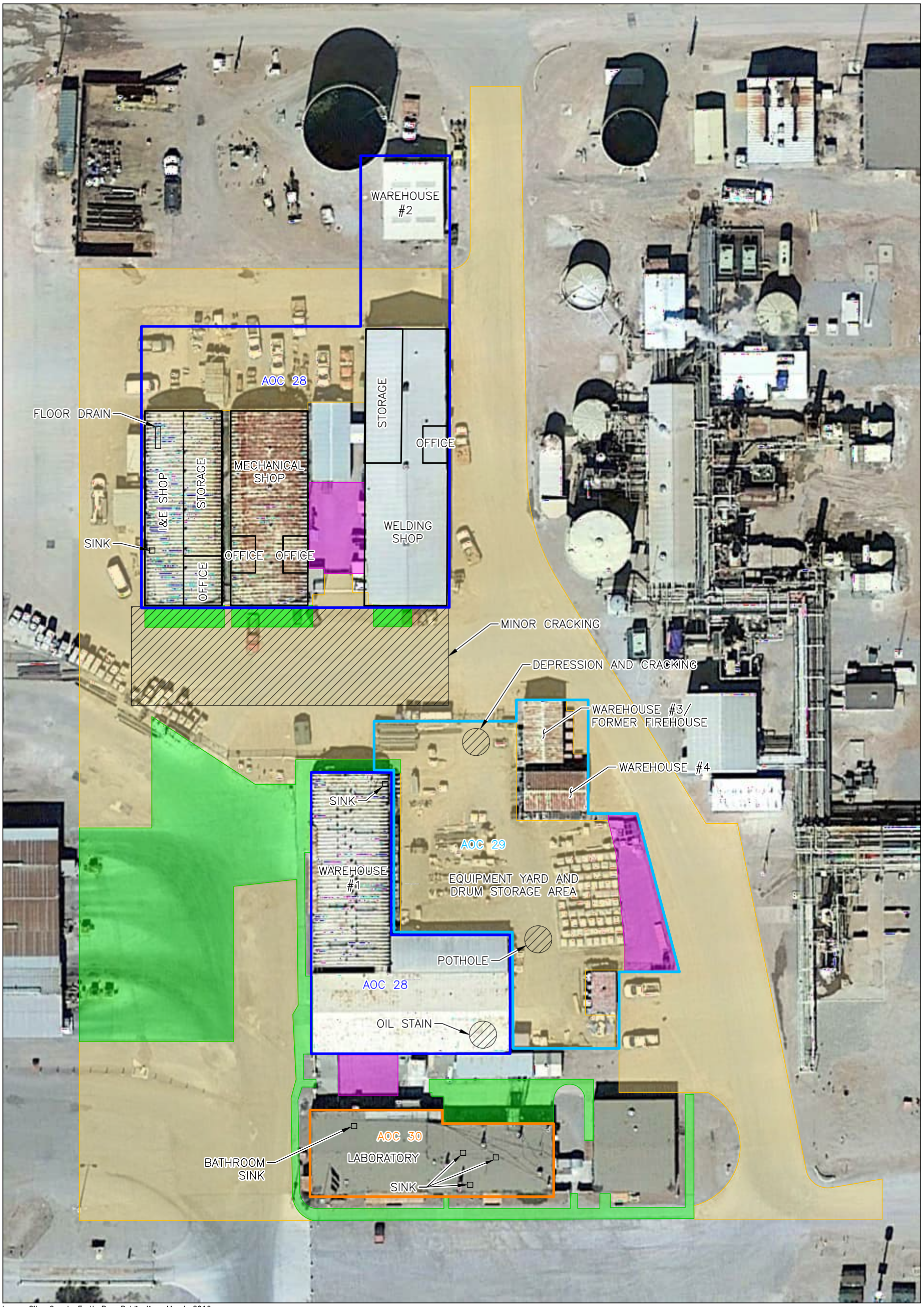

Image Cite: Google Earth Pro, Publication: March 2016

EXPLANATION

AOC 28
AOC 29
AOC 30

ASPHALT
CONCRETE
GRAVEL

AOC AREA OF CONCERN

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 3

AOC 28, AOC 29, AND AOC 30 SURFACE CONDITIONS

WESTERN REFINING SOUTH WEST LLC D/B/A MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: REP	Checked By: AW	Scale: 1" = 50'	Date: 6/9/2023	File: 697-AOC28-WHAREA_202306

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Table

TABLE 1. PROPOSED SAMPLING LOCATION RATIONALE
AOC 28, AOC 29, AND AOC 30 INVESTIGATION WORK PLAN,
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Proposed Soil Boring Identification Number	Location Rationale
282930-SB-1	Perimeter around AOC 28 building(s)
282930-SB-2	Perimeter around AOC 28 building(s)
282930-SB-3	Perimeter around AOC 28 building(s)
282930-SB-4	Perimeter around AOC 28 building(s)
282930-SB-5	Perimeter around AOC 28 building(s)
282930-SB-6	Perimeter around AOC 28 building(s)
282930-SB-7	Perimeter around AOC 28 building(s)
282930-SB-8	Perimeter around AOC 28 building(s)
282930-SB-9	Perimeter around AOC 28 building(s)
282930-SB-10	Perimeter around AOC 28 building(s)
282930-SB-11	Perimeter around AOC 28 building(s)
282930-SB-12	Within AOC 29 laydown yard area
282930-SB-13	Perimeter around AOC 28 building(s)
282930-SB-14	Within AOC 29 laydown yard area
282930-SB-15	Within AOC 29 laydown yard area
282930-SB-16	Within AOC 29 laydown yard area
282930-SB-17	Within AOC 29 laydown yard area
282930-SB-18	Within AOC 29 laydown yard area
282930-SB-19	Perimeter around AOC 28 building(s)
282930-SB-20	Perimeter around AOC 30 Laboratory Building
282930-SB-21	Perimeter around AOC 30 Laboratory Building
282930-SB-22	Perimeter around AOC 30 Laboratory Building
282930-SB-23	Perimeter around AOC 30 Laboratory Building
282930-SB-24	Perimeter around AOC 30 Laboratory Building

AOC - Area of Concern

Appendix A – AOC Assessment Reports

Marathon Petroleum Company LP

September 10, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: Assessment Report for AOC 28 – Warehouse and Maintenance Shop Area
Marathon Petroleum Company LP, Gallup Refinery
(dba Western Refining Southwest, Inc.)
EPA ID# NMD000333211

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 28 (AOC 28) Warehouse and Maintenance Shop Area as required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore at 505-722-0205.

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,
Marathon Petroleum Company LP, Gallup Refinery

For R. Hanks

Robert S. Hanks
Refinery General Manager

Enclosure

cc C. Chavez NMOCD
J. Moore Marathon Gallup Refinery

92 Giant Crossing Road
Jamestown, NM 87347

AOC 28 – Warehouse and Maintenance Shop Area
Consent Order Assessment Report

(1) location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 (Site Location/Topo Map) for location of AOC 28. Area of Concern (AOC) 28 includes the Maintenance Shop Area [Instrumentation and Electrical (I&E) Building, Mechanical Shop, and Welding Shop] and Warehouses (Main Warehouse south of Welding Shop and small warehouse north of Welding Shop) (Figure 2).

(2) designation of type and function of unit(s);

The activities 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 are stored within the various buildings, which have concrete floors.

(3) dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

There are several larger maintenance buildings, two of which are approximately 40 feet by 100 feet, and the third is 40 feet by 140 feet. The two smaller buildings including the I & E shop and the mechanical shop. The largest building is the pipe fitting and welding shop. A fourth building, which is approximately 30 feet by 40 feet, is located to the north of the welding shop and it is used to store flammable materials. The main warehouse building is located south the Welding Shop and consists of an original building oriented north/south that is 40 feet wide by 100 feet long. A new addition lies to the south with an east/west orientation as is 40 feet wide by 100 feet long. See Figures 2 and 3. In addition, a facility drawing dating from the original construction of the refinery in 1957 is attached.

(4) dates that the unit(s) was operated;

Based on the attached site mechanical drawing from 1957, the welding shop, mechanical shop, I & E shop, and original warehouse building were constructed during the original refinery construction in 1957 - 1958. The southern addition to the warehouse and storage area to the north for flammable materials were added later but the exact dates are uncertain.

(5) all available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

Used oil is recovered for on-site processing. Industrial solvents are believed to have been used most likely in the mechanical shop. General non-hazardous plant trash likely would be been generated in the mechanical shop, I&E shop, and welding shop.

(7) all available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

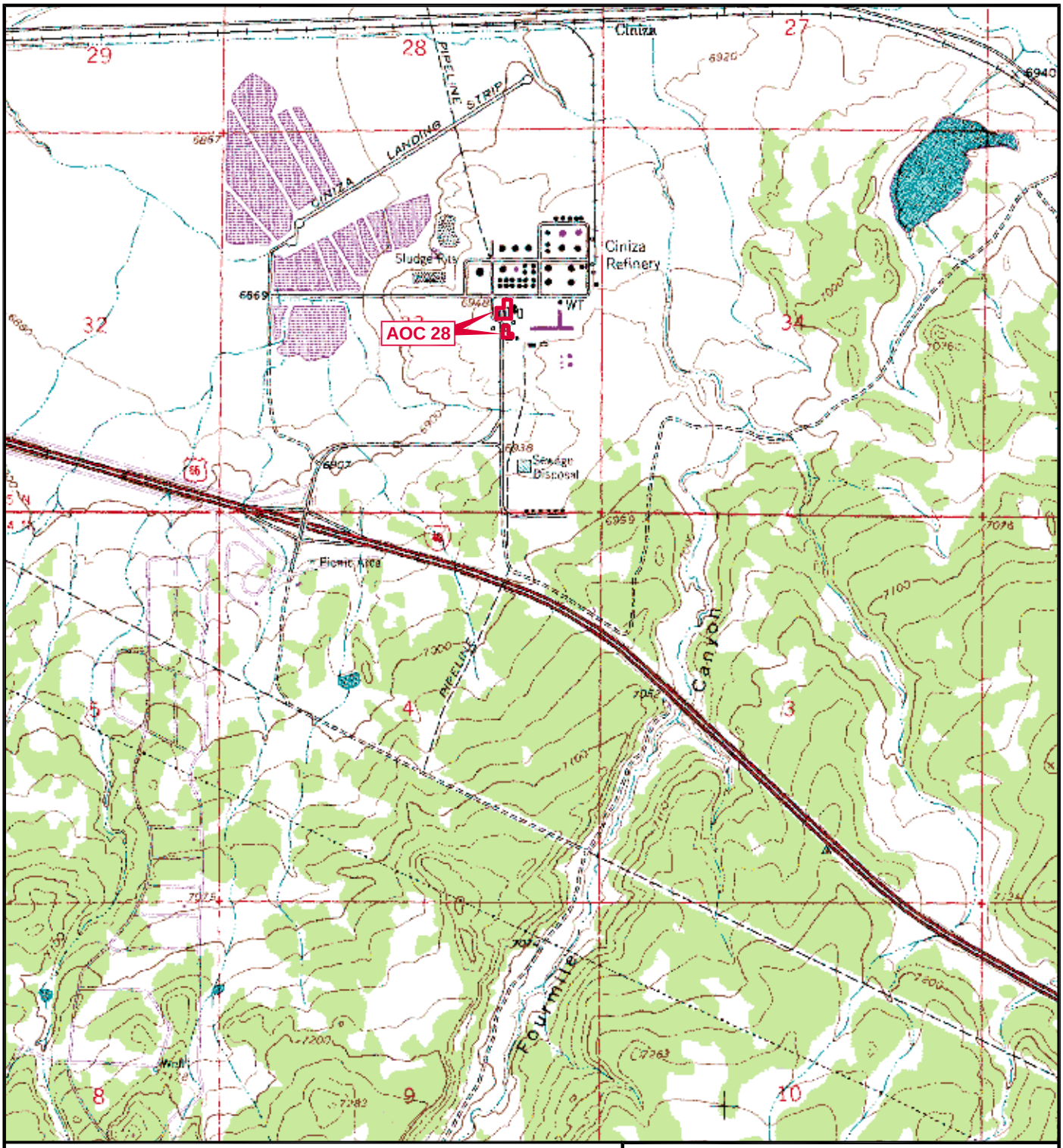
Instrumentation & Electrical (I&E) Shop – The floor drain/sump drains to the refinery Contact Waste Water System (SWMU 12). Water used in instrument testing is discharged to the drain. Periodically, a vacuum truck is used to unclog the drain. See the attached Photo 1.

Mechanical Shop – The shop does not have a floor drain or below grade sump. The above-grade neutralization and hot tanks are connected to the refinery Contact Waste Water System (SWMU 12). Periodically, a vacuum truck is used to unclog the drain. See the attached Photo 2.

Used oil is recovered for on-site processing. There was use of chlorinated cleaning solvents in the past and disposal onsite as documented in the May 12, 1981 memorandum (attached). The exact location of the disposal has not been determined, but may have occurred in the vicinity of the mechanical shop. According to NMED records, used oil and oil sludge was vacuumed from the site in October 2009 and January 2010 (Vacuum Truck Log sheets for Oct. 23, 2009, Jan. 18, 2010).

AOC 28 – Warehouse and Maintenance Shop Area

FIGURES



Map Source: USGS 7.5 min Quad, CINIZA, NEW MEXICO, 1962, Photorevised 1980.

N

0 2000

SCALE IN FEET

NEW MEXICO

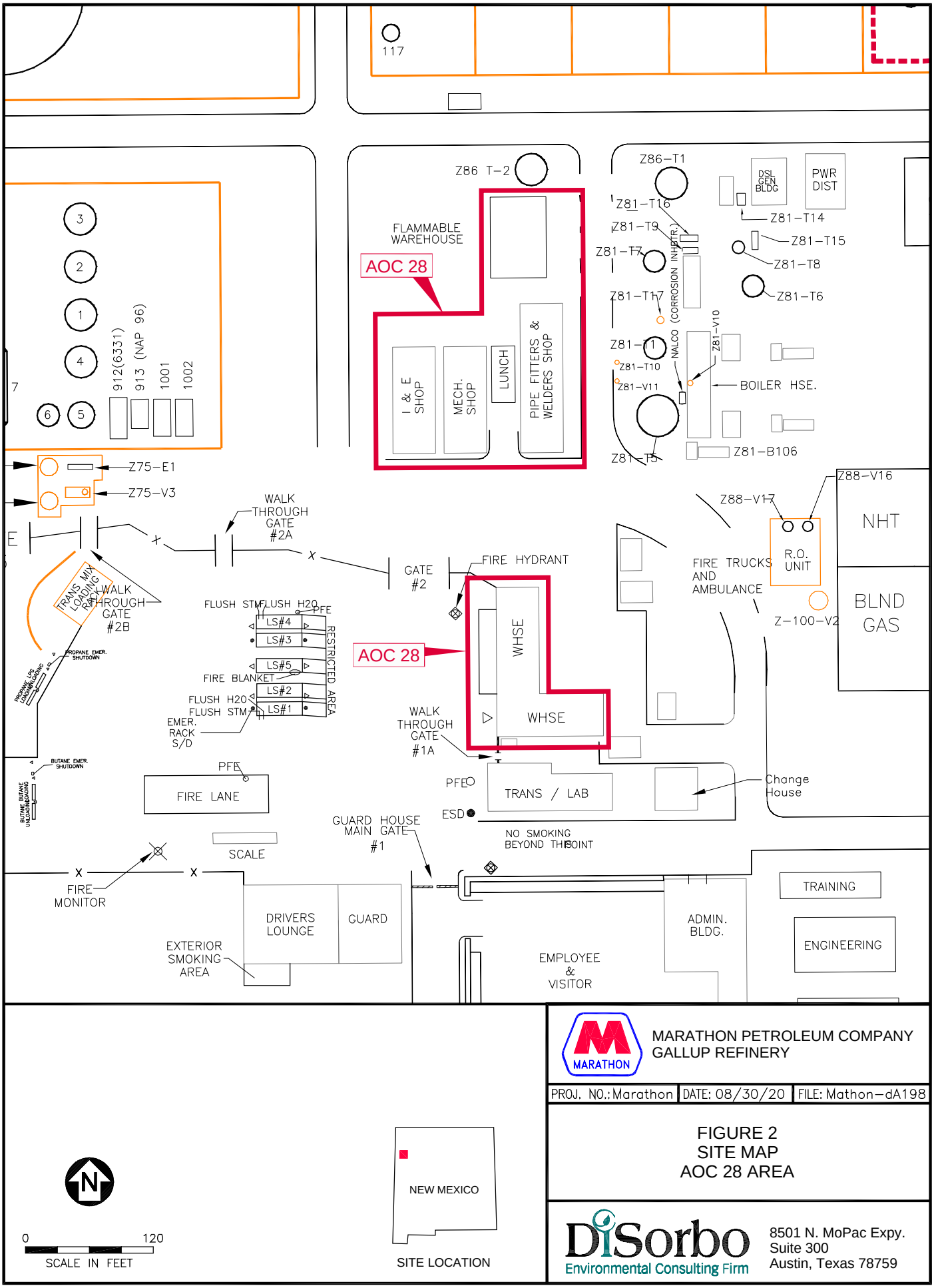
SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/30/20	FILE: Mathon-dA197

FIGURE 1
SITE LOCATION MAP
AOC 28 AREA

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



MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/30/20	FILE: Mathon-dA198

FIGURE 2
SITE MAP
AOC 28 AREA

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Aerial Source: Google Map, 03-18-2016.

N

0 100

SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 08/31/20	FILE: Mathon-dA199

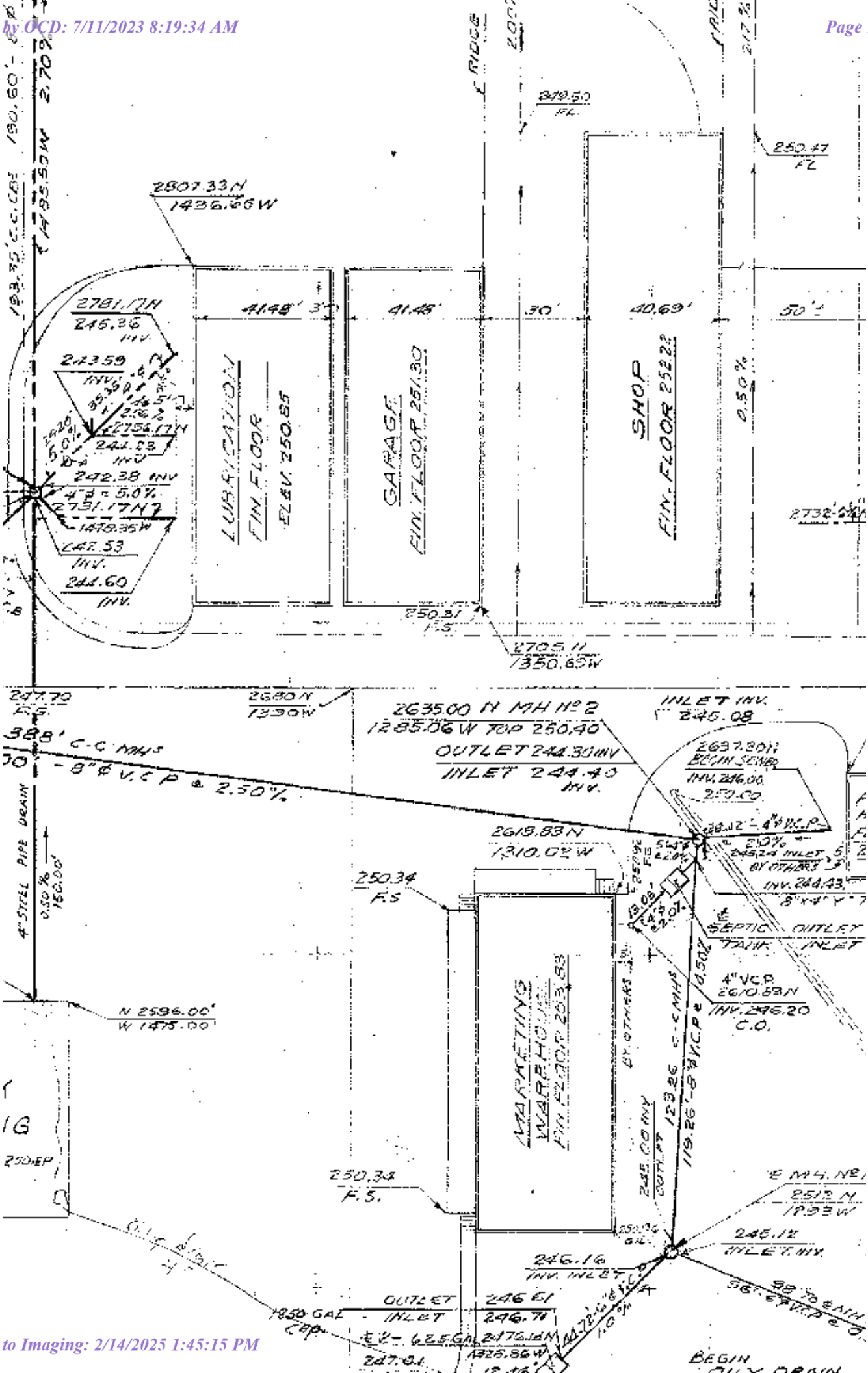
FIGURE 3
AERIAL IMAGE
AOC 28 AREA

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

AOC 28 – Warehouse and Maintenance Shop Area

ATTACHMENTS


LUBRICATION
FIN. FLOOR
ELEV. 250.85
GARAGE
FIN. FLOOR 251.30
SHOP
FIN. FLOOR 252.22
MARKETING
WAREHOUSE
FIN. FLOOR 253.63
2635.00 N MH Nº 2
1285.06 W TOP 250.40
OUTLET 244.30 INV
INLET 244.40 INV.
388' C-C MH's
8" @ V.C.P @ 2.50%
4" STEEL PIPE DRAIN
0.50 %
150.00'
N 2596.00'
W 1475.00'
2619.83 N
1310.02 W
250.34
F.S.
250.33
F.S.
245.00 INV
OUTLET
119.26' 8" V.C.P @
4" V.C.P.
2610.53 N
INV. 246.20
C.O.
246.16
INV. INLET
246.61
246.71
1850 GAL
Cap.
E.V. - 6.25 GAL
2176.18 N
1326.86 W
247.61
INLET INV.
245.08
2693.20 N
BEGIN SEWER
INV. 246.00
250.00
INV. 244.43
SEPTIC
TANK
INLET
OUTLET
2512 N
1293 W
BEGIN
2807.33 N
1426.66 W
2781.17 N
246.26
INV.
244.59
INV.
2754.17 N
244.53
INV.
242.38 INV
4" @ 5.0%
2751.17 N 2
1478.35 W
247.53
INV.
244.60
INV.
849.50
F.L.
250.47
F.L.
41.48'
41.48'
30'
40.69'
50'
0.50 %
250.51
F.S.
2705.11
1350.65 W
247.70
F.S.
2680 N
1290 W
2738'
250 EP

AOC 28 Photo 1

I & E Shop Floor Drain (Sump)

2015/05/07

AOC 28 Photo 2

Mechanics Shop
Hot Tank (Sump)

SM-32 (REV. 5-78)

11.01.C.07.4

Shell Oil Company
Interoffice Memorandum

MAY 12, 1981

FROM: SUPERINTENDENT OPERATIONS - CINIZA REFINERY

TO: MANAGER ENVIRONMENTAL CONSERVATION, OPERATIONS

SUBJECT: INVENTORY OF PAST HAZARDOUS SUBSTANCE HANDLING ACTIVITIES

Attached is a list of potentially hazardous wastes disposed of at Ciniza and a description of the wastes. Only wastes listed with a RCRA number are considered hazardous under current Federal regulations.

Also attached is a list of inactive hazardous waste sites; these are also identified on our RCRA permit application.

Please direct any requests for additional information to M.J. Sapp (SSN 434-3239).

C.D. Shook

MJS/bc

Attachments

cc: B.C. Bell
R.J. Trautner
File 11.04A

CINIZA REFINERY WASTE DISPOSAL

HAZARDOUS WASTE	TYPE	YEARS PRODUCED	AMOUNT	DISPOSAL	SOURCE
1. Acid Soluble Oil	corrosive, toxic	1958-current	500 B/YR	V	E
2. API Overflow	heavy metals	1958-current	80 gpm	EP	CO
3a. API Separator	RCRA-K051	1958-1980	100 TON/YR	SP	IN
3b. API Separator	RCRA-K051	1980-current	100 TON/YR	LT	CO
4. Asbestos Insulation	RCRA-U013	1958-current	0.5 TON/YR	LF	IN
5. Defluorinator Bauxite	fluorides	1958-current	2 TON/YR	V	E
6a. Heat Exchanger Cleaning Sludge	RCRA-K050	1958-1980	unknown	V	IN
6b. Heat Exchanger Cleaning Sludge	RCRA-K050	1980-current	unknown	LT	CO
7. Hydrotreating Catalyst	cobalt-moly nickel	1970-current	50 TONS to date	V	E
8a. Leaded Tank Sludge	RCRA-K052	1965-1980	1 TON/YR	B	IR
8b. Leaded Tank Sludge	RCRA-K052	1980-current	1 TON/YR	LT	IR, CO
9a. Slop Oil Tank Sludge	RCRA-K049	1958-1980	2 TON/YR	SP	IN
9b. Slop Oil Tank Sludge	RCRA-K049	1980-current	2 TON/YR	LT	CO
10a. Softener Waste Water	RCRA-D002	1970-1980	40 TON/YR	EP	PR
10b. Softener Waste Water	RCRA-D002	1980-current	40 TON/YR	N	PR, CO
11a. Spent Caustic	-	1958-1965	25 TON/YR	S	PR
11b. Spent Caustic	-	1965-current	25 TON/YR	EP	PR
12a. Trichloroethane	RCRA-F001	1960-1980	0.5 TON/YR	P, EP	IN
12b. Trichloroethane	RCRA-F001	1980-current	0.5 TON/YR	S	CO

HAZARDOUS WASTE	TYPE	YEARS PRODUCED	AMOUNT	DISPOSAL	SOURCE
13. Alky Scrap Metal	fluorides	1958-current	5 TON/YR	LF	E
14. Waste Oil	waste oil	1958-1980	10 TON/YR	LT	E
15. KOH	pH, basic	1958-current	2 TON/YR	EP	E
16. Laboratory Chemicals	toxic, other	1958-current	200 LB/YR	LF, EP	E

DISPOSAL KEY

EP	evaporation ponds
N	neutralization
B	burial
LT	land treatment
LF	landfill
SP	sludge pit
P	poured out on ground
V	various
S	sold

SOURCE KEY

IN	interviews
PR	purchasing records
IR	inspection records
CO	current operation, refers to amount only
E	estimated

CINIZA REFINERY

INACTIVE HAZARDOUS WASTE DISPOSAL SITES

Evaporative Ponds - received unneutralized softener waste. Site active but not receiving hazardous waste.

Past Land Treatment Area - inactive, contains waste oils which might be designated hazardous waste.

Past Landfill Area - contains asbestos insulation, potentially other hazardous wastes.

Sludge Pits - contain API separator sludge, slop oil and possibly other materials. Current plans are to move this material to the land treatment area.

Alky Scrap Landfill - contains fluoride contaminated scrap from HF Alkylation Unit.

CINIZA REFINERY

WASTE DESCRIPTIONS

Asbestos is currently landfilled in compliance with federal regulations.

Heat Exchangers, prior to 1980, were cleaned in place, at various locations around the Refinery, no effort was made to collect the sludge.

Leaded tank bottoms were, until 1980, buried outside the tank manway. An analysis of leaded sludge from Tank 569 showed

Total Pb	690	ug/gm
EP Pb	0.08	mg/liter
Total Organic Pb	2.4	ug/gm

Slop oil bottoms and API separator sludge were placed in sludge pits until 1980. This material is currently disposed of by land-treatment.

Softener wastewater is acidic due to the excess HCl used during regeneration of the resin. Free HCl in the water will evaporate with the water.

Trichloroethane used as a degreasing solvent has in the past been disposed of by pouring it on the ground. This practice has been stopped and spent solvent will be returned to the manufacturer for recycling.

Other Waste

Acid soluble oil (ASO) is a waste product from the HF alkylation unit. ASO is a polymerization product which contains combined fluorides. In removing ASO from the system some HF acid is also removed. This material is neutralized with soda ash in the alkylation unit and drained to the process sewer. It is believed much of the ASO is removed as in emulsion from the API separator. In

the past ASO has been burned in the Alky furnace and burned from an open pit. Some ASO entered the ground from this pit.

Refinery API overflow, process waterwater, is not a hazardous waste. The residue which remains in the ponds after evaporation of the water may be considered hazardous in the future. An analysis of RCRA metals in the overflow is attached.

Bauxite (activated alumina) is used to remove fluorides from LPG in the alkylation unit. Spent bauxite has in the past been spread on refinery roads and landfilled.

Hydrotreating catalyst has been landfilled at various locations in the refinery. It may also have been spread on refinery roads. Current practice is to sell the catalyst for metals reclamation or to have the catalyst merchant regenerated.

Spent caustic now goes to the process sewer and is finally deposited by evaporation in the ponds. Prior to 1965 some spent caustic was sold.

Scrap metal from the alkylation unit is weathered to reduce fluoride contamination and then landfilled.

Waste oils of various types were placed in the old landtreatment area, including a substantial amount of waxy residue from the crude tank.

Potassium hydroxide (KOH) used in the Alky defluorinators is disposed of through the sewer to the evaporation ponds.

Laboratory Chemicals used in routine testing are normally disposed of through the sewer to the evaporation ponds. Outdated chemicals are occasionally disposed of in the landfill.

API SEPARATOR OVERFLOW ANALYSIS

TABLE 2

Ciniza Refinery Metals Results for Wastewater samples
Taken During July and August,1980.

Metal	New Well Raw Water 7/23/80 0830 hrs.	Pond 3 Inlet /Softener Waste 8/11/80 1000 hrs.	Cooling Water Tower Blowdown 7/23/80 0830 hrs.	API Separator Overflow 7/17/80 1330 hrs.	API Sepatrator Overflow 7/19/80 1300 hrs.	API Separator Overflow 7/23/80 0830 hrs.
Arsenic	0.003	0.031	0.013	0.004	0.005	0.015
Barium	0.014	0.068	0.022	0.22	0.094	0.105
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	0.026	13.	0.91	0.64	1.2
Lead	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Selenium	<0.001	0.097	0.025	0.015	0.018	0.024
Silver	<0.001	0.002	0.010	0.006	0.012	0.005

11.01.C.07.A

SM-32 (REV. 5-78)

Shell Oil Company
Interoffice Memorandum

August 5, 1980

FROM: SUPERINTENDENT OPERATIONS, CINIZA REFINERY

TO: MANAGER ENVIRONMENTAL CONSERVATION - OPERATIONS

SUBJECT: HAZARDOUS WASTE LIST

As requested in your memorandum of 7/7/80, attached is a copy of Ciniza's Solid and Hazardous Waste Inventory.

C.D. Shook

MJS/rr

cc B.C. Bell (w/o attachments)
Environmental File 11.04.A

SM-32 (F EV. 5-73)

Shell Oil Company
Interoffice Memorandum

July 29, 1980

FROM: SENIOR ENGINEER

TO: SUPERINTENDENT OPERATIONS

SUBJECT: REFINERY SOLID WASTE INVENTORY

Attached is the Ciniza Refinery Solid Waste Inventory. Approximate amounts are:

Aqueous Waste	140 gpm
Hydrocarbon Waste	800 B/yr
Chemicals	375 Mlb/yr
Other Solid Waste	400 Mlb/yr

The above list includes hazardous and nonhazardous wastes. Each waste in the inventory is classified as to type hazardous or nonhazardous, disposal method and approximate amount. This information was compiled with the assistance of Refinery department managers and supervisors.

M. J. Sapp

MJS/jg

Attachments

cc: B.C. Bell
B. Lewis
M.S. Mexal
J.J. Stokes
S.L. Yates
J.M. Villalobos
C.F. Yonker
Environmental File 11.01 C.04

CINIZA REFINERY SOLID WASTE INVENTORY SUMMARY

Aqueous Waste to Ponds

Hazardous	35
Nonhazardous	105
Total	140 gpm

Hydrocarbon Waste

ASO	500 B/year
Tank Bottom	100 B/year
Leaded Sludge	25 B/year
Asphalt	25 B/year
Solvent	20 B/year
API Sludge	50 B/year
Slop Oil Bottoms	10 B/year
Waste Motor Oil	25 B/year
	~800 B/year

Chemicals

Spent Caustic	100 Mlb/year
H.F. Acid in ASO	200 Mlb/year
Lab Reagents	0.5 Mlb/year
Nalco, all	50 Mlb/year
Soda Ash	25 Mlb/year
	~375 Mlb/year

Miscellaneous Solid Waste

Vessel Cleaning Sludge	1 Mlb/year
Trash	12 Mlb/year
Filters	1000 yr
Inert Support Media	2 Mlb/year
Catalyst	3 Mlb/year
Insulation	1 Mlb/year
Scrap Metal	380 Mlb/year
	~400 Mlb/year

CINIZA REFINERY SOLID WASTE INVENTORY

		Type/EPA#	Disposal	Amount
A.	Process Water Draws	(NH)	PS	1gpm*
B.	Desalter Brine	(NH)	PS	15 gpm
C.	H.F. Alkylation ASO	(H) D002	PS	500 B/year
D.	Cooling Tower Blowdown	(H) D007	PS	35 gpm
E.	Softner Waste Water	(NH)	PS	25 gpm
F.	Boiler Blowdown	(NH)	PS	35 gpm
G.	Spent Caustic	(H) D002	PS	100 Mlb/year
H.	Pump Leakage & Drains	(NH)	R	1 gpm*
J.	Heat Exchanger Sludge	(H) K050	PS	1000 lb/year*
K.	Sampling Blowdown	(NH)	R	1 gpm *
L.	Sanitary Sewer	(NH)	PS	5 gpm
M.	Hydrocarbon Spills	(NH)	PS	--
N.	Cleaned Drums	(NH)	S	
O.	Trash	(NH)	B	5 ton/year*
P.	Ceramic Catalyst Supports	(NH)	L	1000 lb/year*
Q.	Tank Bottoms	(NH)	LF	100 B/year
R.	CWT Filter, Anthracite	(H) D007	L	300 ft^3/year
S.	Support Media, Quartz Rock	(NH)	L	1000 lb/year *
T.	Filters	(NH)	L	1000 year
U.	Spent Catalyst		L	
	FCC	(NH)		normally sold
	Silica Gel	(NH)		500#/year
	Bauxite	(NH)		2000#/year
	Water Treating Resins	(NH)		50 ft 3/yr*

V.	Tank Water Draws	(NH)	PS	1 gpm*
W.	Leaded Sludge	(H) K052	L	25 B/year
X.	Insulation, Asbestos	(H) U013	L	500 #/year
	Non-Asbestos	(NH)	L	500 #/year*
Y.	Scrap Metal	(NH)	S	180 T/year
Z.	Alky Scrap Metal	(NH)	L	10 T/year
a.	Rubber Hoses	(NH)	L	
b.	Contaminated Earth	(H)	L	
c.	Hydrocarbon Samples	(NH)	R	10 gal/day
	Asphalt	(NH)	L PS	3 gal/day
d.	Acids			
	HF Hydrofluoric	(H) U134		Spills only
	H_2SO_4 Sulfuric	(H) D002		
	HCl Hydrochloric	(H) D002		
e.	Laboratory Reagents (1)		PS	500 lb/year*
	Acetone	(H) F003		
	Acetic Acid	(NH)		
	Isopropyl Alcohol	(NH)		
	Potassium Hydroxide	(H) D002		
	Silver Nitrate	(H) D011		
	Phenolphtalein	(NH)		
	Tetraethyl Lead	(H) P110		
	Oleic Acid	(NH)		
	Iodine	(NH)		
	Chloroform	(NH)		
	Ammonia	(NH)		
	Choromic Acid	(H) D002		
	White Oil	(NH)		
	Chloroethane	(H) F001		
	Trichloroethylene	(H) F002		
	Others			

1. To be considered hazardous, these materials must be disposed of in the pure state, after normal lab use in testing their disposal is

f.	Gasoline Additives	(H)(2)	LF	Spills
	Exxon Arco Chevron Union Mobil Conoco Gulf Shell Amoco Red Dye Ethyl 733-67 Bronze Dye			
	Tetra Ethyl Lead	(H) P110	LF	Spills
	Asphalt Additives	(H)(2)	LF	Spills
	Emery 17065			
	Process			
	Merox 1,2 Kontol Trichloroethane Nalco Dispersant Nalco Chromate Nalco Sulfite Nalco Biocide	(H)(2)	LF	Spills
g.	Condensate includes condensate used as wash water	(NH)	PS	25 gpm
h.	Used Oil Absorbant	(NH)	L	
j.	Laboratory Trash	(NH)	B	1 T/year*
k.	Solvents		PS	20 drum/yr
	Trichloroethane	(H) F001		
m.	Brine Spills	(NH)	PS	
n.	KOH Water Draw	(H) D002	PS	
p.	Ethylene Glycol antifreeze	(NH)	PS	4 drum/yr

2. Proprietary compound spills are to be disposed of as hazardous waste.

q.	Waste Lube Oil	(NH)	R	
r.	Oily Straw, API Separator	(NH)	B,L	
s.	API Separator Sludge	(H) K051	LF	50 B/year*
t.	Trash Burning Residue	(NH)	L	
u.	Soda Ash	(H) D002	PS	13 tons/year
v.	Slop Oil Tank Bottoms	(H) K049	LF	10 B/year*
w.	Waste Motor Oil	(NH)	LF	25 B/year*

KEY:

H - Hazardous
NH - Nonhazardous
PS - Process Sewer
B - Burned
L - Landfill
LF - Landfarm
R - Recovered
S - Sold
* - Estimated

Western Refining Southwest, Inc.
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

December 15, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: 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

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 29 (AOC 29) Equipment Yard and Drum Storage Area required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore of my staff at 505-879-7643.

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,
Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks
Refinery General Manager

Enclosures

cc D. Cobrain, NMED HWB
C. Chavez, NMOCD
G. McCartney, Marathon Petroleum Corporation
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

AOC 29 – Equipment Yard and Drum Storage Area

Consent Order Assessment Report

(1) Location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 for a topographic area of of Area of Concern (AOC) 29 and Figure 2 for the site location and aerial image. AOC 29 includes the Equipment Yard and Drum Storage Area.

(2) Designation of type and function of unit(s);

The area of AOC 29 is currently used for storage of equipment and supplies.

(3) Dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

Within AOC 29 there are two warehouse buildings, the old firehouse, and an exterior storage area. The area is approximately 11,700 square feet.

(4) Dates that the unit(s) was operated;

The warehouse buildings date back to at least 1962 and may have been constructed when the refinery was built in the late 1950s.

(5) All available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

No hazardous wastes are known to have been managed at AOC 29. Empty containers have been temporarily stored in the area pending disposal or recycling. Subsurface investigations regarding AOC 29 have not taken place.

(7) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

There are no documented spills at AOC 29. Observations to the area show a small area of staining. There is asphalt underneath for secondary containment and no releases should have impacted the soil or groundwater.

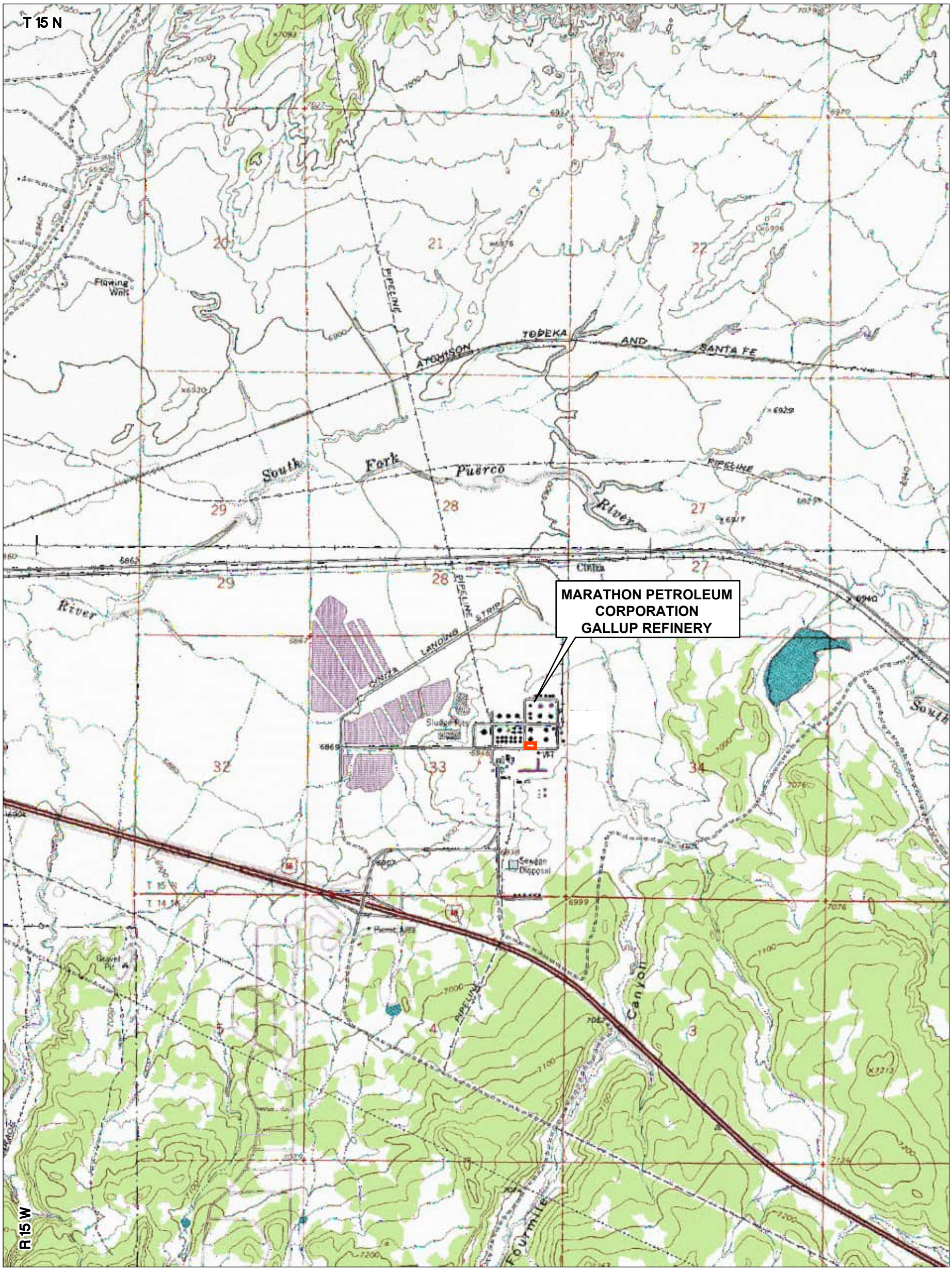


Image Cite: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, McKinley County, Publication: 2004

NOTE:
SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

QUADRANGLE LOCATION

EXPLANATION

AOC 29 (EQUIPMENT YARD AND DRUM STORAGE AREA)

AOC AREA OF CONCERN

N

0 2,000'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

AOC 29 (EQUIPMENT YARD AND DRUM STORAGE AREA)

**MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO**

Drawn By: REP	Checked By: CF	Scale: 1" = 2,000'	Date: 11/30/20	File: 697-SITELOC-202011

M:\TON\MARATHON\CADD\GALLUP_COREFILES-BASEMAPS\697-SITELOC-202011

Image Citation: Google Earth Pro Imagery, Publication: March 2016.

EXPLANATION

FENCE

BUILDING OR OTHER STRUCTURE

AOC AREA OF CONCERN

N

0 30'

20'

M:\TON\MARATHON\CAD\GALLUP_REPORTS\AOC\697-AOC-29

FIGURE 2

AOC 29 - EQUIPMENT YARD AND DRUM STORAGE AREA

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

Drawn By: REP	Checked By: CF	Scale: 1" = 20'	Date: 11/24/20	File: 697-AOC-29

Western Refining Southwest, Inc.
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

November 15, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department 2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: Assessment Report for AOC 30 – Laboratory
Marathon Petroleum Company LP, Gallup Refinery
(dba Western Refining Southwest, Inc.)
EPA ID# NMD000333211

Dear Mr. Pierard:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting this Assessment Report for the Area of Concern 30 (AOC 30) Laboratory Area required by the Consent Order which specifies that Marathon Petroleum Company submit an Assessment Report for each AOC identified in the Consent Order. If there are any questions, please call John Moore of my staff at 505-722-0205.

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,
Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks
Refinery General Manager

Enclosure

cc D. Cobrain, NMED HWB
C. Chavez NMOCD
J. Moore Marathon Gallup Refinery

AOC 30 – Laboratory Area

Consent Order Assessment Report

(1) Location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

See Figure 1 (Site Location/Topo Map) for location of Area of Concern (AOC) 30. AOC 30 includes the Laboratory building.

(2) Designation of type and function of unit(s);

The laboratory is used for on-site analysis to maintain quality control over the refinery process and to help ensure compliance with environmental regulations. It primarily handles petroleum products or related materials and water samples.

(3) Dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

The building in which the laboratory is located is approximately 40 feet by 120 feet. The laboratory building has a concrete floor with drains that connect to the Contact Waste Water Collection System (Solid Waste Management Unit 12).

(4) Dates that the unit(s) was operated;

The laboratory is believed to have been in service since the 1950s or 1960s and operated until the refinery idled in 2020. When the refinery starts back up, the laboratory will be put back in use.

(5) All available site history information;

The refinery began operation in the late 1950s and the refinery property covers an area of approximately 810 acres. The refinery location and the regional vicinity 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.

(6) Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes;

The refinery laboratory analyzed both hydrocarbon and water samples. The materials that were generated in the laboratory can be categorized as follows:

- *spent/unused hydrocarbon samples;*
- *spent/unused wastewater samples;*
- *discharges from sinks in the laboratory; and*
- *discharges from bottle washing systems in the laboratory.*

The spent/unused hydrocarbon samples were normally disposed of in segregated drums located outside the laboratory. These drums contents were picked up periodically by a vacuum truck in the refinery and sent to the refinery slop system. The wastewater samples were discharged to the sewer and through the API separator prior to discharge to the wastewater treatment plan.

Discharges from the sinks in the laboratory were routed to the wastewater treatment plant via the API separator. With improvements in best management practices, care was taken to not discharge various chemicals or reagents (such as nitrobenzene) that would have caused problems in the wastewater treatment plants. Chemicals or reagents that could upset a wastewater treatment plant were managed separately, for example, disposed of in a separate drum and sent off-site for disposal.

(7) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

On October 26, 2005 two glass jars of cuprous chloride were observed in the laboratory building to be leaking. Cuprous chloride is a white to greyish crystalline powder and has a very low solubility in water. It is used as a desulfurizing agent in the refinery industry. The area of the spill was cleaned up, the leaking containers were properly disposed of, and the spilled material was placed in over-pack containers. The over-pack containers were shipped off-site for proper disposal. This area was already addressed and is acknowledged in NMED's letter on October 25, 2006 that no further action is required.

Image Citation: Google Earth Pro Imagery, Publication: March 2016.

EXPLANATION

FENCE

BUILDING OR OTHER STRUCTURE

AOC AREA OF CONCERN

N

0 30'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

AOC 30 - LABORATORY

**MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO**

Drawn By: REP	Checked By: CF	Scale: 1" = 30'	Date: 10/23/20	File: 697-AOC-30

M:\LTON\MARATHON\CADD\GALLUP_REPORTS\697-AOC-30

Appendix B - Standard Operating Procedure – Soil Sampling

memorandum

To: Sampling Team Members
From: Project Manager
Date: Revised July 30, 2023
Re: Standard Operating Procedure – Soil Sampling

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

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.

Soil samples located in dry areas will be collected from representative locations using a decontaminated drive sampler equipped with disposable, thin-walled tube liner. The sampling device will be driven completely into the material using a Geoprobe® direct push drill rig. The material will be placed directly from the liner into a plastic bag (Aliquot #1) and clean glass jars provided by the laboratory (Aliquot #2). The jars will be filled completely to minimize headspace.

If necessary, several cores may be collected from each location to provide adequate sample volume for the laboratory. If necessary, additional cores will be collected from within 6 lateral inches of the original boring, and additional sample volume will be collected from the same depth interval as the original boring. It should be noted that samples collected in this manner will be collected as composite samples. 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 will involve the use of a PID. 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 appropriate sample containers with appropriate preservative (e.g., methyl chloride), labeled, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

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 boring 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 custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

697-097-002

Appendix C – Example Boring Log

Trihydro CORPORATION

Lithology Log

Sheet ___ of ___

LOCID

Project Name	Project Number	Site ID

Drilling Company	Driller	Ground Elevation	Total Drilled Depth

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Total Depth Reached

Type of Sampling Device	Water Level (bgs) First	Final

Sample Hammer Type	Driving Wt.	Drop	Geologist/Engineer	Checked by/Date

Weather	Other Personnel Present
Site Conditions	

Location Description (include sketch in field logbook)

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

Trihydro CORPORATION

Lithology Log (continued) Sheet ___ of ___

LOCID

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

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

CONDITIONS

Action 238317

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 238317
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
joel.stone	Approved for OCD record retention purposes.	2/14/2025