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

March 15, 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: Solid Waste Management Unit 2 – Evaporation Ponds Investigation Work Plan
Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-14-005

Dear Mr. Cobrain:

Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery is submitting this "Solid Waste Management Unit 2 – Evaporation Ponds Investigation Work Plan."

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore 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,
Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery

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

Enclosure

cc: L. Tsinnajinnie, NMED HWB
L. Andress, NMED HWB
L. Barr, NMOCD
K. Luka, MPC
L. King, EPA Region 6
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

Solid Waste Management Unit 2 – Evaporation Ponds Investigation Work Plan

Western Refining Southwest LLC

(D/B/A Marathon Gallup Refinery)

Gallup, New Mexico

EPA ID# NMD000333211

March 15, 2023

Executive Summary

Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) is submitting this Work Plan which details continued soils investigation associated with Solid Waste Management Unit 2 – Evaporation Ponds (EP) (Figure 1-1). In a letter dated April 11, 2008, the New Mexico Environment Department (NMED) stated that when the EPs are removed from service, they must go through the Resource Conservation and Recovery Act corrective action process (NMED 2008). The Refinery has been indefinitely idled since August 2020; during this indefinite idle, preliminary assessment of the ponds will be conducted.

This Work Plan proposes the collection of 48 pond sediment samples and 48 underlying clay samples. Samples will be analyzed for volatile organic compounds by Method 8260; semi-volatile organic compounds (SVOCs) by Method 8270; total metals by Method 6010; total mercury by Method 7471; total petroleum hydrocarbons (TPH) – diesel range organics by Method 8015D; TPH- gasoline range organics by Method 8015C; nitrate, chloride, fluoride, and sulfate by Method 9056; total phosphorus by Method 365.4; and ammonia for Method 350.1. Additionally, one composite sediment sample will be collected from each EP and analyzed for SVOCs, total metals, and chloride using the Synthetic Precipitation Leaching Procedure (Method 1312). The Refinery will prepare an investigation report summarizing the sampling results and investigation conclusions; the investigation report will be submitted to NMED within 180 days of the receipt of analytical data.

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List of Acronyms

%	percent
ABRSC	Alternate Beneficial Reuse Screening Concentration
amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
COC	chain of custody
DRO	diesel range organics
EP	evaporation pond
FID	flame ionization detector
ft	foot or feet
GRO	gasoline range organics
NMED	New Mexico Environment Department
Permit	Resource Conservation and Recovery Act Post-Closure Permit, NM000333211
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
Refinery	Western Refining Southwest LLC D/B/A Marathon Gallup Refinery
SPLP	Synthetic Precipitation Leaching Procedure
SSL	soil screening level
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
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. The Refinery is subject to and maintains compliance under the Resource Conservation and Recovery Act (RCRA) Post-Closure Permit, NM000333211 (Permit) (NMED 2017).

The Refinery has been indefinitely idled since October 9, 2020. Currently, operations at the Refinery are limited to the Wastewater Treatment Plant. 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. Product is not currently stored at the Refinery and all processes have been temporarily shut down as part of the Refinery idling. All process tanks are empty, have been cleaned and inspected, and no longer store or contain material.

This Work Plan details continued soils investigation associated with Solid Waste Management Unit (SWMU) 2 – Evaporation Ponds (EP) (Figure 1-1). In a letter dated April 11, 2008, the New Mexico Environment Department (NMED) stated that when the EPs are removed from service, they must go through the RCRA corrective action process (NMED 2008). However, during this indefinite idle period, the Refinery will be conducting preliminary assessment of the ponds.

This Work Plan proposes the collection of 96 samples (48 pond sediment samples and 48 underlying clay samples). Samples will be collected using a hand auger. Samples will be screened in the field using a flame ionization detector (FID) and the results recorded on the field forms. Samples will be analyzed for volatile organic compounds (VOCs) by Method 8260; semi-volatile organic compounds (SVOCs) by Method 8270; total metals by Method 6010; total mercury by Method 7471; total petroleum hydrocarbons (TPH) – diesel range organics (DRO) by Method 8015D; TPH- gasoline range organics (GRO) by Method 8015C; nitrate, chloride, fluoride, and sulfate by Method 9056; total phosphorus by Method 365.4; and ammonia for Method 350.1. Additionally, one composite sediment sample will be collected from each EP and analyzed for VOCs, SVOCs, total metals, and chloride using the Synthetic Precipitation Leaching Procedure (SPLP) (Method 1312). The results from this investigation will be used for future environmental remedy evaluations, following the RCRA corrective action process.

2.0 Background

A summary of previous investigations of SWMU 2 are described below. Historically, samples have been collected to assess impacts and evaluate berm integrity. Also, as covered in Section 2.3, Marathon performed a voluntary preliminary evaluation in 2020.

2.1 Evaporation Ponds (SWMU 2)

The 11 EPs (EP-2, EP-3, EP-4, EP-5, EP-6, EP-7, EP-8, EP-9, EP-11, EP-12A, and EP-12B) were an integral part of the Refinery's wastewater treatment system. Effluent from the Refinery's wastewater treatment system was directed to the ponds and allowed to evaporate. The total ponds area is approximately 115 acres.

2.2 Operational History

All ponds are man-made earthen basins with bermed sides and unlined natural high clay-content pond floors. The initial ponds (i.e., EP-2 through EP-9 [Giant 1985]) were constructed in the late 1950s, with additional ponds constructed at various times thereafter. The EPs were identified as SWMU 2 under the RCRA Permit.

2.3 Historical Site Investigations

The recommendation in the RCRA Facility Investigation was for No Further Action in SWMU 2 (Giant 1991). The investigation was completed in accordance with an approved work plan (AES 1989) and included soil samples were collected from 12 vertical and 6 angle excavations, with samples collected at 3.5 – 4.0 feet (ft) below ground surface (bgs), 5.0 – 5.5 ft bgs, and 6.5 – 7.0 ft bgs. This investigation resulted in the collected of 54 soil samples, excluding quality assurance/quality control (QA/QC) samples. Toluene and butyl benzyl phthalate were the only organic compounds detected. Eight metals exceeded background. The work plan did not include comparison to residential or industrial screening standards. The report was approved by the United States Environmental Protection Agency in January 1991 (USEPA 1991).

A prior evaporation pond closure plan was completed as required by Condition 27 of the Oil Conservation Division discharge permit, GW-32. The closure plan was submitted to NMED on January 22, 2008 (Western 2008), and NMED provided comments in a letter dated April 11, 2008 (NMED 2008). In their comments, NMED identified a general deficiency in the plan that soil data collected in the 1990s were too old and therefore not acceptable. In addition, NMED stated that the EPs must go through the RCRA corrective action process, as set forth in the New Mexico Administrative Code 20.4.2.7.

Significant findings from the 2007 closure plan include:

- Based on historical soil sampling and comparison to NMED soil screening levels (SSLs), no site remediation would be required for the EPs, except for crystallized salt removal from EP-8 and EP-9. The removal would involve excavating 2 ft of surface sediment with disposal at a local landfill permitted to handle chloride waste.
- Based on available groundwater data from monitoring wells installed at that time (BW-1C, BW-2A, BW-2B, BW-2C, BW-3B, and BW-3C) and vadose zone transport modeling, no excavation of the ponds would be required, except for EP-8 and EP-9 as noted above.
- Vadose zone modeling indicated a low potential for chloride migration.
- Additional soil sampling was recommended after the ponds dry out to confirm these conclusions.

The Refinery completed additional sampling in 2020 to provide a better understanding of current subsurface conditions. Preliminary sampling of the EPs took place from October 19 to October 22, 2020. Two borings were installed per pond, with the collection of a sediment sample and an underlying clay sample at each boring (Figure 2-1). Samples were collected using a hand auger or a sediment sampler. The underlying clay samples were collected from approximately six inches below the sediment/clay interface in each boring. The purpose of this preliminary sampling was to allow for a better assessment of the sediment depth, which was measured during sample collection. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) (Appendix A-1); SVOCs (Appendix A-2); total metals (Appendix A-3); and ammonia, bromide, chloride, TPH – DRO, total fluoride, TPH – GRO, nitrate, pH, total phosphorus, and sulfate (Appendix A-4). Additionally, BTEX, select SVOCs, and select total metals were analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) (Appendix A-5).

Analytical results were compared, where applicable, to the June 2019 NMED Residential, Construction Worker, and Industrial SSLs; Code of Federal Regulations Chapter 40 TCLP regulatory limits (NARA 2006); and the Alternate Beneficial Reuse Screening Concentration (ABRSC) for TPH-DRO, TPH-GRO, and chloride. Significant findings include:

1. BTEX results are below all of the applicable standards.
2. SVOC results were mostly non-detect. No detections exceeded applicable standards. Data quality exceptions, in which the reporting limit of a non-detect analytical result exceeds an applicable standard, were identified for the following analytes:
   a. Atrazine
   b. Benzo(a)anthracene
   c. Benzo(a)pyrene
   d. Benzo(b)fluoranthene
   e. Benzo(k)fluoranthene
   f. Bis(2-chloroethyl)ether
   g. Dibenz(a,h)anthracene
   h. 3,3'-Dichlorobenzidine
   i. 2,4-Dinitrotoluene
   j. 2,6-Dinitrotoluene
   k. Hexachlorobenzene
   l. Hexachlorocyclopentadiene
   m. Indeno(1,2,3-cd)pyrene
   n. Pentachlorophenol

3. NMED Construction Worker SSL exceedances were identified for total aluminum and total manganese. NMED Residential SSL exceedances were identified for total arsenic. No NMED Industrial SSL exceedances were identified for metals.
4. Chloride results exceeded the ABRSC in all but one sample.
5. There were multiple NMED Residential, Construction Worker, and Industrial SSL exceedances identified for TPH-DRO.
6. There was one NMED Residential SSL exceedance identified for TPH-GRO.
7. None of the TCLP results exceeded applicable TCLP regulatory limits.

Based on detected exceedances, total aluminum, total arsenic, chloride, total manganese, and TPH-DRO were identified as the primary constituents of concern.

3.0 Physical Setting

The Refinery is situated in the high desert plain on the western flank of the Continental Divide. The surrounding land is comprised primarily of public and private lands used for cattle and sheep grazing. Site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Surface vegetation consists of native xerophytic vegetation, including grasses, shrubs, small junipers, and prickly pear cacti. Average rainfall at the Refinery is less than 7 inches per year, although it can vary to slightly higher levels elsewhere in the county, depending on elevation. Erosion features such as arroyos are present in portions of the property.

3.1 Surface Conditions

Local site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the refinery property range from 6,860 ft above mean sea level (amsl) to 7,040 ft amsl. The area of the site near SWMU 2 is approximately at an elevation of 6,880 ft amsl.

3.2 Subsurface Conditions

The shallow subsurface soil consists of alluvium deposits comprised of clay and silt with some inter-bedded 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 bgs to over 32 ft bgs.

Fifteen boundary monitoring wells near SWMU 2 are shown on Figure 2-1. Wells BW-1A, BW-2A, BW-3A, BW-4A, and BW-5A are screened within the Upper Sand stratigraphic unit; BW-1B, BW-2B, BW-3B, BW-4B, and BW-5B are screened in the Chinle/Alluvium Interface stratigraphic unit; and BW-1C, BW-2C, BW-3C, and BW-5C are screened within the Sonsela stratigraphic unit located within the Chinle.

4.0 Scope of Activities

The investigative activities proposed in this Work Plan will be completed to better understand the impacts in SWMU 2 and further delineate the preliminary sampling that was conducted in 2020. Pending NMED approval, the Refinery anticipates investigation work to be completed during 2023 and an investigation report to be submitted within 180 days after data validation has been completed.

Samples will be collected with a hand auger at 48 locations within the SWMU 2 area (Figure 2-1). As shown on Figure 4-1, wastewater in the EPs has two primary flow paths:

1. EP-2 → EP-3 →EP-4 → EP-5 → EP-6 → EP-9
2. EP-2 → EP-12B → EP-12A →EP-11 →EP-7 → EP-8

Because of these flow paths, it is assumed that EP-2 will be the most impacted, and contamination will decrease in the downstream ponds (EP-8 and EP-9). Therefore, the proposed sampling methodology in this work plan includes sampling EP-2, EP-3, EP-4, EP-5, EP-11, EP-12A, and EP-12B using a 300 ft by 300 ft grid. The remaining ponds (EP-6, EP-7, EP-8, and EP-9) will be sampled using a 500 ft by 500 ft grid.

Analytical samples will be collected from two intervals: the sediment and the clay underneath the sediment. Samples will be field screened using a FID and the results will be recorded on the field forms. Samples will be collected and analyzed using methods detailed in Sections 5.1 and 5.2. All samples will be analyzed for VOCs by Method 8260; SVOCs by Method 8270; total metals by Method 6010; total mercury by Method 7471; TPH-DRO by Method 8015D; TPH-GRO by Method 8015C; nitrate, chloride, fluoride, and sulfate by Method 9056; total phosphorus by Method 365.4; and ammonia for Method 350.1. Additionally, one composite sediment sample will be collected from each EP and analyzed for VOCs, SVOCs, total metals, and chloride using the SPLP (Method 1312). In addition to the composite sediment sample, individual aliquots will be submitted to the laboratory and held for analysis depending upon on the composite sample results. Aliquot analysis will only be performed if regulatory exceedances are identified for the composite sample.

The results from this investigation will be used to evaluate appropriate future remedies. Analytical results will be compared to the most recent applicable NMED Residential, Industrial, and Construction Worker SSLs. All samples will be compared to Residential SSLs. The Industrial SSLs will be utilized for soils collected from 0 to 1 ft bgs. Soil samples with depths greater than 1 ft bgs will be compared to the Construction Worker SSLs.

5.0 Investigation Methods

Soils 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). Samples will be field screened using a FID, and results will be recorded on the field forms. Additional details regarding the proposed sampling are provided below.

5.1 Soil Sample Collection Procedures

Soil 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 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, sample start and end 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. All reusable sampling equipment will be decontaminated prior to installing a boring and collecting a new sample. All equipment will be decontaminated with Simple Green™ (or equivalent) using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses and recorded in the field logbook.

FID readings and analytical samples will be collected at the intervals proposed below. Aliquot #1 will be placed into a plastic bag and used for FID screening. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis. Aliquot #1 materials will not be submitted for laboratory analysis.

Aliquot #1 will be shaken gently to expose the soil to the air trapped in the container and will be allowed to rest while vapors equilibrate. Headspace vapors will be measured by inserting the probe of the FID in a small opening in Aliquot #1's plastic bag. The maximum value and the ambient air temperature 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.

Samples will be selected from the sediment layer and the clay layer. Specific depths of each sample will be recorded on the field forms. Aliquot #2 materials from the selected depths will be transferred into the appropriate sample container, labeled, and placed in a cooler containing bagged ice. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody (COC) form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory.

A summary of the proposed soil sampling activities is provided below:

1. Completion of 48 hand auger locations, visual screening/logging, and collection of samples.
2. Collection of FID readings at the sample intervals
3. Collection of analytical samples from:
    - The sediment layer
    - The clay layer
4. Submit samples to an accredited laboratory. Samples will be analyzed for the constituents outlined in Section 4.0.
5. Compare analytical soil data with applicable NMED Residential, Construction Worker, and Industrial SSLs.

5.2 Data Quality and Validation

QA/QC samples will be collected during sampling to monitor the validity of the sample collection procedures. Blind duplicates will be collected by homogenizing enough material to collect two separate samples. The blind duplicate parent sample will be recorded in field forms, but not on the COC. Field duplicates will be collected at a rate of 10 percent (%) or at a minimum of 1 per day.

Equipment blanks will be collected at a rate of one per sampling day if disposable sampling equipment is used. Equipment blank samples will be generated by rinsing deionized water through unused or decontaminated sampling equipment. The collected deionized water will be placed in the appropriate sample container and submitted with the samples to the analytical laboratory for the appropriate analyses. Equipment blanks will be collected from re-usable equipment at a rate of 20% or at a minimum of 1 per day.

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 samples. QA/QC samples will be recorded on the field forms and the COCs. All data will undergo Tier II data validation.

COC and shipment procedures will include the following:

- COC will be completed at the end of each sampling day, prior to the transfer of samples off site.
- Individual sample containers will be packed to prevent breakage and transported in a sealed cooler with ice, or suitable coolant/other industry-wide accepted method. The drainage hole at the bottom of the cooler will be sealed, and temperature blanks will be included with each shipping container.
- Each cooler will be delivered directly to the analytical laboratory.

- Glass bottles will be separated in the shipping container by cushioning material, and plastic containers will be protected from possible puncture using cushioning material to prevent breakage.
- The COC and sample request form will be shipped inside the sealed storage container to be delivered to the laboratory.
- Signed and dated custody seals will be used to seal the sample-shipping containers prior to transport in conformance with United States Environmental Protection Agency protocol.
- Upon receipt of the samples at the laboratory, the custody seals will be broken, COCs signed as received, and condition of the samples recorded.
- The original COC will remain with the laboratory, and copies will be returned to the relinquishing party and be maintained on-site.

5.3 Data Evaluation and Waste Management

All analytical results will be compared to applicable NMED Residential SSLs. Analytical results from soils collected from 0-1 ft bgs will be compared to applicable NMED Industrial SSLs. Analytical results from soils collected from below 1 ft bgs will be compared to applicable NMED Construction Worker 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 by Method 8260, SVOCs by Method 8270, and RCRA 8 Metals by Method 6010. Any wastes determined to be hazardous will be disposed of accordingly.

6.0 Schedule

Pending NMED approval, the Refinery anticipates the investigation to be completed during the summer of 2023. Once the investigation has been completed, the Refinery will prepare an investigation report summarizing the sampling results and investigation conclusions within 180 days of the completion of data validation.

7.0 References

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Giant Refining Company (Giant). 1985. Appendix I of Part B Permit Application, Inventory of Solid Waste Management Units, Giant Refining Company, A Division of Giant Industries, Inc., Ciniza Refinery, Gallup, New Mexico. June 14.

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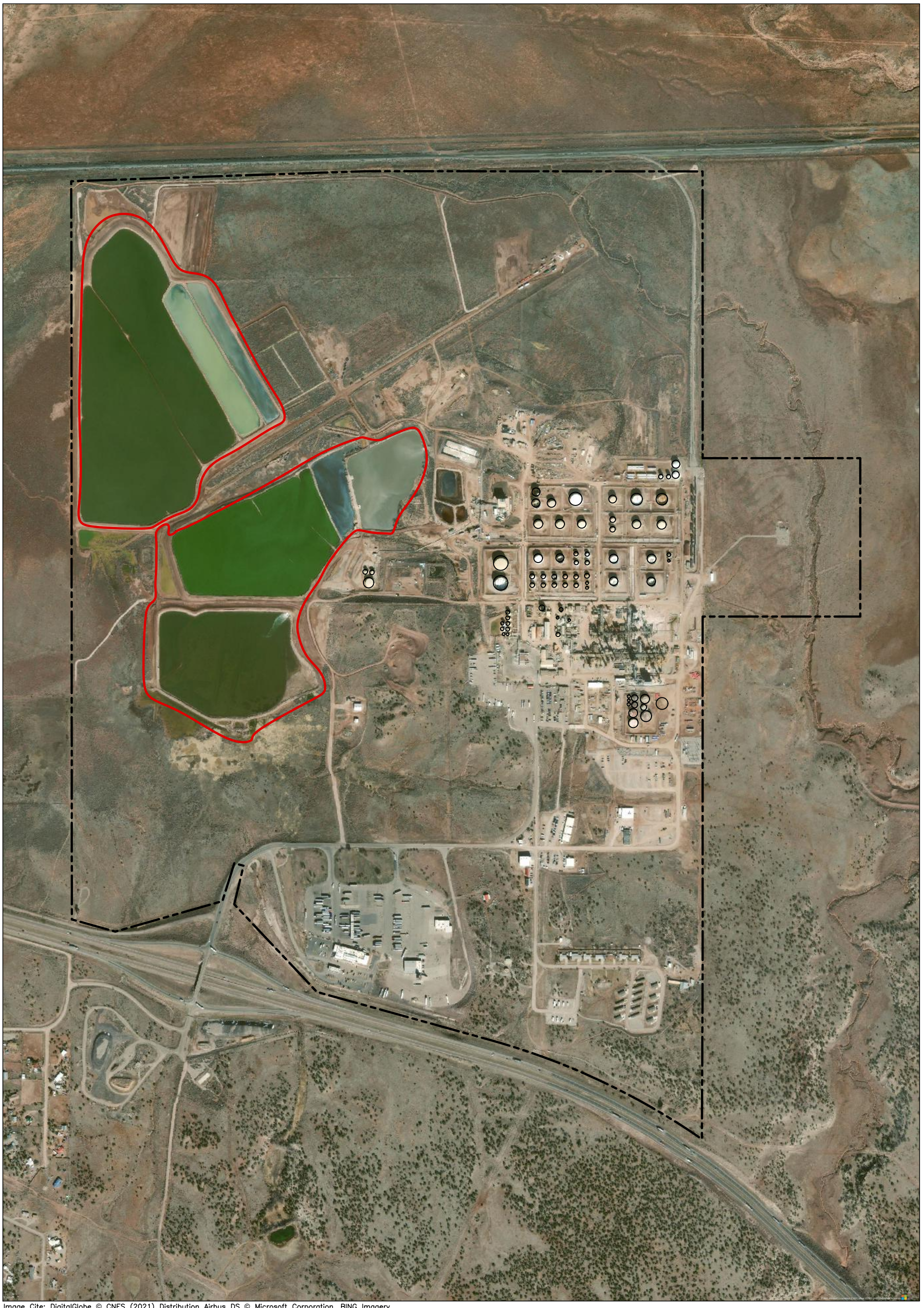
Figures



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EXPLANATION

- PROPERTY BOUNDARY (APPROXIMATE)
- SWMU 2 BOUNDARY
- TANK
- SWMU — SOLID WASTE MANAGEMENT UNIT

N

0 800'

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

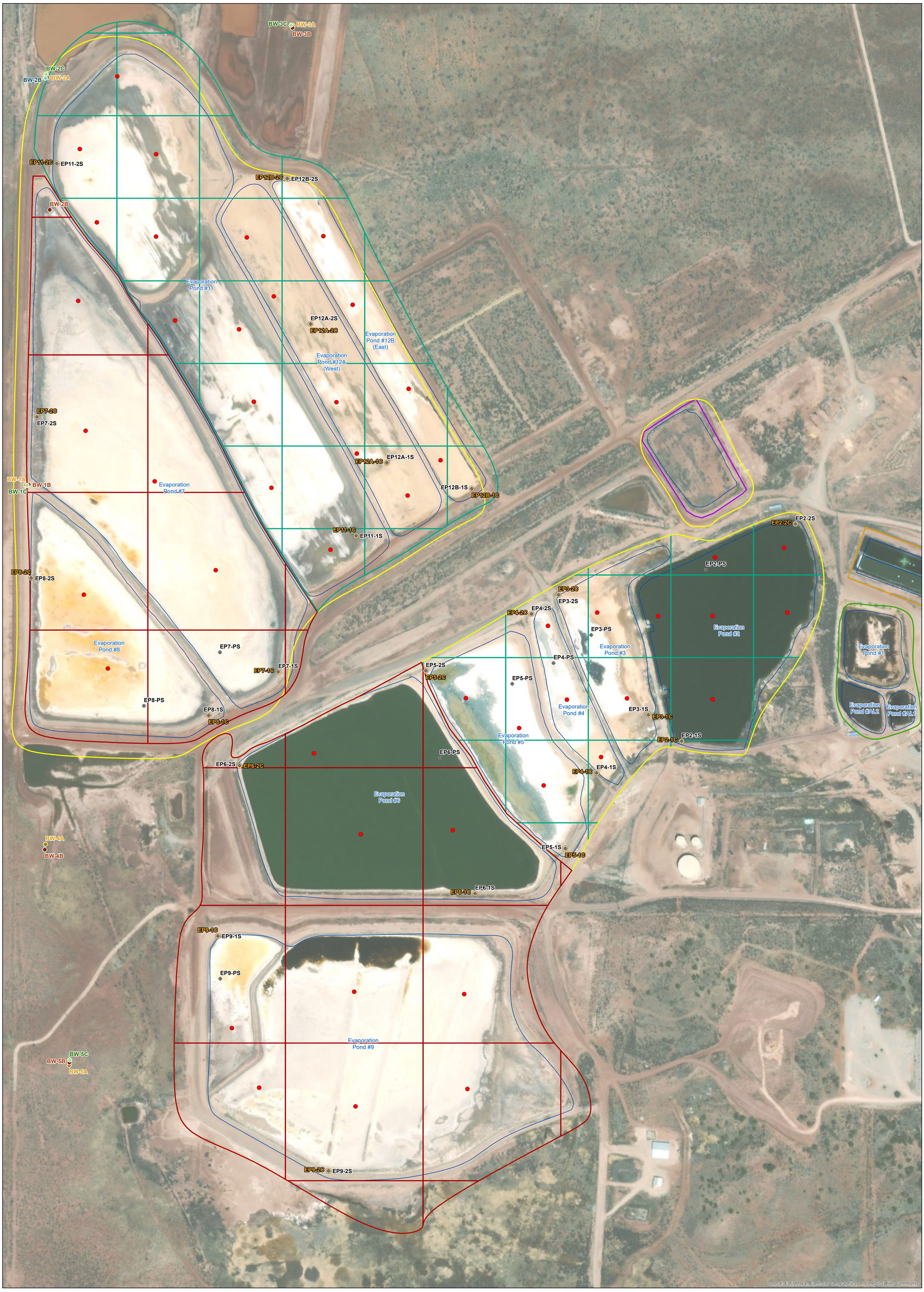
FIGURE 1-1

SITE LOCATION
SWMU 2 INVESTIGATION WORK PLAN

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

Drawn By: REP	Checked By: EC	Scale: 1" = 800'	Date: 1/10/23	File: 697-SWMU2-SITELOC-2023

\\TRIHYDRO.COM\CLIENTS\ITON\MARATHON\CADD\GALLUP_REPORTS\SWMU\SWMU2_EVAPPONDS\202305_INVESTWP\697-SWMU2-SITELOC-2023



EXPLANATION

- PROPOSED SAMPLE LOCATION
- POND SEDIMENT SAMPLE (OCTOBER 2020)
- SUBSURFACE CLAY SAMPLE (OCTOBER 2020)

MONITORING WELL

- ALLUVIAL INTERFACE WELL
- CHINLE INTERFACE WELL
- CHINLE/ALLUVIUM INTERFACE WELL
- SONSELA MEMBER WELL

- AERATION BASIS
- CENTRAL OCD LANDFARM
- SWMU 1
- SWMU 2
- EVAPORATION POND
- 300 FT GRID
- 500 FT GRID

NOTES:

1. OCD - OIL CONSERVATION DIVISION
2. SWMU - SOLID WASTE MANAGEMENT UNIT

N

0 150 300'

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

FIGURE 2-1

HISTORIC AND PROPOSED SAMPLE LOCATIONS SWMU 2 INVESTIGATION WORK PLAN

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

Drawn By: AML	Checked By: EC	Scale: 1 " = 150 '	Date: 2/11/23	File: 2-1_HistPropLocs_Fig2-1.mxd

EVAPORATION POND #12B
EVAPORATION POND #12B (EAST)
EVAPORATION POND #12A (WEST)
EVAPORATION POND #11
EVAPORATION POND #7
EVAPORATION POND #8
EVAPORATION POND #2
EVAPORATION POND #1
EVAPORATION POND #3
EVAPORATION POND #AL2
EVAPORATION POND #AL1
EVAPORATION POND #4
EVAPORATION POND #5
EVAPORATION POND #6
EVAPORATION POND #9

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

EXPLANATION

- FLOW DIRECTION
- APPROXIMATE LOCATION OF UNDERGROUND PIPES

N

0 150 300'

Trihydro CORPORATION

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

FIGURE 4-1

WASTEWATER FLOW PATH
SWMU 2 INVESTIGATION WORK PLAN

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

Drawn By: AML	Checked By: EC	Scale: 1 " = 150 '	Date: 1/30/23	File: 4-1_WWFlowPath_Fig4-1.mxd

Appendix A – Historic Data

Appendix A-1 – Volatile Organic Compounds Data Summary

Appendix A-2 – Semi-volatile Organic Compounds Data Summary

Appendix A-3 – Metals Data Summary

Appendix A-4 – General Chemistry Data Summary

Appendix A-5 – TCLP Data Summary

Appendix A-1 – Volatile Organic Compounds Data Summary

APPENDIX A-1. VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Toluene (mg/kg)	Xylenes, Total (mg/kg)
EP2-1C	10/22/20	ND(0.0027)	0.0354	0.0237	0.204
EP2-1S	10/22/20	ND(0.578)	ND(0.578)	ND(0.578)	1.83
EP2-2C	10/22/20	ND(0.0035)	ND(0.0035)	ND(0.0035)	ND(0.00699)
EP2-2S	10/22/20	ND(0.00456)	ND(0.00456)	ND(0.00456)	ND(0.00912)
EP2-PS	10/20/20	ND(1.48)	ND(1.48)	ND(1.48)	ND(2.95)
EP3-1C	10/22/20	ND(0.347)	0.683	ND(0.347)	1.32
EP3-1S	10/22/20	ND(0.00513)	ND(0.00513)	ND(0.00513)	ND(0.0103)
EP3-2C	10/22/20	ND(0.00372)	ND(0.00372)	ND(0.00372)	ND(0.00744)
EP3-2S	10/22/20	ND(0.00496)	ND(0.00496)	ND(0.00496)	ND(0.00993)
EP3-PS	10/20/20	ND(0.0124)	0.0364	0.0319	0.181
EP4-1C	10/22/20	ND(0.00423)	ND(0.00423)	ND(0.00423)	ND(0.00845)
EP4-1S	10/22/20	ND(0.00597)	ND(0.00597)	ND(0.00597)	ND(0.0119)
EP4-2C	10/22/20	ND(0.00427)	ND(0.00427)	ND(0.00427)	ND(0.00855)
EP4-2S	10/22/20	ND(0.0085)	ND(0.0085)	ND(0.0085)	ND(0.017)
EP4-PS	10/20/20	ND(0.0152)	ND(0.0152)	ND(0.0152)	ND(0.0303)
EP5-1C	10/22/20	ND(0.00297)	ND(0.00297)	ND(0.00297)	ND(0.00595)
EP5-1S	10/22/20	ND(0.00398)	ND(0.00398)	ND(0.00398)	ND(0.00796)
EP5-2C	10/22/20	ND(0.00347)	ND(0.00347)	ND(0.00347)	ND(0.00694)
EP5-2S	10/22/20	ND(0.00748)	ND(0.00748)	ND(0.00748)	ND(0.015)
EP5-PS	10/20/20	ND(0.0115)	ND(0.0115)	ND(0.0115)	ND(0.023)
EP6-1C	10/22/20	ND(0.00311)	ND(0.00311)	ND(0.00311)	ND(0.00622)
EP6-1S	10/22/20	ND(0.00742)	ND(0.00742)	ND(0.00742)	ND(0.0148)
EP6-2C	10/22/20	ND(0.00367)	ND(0.00367)	ND(0.00367)	ND(0.00734)
EP6-2S	10/22/20	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00784)
EP6-PS	10/20/20	ND(0.00819)	ND(0.00819)	ND(0.00819)	ND(0.0164)
EP7-1C	10/21/20	ND(0.00296)	ND(0.00296)	ND(0.00296)	ND(0.00592)
EP7-1S	10/21/20	ND(0.00454)	ND(0.00454)	ND(0.00454)	ND(0.00907)
EP7-2C	10/21/20	0.00426	ND(0.00293)	0.00448	ND(0.00586)
EP7-2S	10/21/20	0.00462	ND(0.00451)	ND(0.00451)	ND(0.00902)
EP7-PS	10/21/20	ND(0.0031)	ND(0.0031)	ND(0.0031)	ND(0.0062)
EP8-1C	10/21/20	ND(0.0055)	ND(0.0055)	ND(0.0055)	ND(0.011)
EP8-1S	10/21/20	ND(0.00401)	ND(0.00401)	ND(0.00401)	ND(0.00802)
EP8-2C	10/21/20	0.00315	ND(0.00268)	ND(0.00268)	ND(0.00537)
EP8-2S	10/21/20	ND(0.00416)	ND(0.00416)	ND(0.00416)	ND(0.00833)
EP9-1C	10/22/20	ND(0.00426)	ND(0.00426)	ND(0.00426)	ND(0.00853)
EP9-1S	10/22/20	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00729)
EP9-1S Dup	10/22/20	ND(0.0036)	ND(0.0036)	ND(0.0036)	ND(0.0072)
EP9-2C	10/22/20	ND(0.00367)	ND(0.00367)	ND(0.00367)	ND(0.00735)
EP9-2S	10/22/20	ND(0.00447)	ND(0.00447)	ND(0.00447)	ND(0.00895)
EP9-PS	10/20/20	ND(0.00691)	ND(0.00691)	ND(0.00691)	ND(0.0138)
EP9-PS Dup	10/20/20	ND(1.25)	ND(1.25)	ND(1.25)	ND(2.5)
EP11-1C	10/21/20	0.00515	ND(0.00356)	ND(0.00356)	ND(0.00712)
EP11-1S	10/21/20	ND(0.00372)	ND(0.00372)	ND(0.00372)	ND(0.00744)
EP11-2C	10/21/20	ND(0.00381)	ND(0.00381)	ND(0.00381)	ND(0.00762)
EP11-2S	10/21/20	ND(0.0064)	ND(0.0064)	ND(0.0064)	ND(0.0128)
EP12A-1C	10/19/20	ND(0.00433)	ND(0.00433)	ND(0.00433)	ND(0.00865)
EP12A-1S	10/19/20	ND(0.00444)	ND(0.00444)	ND(0.00444)	ND(0.00889)
EP12A-1S Dup	10/19/20	ND(0.00598)	ND(0.00598)	ND(0.00598)	ND(0.012)
EP12A-2C	10/19/20	ND(0.00375)	ND(0.00375)	ND(0.00375)	ND(0.0075)
EP12A-2S	10/19/20	ND(0.00474)	ND(0.00474)	ND(0.00474)	ND(0.00947)
EP12B-1C	10/21/20	0.00392	ND(0.00378)	ND(0.00378)	ND(0.00757)
EP12B-1S	10/21/20	ND(0.00573)	ND(0.00573)	ND(0.00573)	ND(0.0115)
EP12B-2C	10/21/20	ND(0.00409)	ND(0.00409)	ND(0.00409)	ND(0.00817)
EP12B-2S	10/21/20	ND(0.00541)	ND(0.00541)	ND(0.00541)	ND(0.0108)
NMED Residential SSL (June 2019)		17.8	75.1	5,230	871
NMED Construction Worker SSL (June 2019)		423	1,770	14,000	798
NMED Industrial SSL (June 2019)		87.2	368	61,340	4,275

C - Clay sample
Dup - Duplicate sample
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
Nov - November
P - Pond sample
RSL - Regional screening level
S - Sediment sample
SSL - Soil screening level
SWMU - Solid Waste Management Unit

Appendix A-2 – Semi-volatile Organic Compounds Data Summary

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Acetophenone (mg/kg)	Anthracene (mg/kg)	Atrazine (mg/kg)	Benzaldehyde (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Biphenyl (mg/kg)	Bis(2chloroethoxy)methane (mg/kg)	Bis(2-chloroethyl)ether (mg/kg)
EP2-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)
EP2-1S	10/22/20	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	*ND(2.72)*	*ND(2.72)*	*ND(2.72)*	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)
EP2-2C	10/22/20	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)
EP2-2S	10/22/20	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)
EP2-PS	10/20/20	ND(19.7)	ND(19.7)	ND(19.7)	24	ND(19.7)	ND(19.7)	*ND(19.7)*	*ND(19.7)*	*ND(19.7)*	ND(19.7)	*ND(19.7)*	ND(19.7)	ND(19.7)	***ND(19.7)***
EP3-1C	10/22/20	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)
EP3-1S	10/22/20	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)
EP3-2C	10/22/20	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	*ND(2.13)*	*ND(2.13)*	*ND(2.13)*	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)
EP3-2S	10/22/20	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	*ND(2.4)*	*ND(2.4)*	*ND(2.4)*	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)
EP3-PS	10/20/20	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	*ND(13)*	*ND(13)*	*ND(13)*	ND(13)	ND(13)	ND(13)	ND(13)	*ND(13)*
EP4-1C	10/22/20	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)
EP4-1S	10/22/20	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	*ND(2.97)*	*ND(2.97)*	*ND(2.97)*	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)
EP4-2C	10/22/20	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)
EP4-2S	10/22/20	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	*ND(3.45)*	*ND(3.45)*	*ND(3.45)*	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	*ND(3.45)*
EP4-PS	10/20/20	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	*ND(11.5)*	*ND(11.5)*	*ND(11.5)*	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	*ND(11.5)*
EP5-1C	10/22/20	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)
EP5-1S	10/22/20	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)
EP5-2C	10/22/20	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)
EP5-2S	10/22/20	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)
EP5-PS	10/20/20	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	*ND(7.72)*	*ND(7.72)*	*ND(7.72)*	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	*ND(7.72)*
EP6-1C	10/22/20	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	*ND(2.1)*	*ND(2.1)*	*ND(2.1)*	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)
EP6-1S	10/22/20	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)
EP6-2C	10/22/20	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)
EP6-2S	10/22/20	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	*ND(2.16)*	*ND(2.16)*	*ND(2.16)*	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)
EP6-PS	10/20/20	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	*ND(6.59)*	*ND(6.59)*	*ND(6.59)*	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	*ND(6.59)*
EP7-1C	10/21/20	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)
EP7-1S	10/21/20	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	*ND(2.58)*	*ND(2.58)*	*ND(2.58)*	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)
EP7-2C	10/21/20	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	*ND(1.91)*	*ND(1.91)*	*ND(1.91)*	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)
EP7-2S	10/21/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	*ND(2.33)*	*ND(2.33)*	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP7-PS	10/21/20	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)
EP8-1C	10/21/20	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	*ND(2.35)*	*ND(2.35)*	*ND(2.35)*	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)
EP8-1S	10/21/20	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	*ND(2.32)*	*ND(2.32)*	*ND(2.32)*	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)
EP8-2C	10/21/20	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	*ND(1.83)*	*ND(1.83)*	*ND(1.83)*	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)
EP8-2S	10/21/20	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	*ND(2.31)*	*ND(2.31)*	*ND(2.31)*	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)
EP9-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)
EP9-1S	10/22/20	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)
EP9-1S Dup	10/22/20	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)
EP9-2C	10/22/20	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)
EP9-2S	10/22/20	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)
EP9-PS	10/20/20	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	*ND(6.39)*	*ND(6.39)*	*ND(6.39)*	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	*ND(6.39)*
EP9-PS Dup	10/20/20	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	*ND(32.9)*	ND(32.9)	***ND(32.9)***	***ND(32.9)***	***ND(32.9)***	ND(32.9)	*ND(32.9)*	ND(32.9)	ND(32.9)	***ND(32.9)***
EP10-1C	10/19/20	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)
EP10-1S	10/19/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	*ND(1.69)*	*ND(1.69)*	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP10-2C	10/21/20	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	*ND(1.88)*	*ND(1.88)*	*ND(1.88)*	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)
EP10-2S	10/21/20	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	*ND(1.72)*	*ND(1.72)*	*ND(1.72)*	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)
EP10-2S Dup	10/21/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	*ND(1.69)*	*ND(1.69)*	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP11-1C	10/21/20	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)
EP11-1S	10/21/20	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)
EP11-2C	10/21/20	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	*ND(2.18)*	*ND(2.18)*	*ND(2.18)*	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-ethylhexyl)phthalate (mg/kg)	4-Bromo-phenyl-phenylether (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Caprolactam (mg/kg)	Carbazole (mg/kg)	4-Chloro-3-Methyl phenol (mg/kg)	4-Chloro-aniline (mg/kg)	2-Chloronaphthalene (mg/kg)	2-Chlorophenol (mg/kg)	4-Chloro-phenyl-phenylether (mg/kg)	Chrysene (mg/kg)
EP2-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)
EP2-1S	10/22/20	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)
EP2-2C	10/22/20	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)
EP2-2S	10/22/20	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)
EP2-PS	10/20/20	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	23
EP3-1C	10/22/20	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)
EP3-1S	10/22/20	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)
EP3-2C	10/22/20	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)
EP3-2S	10/22/20	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)
EP3-PS	10/20/20	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)
EP4-1C	10/22/20	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)
EP4-1S	10/22/20	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)
EP4-2C	10/22/20	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)
EP4-2S	10/22/20	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)
EP4-PS	10/20/20	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)
EP5-1C	10/22/20	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)
EP5-1S	10/22/20	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)
EP5-2C	10/22/20	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)
EP5-2S	10/22/20	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)
EP5-PS	10/20/20	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)
EP6-1C	10/22/20	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)
EP6-1S	10/22/20	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)
EP6-2C	10/22/20	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)
EP6-2S	10/22/20	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)
EP6-PS	10/20/20	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)
EP7-1C	10/21/20	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)
EP7-1S	10/21/20	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)
EP7-2C	10/21/20	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)
EP7-2S	10/21/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP7-PS	10/21/20	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)
EP8-1C	10/21/20	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)
EP8-1S	10/21/20	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)
EP8-2C	10/21/20	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)
EP8-2S	10/21/20	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)
EP9-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)
EP9-1S	10/22/20	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)
EP9-1S Dup	10/22/20	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)
EP9-2C	10/22/20	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)
EP9-2S	10/22/20	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)
EP9-PS	10/20/20	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)
EP9-PS Dup	10/20/20	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)
EP10-1C	10/19/20	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)
EP10-1S	10/19/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP10-2C	10/21/20	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)
EP10-2S	10/21/20	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)
EP10-2S Dup	10/21/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP11-1C	10/21/20	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)
EP11-1S	10/21/20	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)
EP11-2C	10/21/20	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)

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Location ID	Date Sampled	Dibenz(a,h)anthracene (mg/kg)	Dibenzo-furan (mg/kg)	3,3'-Dichlorobenzidine (mg/kg)	2,4-Dichlorophenol (mg/kg)	Diethylphthalate (mg/kg)	2,4-Dimethylphenol (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	2-Methyl-4,6-dinitro phenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)
EP2-1C	10/22/20	*ND(0.449)*	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(1.35)	ND(0.449)	ND(0.449)
EP2-1S	10/22/20	*ND(2.72)*	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(8.15)	ND(2.72)	ND(2.72)
EP2-2C	10/22/20	*ND(0.811)*	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(2.43)	ND(0.811)	ND(0.811)
EP2-2S	10/22/20	*ND(0.963)*	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(2.89)	ND(0.963)	ND(0.963)
EP2-PS	10/20/20	***ND(19.7)***	ND(19.7)	*ND(19.7)*	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(59.2)	*ND(19.7)*	***ND(19.7)***
EP3-1C	10/22/20	*ND(0.476)*	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(1.43)	ND(0.476)	ND(0.476)
EP3-1S	10/22/20	*ND(1.02)*	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(3.06)	ND(1.02)	ND(1.02)
EP3-2C	10/22/20	*ND(2.13)*	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(6.4)	ND(2.13)	ND(2.13)
EP3-2S	10/22/20	*ND(2.4)*	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(7.21)	ND(2.4)	ND(2.4)
EP3-PS	10/20/20	***ND(13)***	ND(13)	*ND(13)*	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(38.9)	ND(13)	*ND(13)*
EP4-1C	10/22/20	*ND(0.845)*	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(2.54)	ND(0.845)	ND(0.845)
EP4-1S	10/22/20	*ND(2.97)*	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(8.92)	ND(2.97)	ND(2.97)
EP4-2C	10/22/20	*ND(0.482)*	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(1.45)	ND(0.482)	ND(0.482)
EP4-2S	10/22/20	***ND(3.45)***	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(10.3)	ND(3.45)	ND(3.45)
EP4-PS	10/20/20	***ND(11.5)***	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(34.4)	ND(11.5)	*ND(11.5)*
EP5-1C	10/22/20	*ND(0.391)*	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(1.17)	ND(0.391)	ND(0.391)
EP5-1S	10/22/20	*ND(0.921)*	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(2.76)	ND(0.921)	ND(0.921)
EP5-2C	10/22/20	*ND(0.447)*	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(1.34)	ND(0.447)	ND(0.447)
EP5-2S	10/22/20	*ND(0.454)*	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(1.36)	ND(0.454)	ND(0.454)
EP5-PS	10/20/20	***ND(7.72)***	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(23.2)	ND(7.72)	*ND(7.72)*
EP6-1C	10/22/20	*ND(2.1)*	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(6.31)	ND(2.1)	ND(2.1)
EP6-1S	10/22/20	*ND(0.45)*	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(1.35)	ND(0.45)	ND(0.45)
EP6-2C	10/22/20	*ND(0.394)*	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(1.18)	ND(0.394)	ND(0.394)
EP6-2S	10/22/20	*ND(2.16)*	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(6.48)	ND(2.16)	ND(2.16)
EP6-PS	10/20/20	***ND(6.59)***	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(19.8)	ND(6.59)	*ND(6.59)*
EP7-1C	10/21/20	*ND(0.398)*	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(1.19)	ND(0.398)	ND(0.398)
EP7-1S	10/21/20	*ND(2.58)*	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(7.73)	ND(2.58)	ND(2.58)
EP7-2C	10/21/20	*ND(1.91)*	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(5.73)	ND(1.91)	ND(1.91)
EP7-2S	10/21/20	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(7)	ND(2.33)	ND(2.33)
EP7-PS	10/21/20	*ND(0.347)*	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(1.04)	ND(0.347)	ND(0.347)
EP8-1C	10/21/20	*ND(2.35)*	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(7.06)	ND(2.35)	ND(2.35)
EP8-1S	10/21/20	*ND(2.32)*	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(6.95)	ND(2.32)	ND(2.32)
EP8-2C	10/21/20	*ND(1.83)*	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(5.5)	ND(1.83)	ND(1.83)
EP8-2S	10/21/20	*ND(2.31)*	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(6.92)	ND(2.31)	ND(2.31)
EP9-1C	10/22/20	*ND(0.449)*	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(1.35)	ND(0.449)	ND(0.449)
EP9-1S	10/22/20	*ND(0.407)*	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(1.22)	ND(0.407)	ND(0.407)
EP9-1S Dup	10/22/20	*ND(0.385)*	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(1.16)	ND(0.385)	ND(0.385)
EP9-2C	10/22/20	*ND(0.4)*	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(1.2)	ND(0.4)	ND(0.4)
EP9-2S	10/22/20	*ND(0.363)*	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(1.09)	ND(0.363)	ND(0.363)
EP9-PS	10/20/20	***ND(6.39)***	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(19.2)	ND(6.39)	*ND(6.39)*
EP9-PS Dup	10/20/20	***ND(32.9)***	ND(32.9)	*ND(32.9)*	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(98.8)	*ND(32.9)*	***ND(32.9)***
EP10-1C	10/19/20	*ND(0.513)*	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(1.54)	ND(0.513)	ND(0.513)
EP10-1S	10/19/20	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(5.06)	ND(1.69)	ND(1.69)
EP10-2C	10/21/20	*ND(1.88)*	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(5.65)	ND(1.88)	ND(1.88)
EP10-2S	10/21/20	*ND(1.72)*	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(5.17)	ND(1.72)	ND(1.72)
EP10-2S Dup	10/21/20	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(5.08)	ND(1.69)	ND(1.69)
EP11-1C	10/21/20	*ND(0.413)*	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(1.24)	ND(0.413)	ND(0.413)
EP11-1S	10/21/20	*ND(0.758)*	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(2.27)	ND(0.758)	ND(0.758)
EP11-2C	10/21/20	*ND(2.18)*	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(6.53)	ND(2.18)	ND(2.18)

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)	Hexachlorobutadiene (mg/kg)	Hexachlorocyclopentadiene (mg/kg)	Hexachloroethane (mg/kg)	Indeno-(1,2,3-cd)pyrene (mg/kg)	Isophorone (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methyl phenol (mg/kg)	3,4-Methyl phenol (mg/kg)	Naphthalene (mg/kg)
EP2-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.897)	ND(0.449)
EP2-1S	10/22/20	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	*ND(2.72)*	ND(2.72)	*ND(2.72)*	ND(2.72)	ND(2.72)	ND(2.72)	ND(5.43)	ND(2.72)
EP2-2C	10/22/20	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(1.62)	ND(0.811)
EP2-2S	10/22/20	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(1.93)	ND(0.963)
EP2-PS	10/20/20	ND(19.7)	ND(19.7)	ND(19.7)	***ND(19.7)***	ND(19.7)	*ND(19.7)*	ND(19.7)	*ND(19.7)*	ND(19.7)	57.5	ND(19.7)	ND(39.5)	ND(19.7)
EP3-1C	10/22/20	ND(0.476)	ND(0.476)	0.921	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.952)	ND(0.476)
EP3-1S	10/22/20	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(2.04)	ND(1.02)
EP3-2C	10/22/20	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	*ND(2.13)*	ND(2.13)	ND(2.13)	ND(2.13)	ND(4.27)	ND(2.13)
EP3-2S	10/22/20	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	*ND(2.4)*	ND(2.4)	*ND(2.4)*	ND(2.4)	ND(2.4)	ND(2.4)	ND(4.81)	ND(2.4)
EP3-PS	10/20/20	ND(13)	ND(13)	ND(13)	*ND(13)*	ND(13)	*ND(13)*	ND(13)	*ND(13)*	ND(13)	ND(13)	ND(13)	ND(25.9)	ND(13)
EP4-1C	10/22/20	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(1.69)	ND(0.845)
EP4-1S	10/22/20	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	*ND(2.97)*	ND(2.97)	*ND(2.97)*	ND(2.97)	ND(2.97)	ND(2.97)	ND(5.95)	ND(2.97)
EP4-2C	10/22/20	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.965)	ND(0.482)
EP4-2S	10/22/20	ND(3.45)	ND(3.45)	ND(3.45)	*ND(3.45)*	ND(3.45)	*ND(3.45)*	ND(3.45)	*ND(3.45)*	ND(3.45)	ND(3.45)	ND(3.45)	ND(6.9)	ND(3.45)
EP4-PS	10/20/20	ND(11.5)	ND(11.5)	ND(11.5)	*ND(11.5)*	ND(11.5)	*ND(11.5)*	ND(11.5)	*ND(11.5)*	ND(11.5)	ND(11.5)	ND(11.5)	ND(22.9)	ND(11.5)
EP5-1C	10/22/20	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.782)	ND(0.391)
EP5-1S	10/22/20	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(1.84)	ND(0.921)
EP5-2C	10/22/20	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.894)	ND(0.447)
EP5-2S	10/22/20	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.907)	ND(0.454)
EP5-PS	10/20/20	ND(7.72)	ND(7.72)	ND(7.72)	*ND(7.72)*	ND(7.72)	*ND(7.72)*	ND(7.72)	*ND(7.72)*	ND(7.72)	ND(7.72)	ND(7.72)	ND(15.4)	ND(7.72)
EP6-1C	10/22/20	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	*ND(2.1)*	ND(2.1)	ND(2.1)	ND(2.1)	ND(4.21)	ND(2.1)
EP6-1S	10/22/20	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.9)	ND(0.45)
EP6-2C	10/22/20	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.788)	ND(0.394)
EP6-2S	10/22/20	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	*ND(2.16)*	ND(2.16)	ND(2.16)	ND(2.16)	ND(4.32)	ND(2.16)
EP6-PS	10/20/20	ND(6.59)	ND(6.59)	ND(6.59)	*ND(6.59)*	ND(6.59)	*ND(6.59)*	ND(6.59)	*ND(6.59)*	ND(6.59)	ND(6.59)	ND(6.59)	ND(13.2)	ND(6.59)
EP7-1C	10/21/20	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.795)	ND(0.398)
EP7-1S	10/21/20	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	*ND(2.58)*	ND(2.58)	*ND(2.58)*	ND(2.58)	ND(2.58)	ND(2.58)	ND(5.16)	ND(2.58)
EP7-2C	10/21/20	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	*ND(1.91)*	ND(1.91)	ND(1.91)	ND(1.91)	ND(3.82)	ND(1.91)
EP7-2S	10/21/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	*ND(2.33)*	ND(2.33)	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(4.67)	ND(2.33)
EP7-PS	10/21/20	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.694)	ND(0.347)
EP8-1C	10/21/20	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	*ND(2.35)*	ND(2.35)	*ND(2.35)*	ND(2.35)	ND(2.35)	ND(2.35)	ND(4.71)	ND(2.35)
EP8-1S	10/21/20	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	*ND(2.32)*	ND(2.32)	*ND(2.32)*	ND(2.32)	ND(2.32)	ND(2.32)	ND(4.64)	ND(2.32)
EP8-2C	10/21/20	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	*ND(1.83)*	ND(1.83)	ND(1.83)	ND(1.83)	ND(3.67)	ND(1.83)
EP8-2S	10/21/20	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	*ND(2.31)*	ND(2.31)	*ND(2.31)*	ND(2.31)	ND(2.31)	ND(2.31)	ND(4.61)	ND(2.31)
EP9-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	1.13	ND(0.449)
EP9-1S	10/22/20	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.815)	ND(0.407)
EP9-1S Dup	10/22/20	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.771)	ND(0.385)
EP9-2C	10/22/20	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.799)	ND(0.4)
EP9-2S	10/22/20	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.726)	ND(0.363)
EP9-PS	10/20/20	ND(6.39)	ND(6.39)	ND(6.39)	*ND(6.39)*	ND(6.39)	*ND(6.39)*	ND(6.39)	*ND(6.39)*	ND(6.39)	ND(6.39)	ND(6.39)	ND(12.8)	ND(6.39)
EP9-PS Dup	10/20/20	ND(32.9)	ND(32.9)	ND(32.9)	***ND(32.9)***	ND(32.9)	*ND(32.9)*	ND(32.9)	***ND(32.9)***	ND(32.9)	85.3	ND(32.9)	ND(65.9)	ND(32.9)
EP10-1C	10/19/20	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(1.03)	ND(0.513)
EP10-1S	10/19/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(3.37)	ND(1.69)
EP10-2C	10/21/20	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	*ND(1.88)*	ND(1.88)	ND(1.88)	ND(1.88)	ND(3.77)	ND(1.88)
EP10-2S	10/21/20	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	*ND(1.72)*	ND(1.72)	ND(1.72)	ND(1.72)	ND(3.45)	ND(1.72)
EP10-2S Dup	10/21/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	*ND(1.69)*	ND(1.69)	ND(1.69)	ND(1.69)	ND(3.39)	ND(1.69)
EP11-1C	10/21/20	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.827)	ND(0.413)
EP11-1S	10/21/20	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(1.52)	ND(0.758)
EP11-2C	10/21/20	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	*ND(2.18)*	ND(2.18)	ND(2.18)	ND(2.18)	ND(4.35)	ND(2.18)

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Nitroaniline (mg/kg)	3-Nitroaniline (mg/kg)	4-Nitroaniline (mg/kg)	Nitrobenzene (mg/kg)	2-Nitrophenol (mg/kg)	4-Nitrophenol (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitrosodiphenylamine (mg/kg)	2,2'-oxybis(1-Chloropropane) (mg/kg)	Pentachlorophenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)	2,4,5-Trichlorophenol (mg/kg)	2,4,6-Trichlorophenol (mg/kg)
EP2-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.897)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)
EP2-1S	10/22/20	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)	ND(5.43)	3.9	ND(2.72)	ND(2.72)	ND(2.72)	ND(2.72)
EP2-2C	10/22/20	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(1.62)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)	ND(0.811)
EP2-2S	10/22/20	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(1.93)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)	ND(0.963)
EP2-PS	10/20/20	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	ND(19.7)	*ND(39.5)*	99.2	ND(19.7)	34	ND(19.7)	ND(19.7)
EP3-1C	10/22/20	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.952)	1.48	ND(0.476)	ND(0.476)	ND(0.476)	ND(0.476)
EP3-1S	10/22/20	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(2.04)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)	ND(1.02)
EP3-2C	10/22/20	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(4.27)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)	ND(2.13)
EP3-2S	10/22/20	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(4.81)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)	ND(2.4)
EP3-PS	10/20/20	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)	*ND(25.9)*	ND(13)	ND(13)	ND(13)	ND(13)	ND(13)
EP4-1C	10/22/20	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(1.69)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)	ND(0.845)
EP4-1S	10/22/20	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(5.95)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)	ND(2.97)
EP4-2C	10/22/20	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.965)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)	ND(0.482)
EP4-2S	10/22/20	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(6.9)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)	ND(3.45)
EP4-PS	10/20/20	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	*ND(22.9)*	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)	ND(11.5)
EP5-1C	10/22/20	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.782)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)	ND(0.391)
EP5-1S	10/22/20	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(1.84)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)	ND(0.921)
EP5-2C	10/22/20	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.894)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)	ND(0.447)
EP5-2S	10/22/20	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.907)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)	ND(0.454)
EP5-PS	10/20/20	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	*ND(15.4)*	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)	ND(7.72)
EP6-1C	10/22/20	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(4.21)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)	ND(2.1)
EP6-1S	10/22/20	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.9)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)	ND(0.45)
EP6-2C	10/22/20	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.788)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)	ND(0.394)
EP6-2S	10/22/20	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(4.32)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)	ND(2.16)
EP6-PS	10/20/20	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	*ND(13.2)*	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)	ND(6.59)
EP7-1C	10/21/20	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.795)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)	ND(0.398)
EP7-1S	10/21/20	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(5.16)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)	ND(2.58)
EP7-2C	10/21/20	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(3.82)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)	ND(1.91)
EP7-2S	10/21/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(4.67)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP7-PS	10/21/20	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.694)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)	ND(0.347)
EP8-1C	10/21/20	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(4.71)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)	ND(2.35)
EP8-1S	10/21/20	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(4.64)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)	ND(2.32)
EP8-2C	10/21/20	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(3.67)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)	ND(1.83)
EP8-2S	10/21/20	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(4.61)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)	ND(2.31)
EP9-1C	10/22/20	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.449)	ND(0.898)	ND(0.449)	1.38	ND(0.449)	ND(0.449)	ND(0.449)
EP9-1S	10/22/20	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.815)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)	ND(0.407)
EP9-1S Dup	10/22/20	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.771)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)	ND(0.385)
EP9-2C	10/22/20	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.799)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)
EP9-2S	10/22/20	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.726)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)	ND(0.363)
EP9-PS	10/20/20	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	*ND(12.8)*	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)	ND(6.39)
EP9-PS Dup	10/20/20	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	ND(32.9)	***ND(65.9)***	139	ND(32.9)	48	ND(32.9)	ND(32.9)
EP10-1C	10/19/20	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(1.03)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)	ND(0.513)
EP10-1S	10/19/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(3.37)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP10-2C	10/21/20	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(3.77)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)	ND(1.88)
EP10-2S	10/21/20	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(3.45)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)	ND(1.72)
EP10-2S Dup	10/21/20	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(3.39)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)	ND(1.69)
EP11-1C	10/21/20	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.827)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)	ND(0.413)
EP11-1S	10/21/20	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(1.52)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)	ND(0.758)
EP11-2C	10/21/20	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(4.35)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)	ND(2.18)

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Acetophenone (mg/kg)	Anthracene (mg/kg)	Atrazine (mg/kg)	Benzaldehyde (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Biphenyl (mg/kg)	Bis(2chloroethoxy)methane (mg/kg)	Bis(2-chloroethyl)ether (mg/kg)
EP11-2S	10/21/20	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	*ND(2.51)*	*ND(2.51)*	*ND(2.51)*	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)
EP12A-1C	10/19/20	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)
EP12A-1S	10/19/20	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	*ND(2.23)*	*ND(2.23)*	*ND(2.23)*	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)
EP12A-1S Dup	10/19/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	*ND(2.33)*	*ND(2.33)*	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP12A-2C	10/19/20	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)
EP12A-2S	10/19/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	*ND(1.99)*	*ND(1.99)*	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-1C	10/21/20	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	*ND(2.22)*	*ND(2.22)*	*ND(2.22)*	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)
EP12B-1S	10/21/20	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	*ND(3.02)*	*ND(3.02)*	*ND(3.02)*	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)
EP12B-2C	10/21/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	*ND(1.99)*	*ND(1.99)*	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-2S	10/21/20	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	*ND(2.48)*	*ND(2.48)*	*ND(2.48)*	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)
NMED Residential SSL (June 2019)		3,480	NA	7,820	17,400	23.2	NA	1.53	1.12	1.53	NA	15.3	847.9	NA	3.11
NMED Construction Worker SSL (June 2019)		15,100	NA	35,400	75,300	819	NA	240	173	240	NA	2,310	30,200	NA	1.95
NMED Industrial SSL (June 2019)		50,520	NA	129,800	252,600	111.5	NA	32.3	23.6	32.3	NA	322.9	4,431	NA	15.67

C - Clay sample
Dup - Duplicate sample
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
Nov - November
P - Pond sample
RSL - Regional screening level
S - Sediment sample
SSL - Soil screening level
SWMU - Solid Waste Management Unit

Notes:
[1] Italicized text indicates results that exceed the NMED Residential SSL.
[2] Underlined text indicates results that exceed the NMED Construction Worker SSL.
[3] Bold text indicates results that exceed the NMED Industrial SSL.

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-ethylhexyl)phthalate (mg/kg)	4-Bromo-phenyl-phenylether (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Caprolactam (mg/kg)	Carbazole (mg/kg)	4-Chloro-3-Methyl phenol (mg/kg)	4-Chloro-aniline (mg/kg)	2-Chloronaphthalene (mg/kg)	2-Chlorophenol (mg/kg)	4-Chloro-phenyl-phenylether (mg/kg)	Chrysene (mg/kg)
EP11-2S	10/21/20	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)
EP12A-1C	10/19/20	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)
EP12A-1S	10/19/20	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)
EP12A-1S Dup	10/19/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP12A-2C	10/19/20	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)
EP12A-2S	10/19/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-1C	10/21/20	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)
EP12B-1S	10/21/20	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)
EP12B-2C	10/21/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-2S	10/21/20	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)
NMED Residential SSL (June 2019)		380.4	NA	NA	NA	NA	NA	NA	6,260	391	NA	153
NMED Construction Worker SSL (June 2019)		13,400	NA	NA	NA	NA	NA	NA	28,300	1,770	NA	23,100
NMED Industrial SSL (June 2019)		1,832	NA	NA	NA	NA	NA	NA	103,800	6,489	NA	3,229

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NMED - New Mexico Environment Department
Nov - November
P - Pond sample
RSL - Regional screening level
S - Sediment sample
SSL - Soil screening level
SWMU - Solid Waste Management Unit

Notes:
[1] Italicized text indicates results that exceed the NMED Residential SSL.
[2] Underlined text indicates results that exceed the NMED Construction Worker SSL.
[3] Bold text indicates results that exceed the NMED Industrial SSL.

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Dibenz(a,h)anthracene (mg/kg)	Dibenzo-furan (mg/kg)	3,3'-Dichlorobenzidine (mg/kg)	2,4-Dichlorophenol (mg/kg)	Diethylphthalate (mg/kg)	2,4-Dimethylphenol (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	2-Methyl-4,6-dinitro phenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)
EP11-2S	10/21/20	*ND(2.51)*	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(7.53)	ND(2.51)	ND(2.51)
EP12A-1C	10/19/20	*ND(0.49)*	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(1.47)	ND(0.49)	ND(0.49)
EP12A-1S	10/19/20	*ND(2.23)*	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(6.68)	ND(2.23)	ND(2.23)
EP12A-1S Dup	10/19/20	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(6.99)	ND(2.33)	ND(2.33)
EP12A-2C	10/19/20	*ND(0.505)*	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(1.52)	ND(0.505)	ND(0.505)
EP12A-2S	10/19/20	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(5.98)	ND(1.99)	ND(1.99)
EP12B-1C	10/21/20	*ND(2.22)*	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(6.67)	ND(2.22)	ND(2.22)
EP12B-1S	10/21/20	*ND(3.02)*	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(9.07)	ND(3.02)	ND(3.02)
EP12B-2C	10/21/20	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(5.96)	ND(1.99)	ND(1.99)
EP12B-2S	10/21/20	*ND(2.48)*	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(7.45)	ND(2.48)	ND(2.48)
NMED Residential SSL (June 2019)		0.153	NA	11.8	185	49,300	1,230	61,600	6,160	NA	123	17.1	3.56
NMED Construction Worker SSL (June 2019)		24.0	NA	410	807	215,000	5,380	269,000	26,900	NA	538	600	165
NMED Industrial SSL (June 2019)		3.23	NA	57.01	2,749	733,000	18,330	916,000	91,630	NA	1,833	82.3	17.2

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RSL - Regional screening level
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Notes:
[1] Italicized text indicates results that exceed the NMED Residential SSL.
[2] Underlined text indicates results that exceed the NMED Construction Worker SSL.
[3] Bold text indicates results that exceed the NMED Industrial SSL.

APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)	Hexachlorobutadiene (mg/kg)	Hexachlorocyclopentadiene (mg/kg)	Hexachloroethane (mg/kg)	Indeno-(1,2,3-cd)pyrene (mg/kg)	Isophorone (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methyl phenol (mg/kg)	3,4-Methyl phenol (mg/kg)	Naphthalene (mg/kg)
EP11-2S	10/21/20	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	*ND(2.51)*	ND(2.51)	*ND(2.51)*	ND(2.51)	ND(2.51)	ND(2.51)	ND(5.02)	ND(2.51)
EP12A-1C	10/19/20	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.981)	ND(0.49)
EP12A-1S	10/19/20	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	*ND(2.23)*	ND(2.23)	ND(2.23)	ND(2.23)	ND(4.46)	ND(2.23)
EP12A-1S Dup	10/19/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	*ND(2.33)*	ND(2.33)	*ND(2.33)*	ND(2.33)	ND(2.33)	ND(2.33)	ND(4.66)	ND(2.33)
EP12A-2C	10/19/20	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(1.01)	ND(0.505)
EP12A-2S	10/19/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(3.99)	ND(1.99)
EP12B-1C	10/21/20	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	*ND(2.22)*	ND(2.22)	ND(2.22)	ND(2.22)	ND(4.45)	ND(2.22)
EP12B-1S	10/21/20	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	*ND(3.02)*	ND(3.02)	*ND(3.02)*	ND(3.02)	ND(3.02)	ND(3.02)	ND(6.05)	ND(3.02)
EP12B-2C	10/21/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	*ND(1.99)*	ND(1.99)	ND(1.99)	ND(1.99)	ND(3.97)	ND(1.99)
EP12B-2S	10/21/20	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	*ND(2.48)*	ND(2.48)	*ND(2.48)*	ND(2.48)	ND(2.48)	ND(2.48)	ND(4.96)	ND(2.48)
NMED Residential SSL (June 2019)		NA	2,320	2,320	3.33	68.3	2.3	133	1.53	5,606	232	NA	NA	49.7
NMED Construction Worker SSL (June 2019)		NA	10,000	10,000	117	2,400	867	4,670	240	198,000	1,000	NA	NA	1,110
NMED Industrial SSL (June 2019)		NA	33,680	33,680	16.03	52.1	5,492	641	32.3	27,005	3,368	NA	NA	241

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Notes:
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APPENDIX A-2. SEMI-VOLATILE ORGANIC COMPOUNDS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Nitroaniline (mg/kg)	3-Nitroaniline (mg/kg)	4-Nitroaniline (mg/kg)	Nitrobenzene (mg/kg)	2-Nitrophenol (mg/kg)	4-Nitrophenol (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitrosodiphenylamine (mg/kg)	2,2'-oxybis(1-Chloropropane) (mg/kg)	Pentachlorophenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)	2,4,5-Trichlorophenol (mg/kg)	2,4,6-Trichlorophenol (mg/kg)
EP11-2S	10/21/20	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(5.02)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)	ND(2.51)
EP12A-1C	10/19/20	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.981)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.49)
EP12A-1S	10/19/20	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(4.46)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)	ND(2.23)
EP12A-1S Dup	10/19/20	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(4.66)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)	ND(2.33)
EP12A-2C	10/19/20	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(1.01)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)	ND(0.505)
EP12A-2S	10/19/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(3.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-1C	10/21/20	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(4.45)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)	ND(2.22)
EP12B-1S	10/21/20	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(6.05)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)	ND(3.02)
EP12B-2C	10/21/20	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(3.97)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)	ND(1.99)
EP12B-2S	10/21/20	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(4.96)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)	ND(2.48)
NMED Residential SSL (June 2019)		NA	NA	NA	60.4	NA	NA	NA	1,090	NA	9.85	1,740	18,500	1,740	6,160	484
NMED Construction Worker SSL (June 2019)		NA	NA	NA	1,350	NA	NA	NA	37,900	NA	346	7,530	77,400	7,530	26,900	17,000
NMED Industrial SSL (June 2019)		NA	NA	NA	293	NA	NA	NA	5,236	NA	44.5	25,260	274,900	25,260	91,630	2,330

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Notes:
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Appendix A-3 – Metals Data Summary

APPENDIX A-3. METALS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Aluminum, Total (mg/kg)	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Calcium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)	Lead, Total (mg/kg)	Magnesium, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Potassium, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Sodium, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
EP2-1C	10/22/20	22,100	ND(2.54)	ND(2.54)	332	1	ND(0.634)	22,600	52.1	7.09	15,300	11.3	7,220	397	0.052	11.6	4,230	ND(3.17)	ND(1.27)	3,040	20.7	46.6
EP2-1S	10/22/20	23,200	3.75	3.46	361	0.666	ND(0.763)	67,100	20.2	6.15	14,700	12.3	5,840	246	0.227	13.3	4,220	ND(3.82)	ND(1.53)	3,230	22.6	395
EP2-2C	10/22/20	20,900	ND(2.4)	ND(2.4)	247	1.02	ND(0.599)	56,600	12.1	5.95	13,300	11.4	6,230	631	ND(0.0158)	9.66	2,510	ND(3)	ND(1.2)	3,470	23	20.4
EP2-2S	10/22/20	24,100	ND(2.67)	ND(2.67)	317	1.01	ND(0.668)	27,900	24.7	5.13	14,400	14.2	6,360	299	0.878	10.3	4,080	ND(3.34)	ND(1.34)	4,340	24	60.3
EP2-PS	10/20/20	12,200	ND(18.3)	*11.9*	288	ND(1.1)	ND(1.83)	290,000	47.8	6.69	19,900	19.3	5,230	194	2.98	23.4	2,880	18.1	ND(1.83)	19,800	19.4	1330
EP3-1C	10/22/20	19,300	ND(2.43)	ND(2.43)	373	1.29	ND(0.608)	24,300	32.5	6.08	15,300	12.9	5,560	555	0.0268	11.8	2,940	ND(3.04)	ND(1.22)	4,250	21.1	22.6
EP3-1S	10/22/20	35,600	ND(2.68)	4.62	519	0.862	ND(0.67)	42,400	*439*	5.77	16,400	25.8	7,980	234	0.126	12.3	5,920	ND(3.35)	ND(1.34)	5,640	30.8	68.9
EP3-2C	10/22/20	23,500	ND(2.19)	2.45	331	1.02	ND(0.548)	21,100	32.8	5.71	14,600	12.2	6,140	301	0.0606	11.2	3,080	ND(2.74)	ND(1.1)	2,730	23.9	51.3
EP3-2S	10/22/20	26,800	ND(2.46)	ND(2.46)	165	0.769	ND(0.614)	56,700	21.3	4.66	13,300	7.74	6,830	257	0.0659	9.39	4,690	ND(3.07)	ND(1.23)	3,300	21.7	47.5
EP3-PS	10/20/20	36,500	ND(20.7)	*11.4*	402	ND(1.24)	ND(2.07)	105,000	*114*	9.26	16,600	12.3	6,830	160	1.7	25.8	8,640	17	ND(2.07)	20,900	50.3	374
EP4-1C	10/22/20	22,200	ND(2.44)	4.8	327	0.722	ND(0.61)	10,000	30.3	5.2	13,000	15.6	5,790	125	0.036	10.5	3,690	ND(3.05)	ND(1.22)	3,500	25.4	45.1
EP4-1S	10/22/20	26,900	ND(3.06)	ND(3.06)	325	0.866	ND(0.764)	148,000	17.3	5.83	13,200	11	8,380	1770	0.061	10.5	5,650	ND(3.82)	ND(1.53)	5,640	30.4	33.6
EP4-2C	10/22/20	13,600	ND(2.63)	ND(2.63)	261	ND(0.526)	ND(0.657)	9,580	22.6	3.83	10,800	6.99	4,120	159	ND(0.0183)	8.74	3,950	ND(3.29)	ND(1.31)	3,580	16.2	18.5
EP4-2S	10/22/20	29,800	ND(3.58)	ND(3.58)	209	0.877	ND(0.896)	113,000	22.1	5.57	14,400	10.2	7,920	384	0.0765	12.1	6,800	ND(4.48)	ND(1.79)	8,880	26.3	54.9
EP4-PS	10/20/20	31,700	ND(17.4)	6.54	264	ND(1.05)	ND(1.74)	94,900	55.8	7.44	15,100	11.2	6,480	261	0.677	21.9	7,330	9.12	ND(1.74)	13,600	33.9	185
EP5-1C	10/22/20	13,800	ND(2.23)	2.34	319	0.655	ND(0.557)	30,400	9.22	3.77	9,590	11	4,340	452	ND(0.0148)	6.63	2,470	ND(2.78)	ND(1.11)	2,810	18	12.6
EP5-1S	10/22/20	21,000	ND(2.44)	ND(2.44)	271	0.841	ND(0.609)	52,400	67.1	5.13	12,100	10.7	5,810	386	0.106	9.57	4,350	ND(3.05)	ND(1.22)	4,250	23.9	37.2
EP5-2C	10/22/20	15,200	ND(2.55)	ND(2.55)	286	0.578	ND(0.637)	5,760	28.3	3.94	15,900	6.26	4,010	89.7	ND(0.0183)	9.25	3,700	ND(3.19)	ND(1.27)	5,440	17.6	20.8
EP5-2S	10/22/20	15,600	ND(2.64)	ND(2.64)	238	0.922	ND(0.659)	24,700	9.99	3.59	11,200	9.23	4,870	292	0.0409	7.53	3,900	ND(3.29)	ND(1.32)	5,520	17.2	13.8
EP5-PS	10/20/20	61,000	ND(12.5)	2.78	512	1.43	ND(1.25)	59,100	58.8	11.1	26,400	12.1	11,800	453	0.0619	25.7	11,700	ND(5.01)	ND(1.25)	10,300	49.3	69.1
EP6-1C	10/22/20	15,200	ND(2.3)	2.54	698	0.886	ND(0.576)	65,200	8.65	4.2	11,200	10.3	5,180	702	ND(0.0166)	7.71	2,680	ND(2.88)	ND(1.15)	5,100	20	14.4
EP6-1S	10/22/20	13,800	ND(2.57)	ND(2.57)	148	0.737	ND(0.644)	38,600	8.94	3.39	9,640	7.68	4,470	288	0.0303	6.99	3,940	ND(3.22)	ND(1.29)	4,980	16.5	12.6
EP6-2C	10/22/20	8,360	ND(2.08)	ND(2.08)	276	0.561	ND(0.52)	29,000	6.73	2.78	7,590	6.11	3,180	347	ND(0.0162)	5.33	1,280	ND(2.6)	ND(1.04)	2,780	13.6	12.4
EP6-2S	10/22/20	12,900	ND(2.26)	ND(2.26)	300	0.69	ND(0.565)	34,600	10.9	3.21	10,100	9.33	4,440	430	0.0281	6.71	3,120	ND(2.83)	ND(1.13)	4,090	17.1	16.5
EP6-PS	10/20/20	60,300	ND(9.23)	5.2	381	1.59	ND(0.923)	43,300	65.9	10.6	25,400	14	10,700	315	0.0905	24.5	11,000	4.46	ND(0.923)	10,300	44.3	55.5
EP7-1C	10/21/20	30,000	ND(2.09)	3.25	270	1.29	ND(0.524)	19,600	27.1	6.63	16,800	13.3	7,330	324	0.0206	13.4	5,860	ND(2.62)	ND(1.05)	15,200	26.5	40
EP7-1S	10/21/20	22,100	ND(2.79)	2.87	271	1.04	ND(0.698)	32,800	15.4	4.81	13,100	10.5	6,750	466	ND(0.0201)	11.1	6,130	ND(3.49)	ND(1.4)	34,600	22.1	21
EP7-2C	10/21/20	17,500	ND(2.22)	3.79	286	1.06	ND(0.554)	17,400	14.2	5.4	14,000	16.4	5,420	308	0.227	19.8	4,080	ND(2.77)	ND(1.11)	21,700	20.1	112
EP7-2S	10/21/20	21,500	ND(2.77)	3.3	240	1.06	ND(0.693)	41,600	15.4	5.68	14,500	12.9	7,360	560	0.221	15	7,010	ND(3.47)	ND(1.39)	42,600	23.7	57
EP7-PS	10/21/20	12,800	ND(2.13)	ND(2.13)	83.8	ND(0.425)	ND(0.531)	50,900	21.4	2.71	5,810	3.98	4,220	140	0.0174	6.92	5,180	ND(2.66)	ND(1.06)	64,800	11.4	18
EP8-1C	10/21/20	25,400	ND(2.59)	2.71	302	1.35	ND(0.647)	20,700	17.2	9.59	16,500	13.1	7,940	422	ND(0.0179)	14	6,510	ND(3.23)	ND(1.29)	24,800	25.3	27.3
EP8-1S	10/21/20	12,300	ND(2.46)	3.09	261	0.699	ND(0.614)	33,100	8.91	3.34	8,560	8.47	4,870	363	ND(0.0175)	6.79	4,530	ND(3.07)	ND(1.23)	35,300	14.9	13.4
EP8-2C	10/21/20	12,500	ND(2.23)	ND(2.23)	311	0.803	ND(0.558)	20,200	8.04	3.54	9,680	10.1	4,250	338	ND(0.0288)	6.57	3,270	ND(2.79)	ND(1.12)	16,600	15.8	11.8
EP8-2S	10/21/20	12,600	ND(2.4)	ND(2.4)	240	0.765	ND(0.6)	31,000	8.46	3.58	9,200	9.42	5,210	481	ND(0.0174)	7.21	4,230	ND(3)	ND(1.2)	35,800	16.2	14
EP9-1C	10/22/20	29,400	ND(2.6)	ND(2.6)	252	1.74	ND(0.649)	25,600	24.5	7.65	20,700	11.3	9,220	292	ND(0.0177)	18.2	7,150	ND(3.25)	ND(1.3)	43,400	29.3	23.4
EP9-1S	10/22/20	10,300	ND(2.14)	ND(2.14)	159	0.498	ND(0.536)	43,900	6.22	2.46	7,170	5.78	4,690	429	0.0234	5.03	3,300	ND(2.68)	ND(1.07)	37,800	13.4	10.3
EP9-1S Dup	10/22/20	6,990	ND(2.4)	ND(2.4)	104	ND(0.479)	ND(0.599)	31,800	4.5	2.1	5,860	4.38	3,430	375	ND(0.0154)	ND(4.79)	3,180	ND(3)	ND(1.2)	24,100	10.3	8.69
EP9-2C	10/22/20	19,400	ND(2.12)	2.37	368	1.15	ND(0.53)	28,700	12.3	5.55	14,600	8.84	6,580	526	ND(0.0159)	11	4,300	ND(2.65)	ND(1.06)	19,000	20.3	21.2
EP9-2S	10/22/20	6,850	ND(2.2)	2.58	211	ND(0.44)	ND(0.55)	20,600	5.93	2.64	5,750	4.72	3,370	205	0.102	6.28	2,820	ND(2.75)	ND(1.1)	34,500	9.29	18.3
EP9-PS	10/20/20	11,400	ND(9.32)	2.3	131	ND(0.559)	ND(0.932)	93,100	8.3	2.75	5,120	4.62	6,640	361	ND(0.0251)	8.33	6,690	ND(3.73)	ND(0.932)	114,000	9.73	17.2
EP9-PS Dup	10/20/20	10,900	ND(16)	*9.36*	301	ND(0.958)	ND(1.6)	273,000	29.5	6.05	17,700	15.4	4,530	146	1.35	20.2	2,620	13	ND(1.6)	16,400	15.3	1150
EP10-1C	10/19/20	34,500	ND(7.45)	1.51	388	1.56	ND(0.745)	26,300	21.1	8.9	20,100	16.6	8,560	593	ND(0.0193)	19.2	3,660	ND(2.98)	ND(0.745)	1,150	30.3	30.3
EP10-1S	10/19/20	27,300	ND(4.99)	2.15	406	1.14	ND(0.499)	36,200	20.1	7.14	15,500	29.8	6,990	468	0.137	22.3	3,030	ND(2)	ND(0.499)	1,090	24.4	73.1
EP10-2C	10/21/20	15,800	ND(2.09)	2.7	279	1.17	ND(0.523)	18,000	11.9	5.98	13,900	14.5	4,840	310	0.0281	11.4	2,520	ND(2.61)	ND(1.05)	1,330	21.9	32.1
EP10-2S	10/21/20	15,600	ND(2.05)	4.27	387	0.924	ND(0.513)	32,000	14.5	5.75	15,300	21.6	4,570	412	0.261	15.4	2,170	ND(2.56)	ND(1.03)	810	20.4	140
EP10-2S Dup	10/21/20	15,700	ND(1.91)	4.35	399	0.956	ND(0.479)	26,500	14.9	5.74	14,600	23.8	4,630	405	0.364	14.1	2,190	ND(2.39)	ND(0.957)	838	21.2	205
EP11-1C	10/21/20	25,300	ND(2.22)	ND(2.22)	493	1.49	ND(0.556)	19,300	18.2	6.65	17,400	14.6	7,370	378	ND(0.0314)	14.6	4,400	ND(2.78)	ND(1.11)	13,700	25.9	20.9
EP11-1S	10/21/20	23,100	ND(2.05)	ND(2.05)	174	0.792	ND(0.513)	32,300	20.1	4.41	11,000	6.9	7,100	376	0.0298	11.4	7,380	ND(2.56)	ND(1.03)	47,400	20.6	22.3
EP11-2C	10/21/20	27,800	ND(2.26)	ND(2.26)	257	1.31	ND(0.566)	20,400	23	6.79	16,800	12.4	7,420	358	ND(0.0337)	14.6	5,150	ND(2.83)	ND(1.13)	13,000	26.9	28.3
EP11-2S	10/21/20	29,800	ND(2.78)	ND(2.78)	239	1.09	ND(0.695)	42,100	21	5.9	15,100	9.12	8,530	315	0.0439	13.9	9,020	ND(3.47)	ND(1.39)	50,200	27.3	29.5
EP12A-1C	10/19/20	39,600	ND(6.89)	1.78	520	1.68	ND(0.689)	23,400	23.2	9	20,700	16.7	9,390	496	ND(0.0187)	19.5	4,420	ND(2.75)	ND(0.689)	4,580	33.2	25.9

APPENDIX A-3. METALS DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Aluminum, Total (mg/kg)	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Calcium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)	Lead, Total (mg/kg)	Magnesium, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Potassium, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Sodium, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
EP12A-1S	10/19/20	44,200	ND(6.69)	3.36	277	1.28	ND(0.669)	77,700	35.4	8.93	22,300	10.4	10,300	530	0.127	22.6	14,000	5.61	ND(0.669)	29,200	37.1	64.8
EP12A-1S Dup	10/19/20	48,000	ND(6.94)	3.16	268	1.4	ND(0.694)	67,600	38.6	9.83	22,500	11.3	10,100	471	0.0964	23.8	12,700	5.84	ND(0.694)	22,800	39.4	62.7
EP12A-2C	10/19/20	64,800	ND(7.48)	3.05	342	1.99	ND(0.748)	33,200	60.4	12.1	27,700	16.9	13,200	512	ND(0.0196)	27.1	9,950	ND(2.99)	ND(0.748)	5,830	50.7	50.5
EP12A-2S	10/19/20	44,800	ND(5.83)	3.17	263	1.27	ND(0.583)	92,800	38.3	9.3	18,800	10.1	9,930	624	0.119	22.9	13,500	6.28	ND(0.583)	27,800	37	65.6
EP12B-1C	10/21/20	30,700	ND(2.42)	2.88	302	1.65	ND(0.605)	13,200	21.9	7.28	20,000	15.4	7,580	310	0.0938	15.6	4,080	ND(3.02)	ND(1.21)	3,770	28.3	26.6
EP12B-1S	10/21/20	48,300	ND(3.67)	ND(3.67)	333	1.5	ND(0.918)	75,300	39.2	7.7	21,900	13	11,000	394	0.11	17.3	9,960	ND(4.59)	ND(1.84)	7,060	37	65.3
EP12B-2C	10/21/20	25,500	ND(2.07)	2.22	280	0.898	ND(0.518)	15,600	31.5	4.9	13,300	9.72	6,330	196	0.0615	10.2	3,890	ND(2.59)	ND(1.04)	2,180	22.7	25
EP12B-2S	10/21/20	44,000	ND(3.06)	ND(3.06)	334	1.48	ND(0.765)	26,400	50.8	7.87	21,300	15.2	9,830	243	0.0392	17.8	9,220	ND(3.83)	ND(1.53)	5,360	38.6	43.8
NMED Residential SSL (June 2019)		78,000	31.3	7.07	15,600	64,411	85,881	13,000,000	96.6	17,176	54,800	400	15,600,000	10,500	NA	594,564	15,600,000	391	391	7,820,000	394	23,500
NMED Construction Worker SSL (June 2019)		41,400	142	216	4,390	2,710	3,610	8,550,000	468	722	248,000	800	1,550,000	464	NA	25,000	20,800,000	1,750	1,770	10,200,000	614	106,000
NMED Industrial SSL (June 2019)		1,285,000	519.1	35.9	254,700	312,609	416,811	32,440,000	505	83,362	908,400	800	5,678,000	160,200	NA	2,885,620	76,240,000	6,489	6,489	37,310,000	6,525	389,300

C - Clay sample
Dup - Duplicate sample
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
Nov - November
P - Pond sample
RSL - Regional screening level
S - Sediment sample
SSL - Soil Screening Level
Std Units - Standard units
SWMU - Solid Waste Management Unit
USEPA - United States Environmental Protection Agency

Notes:
[1] Italicized text indicates results that exceed the NMED Residential SSL.
[2] Underlined text indicates results that exceed the NMED Construction Worker SSL.
[3] Bold text indicates results that exceed the NMED Industrial SSL.

Appendix A-4 – General Chemistry Data Summary

APPENDIX A-4. GENERAL CHEMISTRY DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Ammonia (mg/kg)	Bromide (mg/kg)	Chloride (mg/kg)	Diesel Range Organics (mg/kg)	Fluoride, Total (mg/kg)	Gasoline Range Organics (mg/kg)	Nitrogen, Nitrate (mg/kg)	pH, Laboratory Calc (Std Units)	Phosphorus, Total (mg/kg)	Sulfate (mg/kg)
EP2-1C	10/22/20	1,130	ND(142)	544	935	416	22.3	ND(142)	8.5	12.2	1,690
EP2-1S	10/22/20	610	ND(166)	2,770	***7,460***	646	67.8	ND(16.6)	7.9	609	2,000
EP2-2C	10/22/20	23.3	ND(1250)	1,670	158	ND(1250)	ND(5.32)	ND(125)	7.6	7.97	1,310
EP2-2S	10/22/20	42.2	ND(1430)	3,150	*1,480*	ND(1430)	ND(7.43)	ND(143)	7.5	10.3	4,300
EP2-PS	10/20/20	959	ND(81.1)	26,000	***25,500***	858	78	ND(8.11)	7.4	4,430	91.4
EP3-1C	10/22/20	46	ND(149)	2,600	673	ND(149)	*123*	ND(14.9)	7.5	14.3	1,150
EP3-1S	10/22/20	155	ND(1580)	5,690	*2,000*	ND(1580)	ND(7.74)	ND(158)	7.1	18.8	9,270
EP3-2C	10/22/20	207	ND(130)	1,050	*1,510*	158	ND(5.21)	ND(130)	7.8	14	181
EP3-2S	10/22/20	308	ND(1430)	2,120	***3,430***	ND(1430)	ND(6.7)	ND(143)	7	16	7,600
EP3-PS	10/20/20	1,700	ND(81.2)	21,400	***12,300***	1740	63.3	ND(8.12)	7.9	1,490	5,610
EP4-1C	10/22/20	293	ND(133)	1,330	383	275	ND(5.53)	ND(133)	7.9	6.33	1,910
EP4-1S	10/22/20	510	ND(183)	3,260	779	368	ND(11.6)	ND(18.3)	7.9	542	1,960
EP4-2C	10/22/20	636	ND(147)	1,820	68.9	645	ND(5.7)	ND(147)	8.1	10.1	2,110
EP4-2S	10/22/20	647	ND(212)	7,360	693	293	15.7	ND(21.2)	7.5	1,230	3,200
EP4-PS	10/20/20	793	ND(70)	12,900	*1,890*	648	42.9	ND(7)	7.8	993	2,440
EP5-1C	10/22/20	293	ND(121)	1,120	54.4	ND(121)	ND(3.8)	ND(121)	8.3	217	238
EP5-1S	10/22/20	382	ND(1410)	2,480	701	ND(1410)	ND(6.31)	ND(141)	7.4	13	ND(1410)
EP5-2C	10/22/20	659	ND(144)	2,020	682	287	ND(6.15)	ND(144)	8.6	11.8	484
EP5-2S	10/22/20	465	ND(1400)	3,620	173	ND(1400)	ND(5.8)	ND(140)	8.1	278	ND(1400)
EP5-PS	10/20/20	758	ND(48.8)	8,470	766	424	ND(15.1)	ND(4.88)	8.4	670	4,030
EP6-1C	10/22/20	108	ND(131)	2,850	36.3	ND(131)	ND(5.03)	ND(13.1)	8.2	8.48	717
EP6-1S	10/22/20	370	ND(138)	2,700	39.4	177	ND(7.18)	ND(13.8)	8.7	238	938
EP6-2C	10/22/20	142	ND(123)	1,990	24.1	141	ND(5.2)	ND(12.3)	8	7.64	293
EP6-2S	10/22/20	299	ND(132)	1,480	21.7	ND(132)	ND(7.46)	ND(13.2)	8.3	273	707
EP6-PS	10/20/20	607	ND(40.1)	ND(40.1)	*1,480*	517	ND(14.2)	ND(4.01)	8	585	17,300
EP7-1C	10/21/20	106	ND(24.7)	13,000	33.5	100	ND(4.75)	3.87	7.8	417	4,620
EP7-1S	10/21/20	211	ND(32)	46,200	32.3	173	ND(7.74)	ND(3.2)	7.8	361	31,800
EP7-2C	10/21/20	85.4	ND(24.6)	25,300	13.5	40.1	ND(3.78)	ND(2.46)	8	249	5,850
EP7-2S	10/21/20	120	34.7	67,400	14.9	211	ND(6.51)	ND(2.94)	8.2	340	30,200
EP7-PS	10/21/20	149	40.5	98,600	23.1	133	16.9	ND(2.21)	8.1	235	53,300
EP8-1C	10/21/20	482	ND(28.6)	36,900	141	124	ND(7.04)	ND(2.86)	7.6	301	17,800
EP8-1S	10/21/20	217	ND(28.7)	46,800	7.32	157	ND(5.83)	ND(2.87)	8.2	247	23,400
EP8-2C	10/21/20	97.6	ND(22.3)	23,500	ND(5.47)	38.9	ND(3.06)	ND(2.23)	7.6	186	6,880
EP8-2S	10/21/20	132	32.9	30,800	11.2	122	ND(5.44)	ND(2.75)	8	246	18,000
EP9-1C	10/22/20	1,050	ND(1390)	67,400	137	ND(1390)	ND(6.1)	ND(139)	7.6	326	58,900
EP9-1S	10/22/20	43.2	ND(1280)	53,200	8.13	ND(1280)	ND(6.91)	ND(128)	8.3	227	15,800
EP9-1S Dup	10/22/20	39	ND(1240)	47,900	12.4	ND(1240)	ND(5.97)	ND(124)	7.9	250	16,600
EP9-2C	10/22/20	321	ND(1240)	20,100	49.1	ND(1240)	7.41	ND(124)	7.6	510	5,100
EP9-2S	10/22/20	213	ND(1130)	38,400	20.4	ND(1130)	18.8	ND(113)	7.9	251	10,700
EP9-PS	10/20/20	282	71	164,000	86.2	560	27.3	ND(3.83)	7.7	768	91,000
EP9-PS Dup	10/20/20	527	ND(67.8)	20,000	***41,600***	674	56.8	ND(6.78)	7.9	2,640	102
EP11-1C	10/21/20	179	ND(25.1)	13,500	ND(6.21)	84.7	ND(4.61)	ND(2.51)	7.9	305	1,290
EP11-1S	10/21/20	153	40	73,600	320	239	4.33	ND(2.33)	7.9	285	15,700

APPENDIX A-4. GENERAL CHEMISTRY DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Ammonia (mg/kg)	Bromide (mg/kg)	Chloride (mg/kg)	Diesel Range Organics (mg/kg)	Fluoride, Total (mg/kg)	Gasoline Range Organics (mg/kg)	Nitrogen, Nitrate (mg/kg)	pH, Laboratory Calc (Std Units)	Phosphorus, Total (mg/kg)	Sulfate (mg/kg)
EP11-2C	10/21/20	391	ND(25.8)	17,400	23.7	112	ND(4.73)	ND(2.58)	8.1	289	16,400
EP11-2S	10/21/20	292	36.7	67,000	410	165	16.9	ND(3.23)	8.3	508	53,600
EP12A-1C	10/19/20	143	ND(30)	3,310	47.1	40.1	ND(6.59)	ND(3)	7.4	341	918
EP12A-1S	10/19/20	326	ND(27.7)	43,300	***4,160***	443	ND(5.92)	49.3	7.1	1,310	67,400
EP12A-1S Dup	10/19/20	561	ND(28.5)	26,000	***5,020***	320	ND(8.58)	56.8	7.2	1,100	46,000
EP12A-2C	10/19/20	250	ND(29.9)	4,180	20.6	210	ND(7.07)	ND(2.99)	7.7	340	2,990
EP12A-2S	10/19/20	883	27.3	36,500	*2,360*	410	ND(5.61)	227	7.4	689	51,300
EP12B-1C	10/21/20	380	ND(26.2)	1,530	72.1	220	ND(5.43)	ND(2.62)	7.9	405	1,180
EP12B-1S	10/21/20	998	ND(38.5)	5,300	*1,150*	285	ND(11.1)	ND(3.85)	7.5	810	16,700
EP12B-2C	10/21/20	443	ND(24.2)	929	225	249	ND(5.03)	ND(2.42)	8.2	396	948
EP12B-2S	10/21/20	1,000	ND(32.2)	4,030	790	275	ND(7.78)	ND(3.22)	7.4	599	7,130
NMED Residential SSL (June 2019)		NA	NA	12,000,000	1,000	4,690	100	125,000	NA	15,600,000	NA
NMED Construction Worker SSL (June 2019)		NA	NA	15,900,000	3,000	18,100	500	566,000	NA	17,700,000	NA
NMED Industrial SSL (June 2019)		NA	NA	58,400,000	3,000	77,850	500	2,080,000	NA	64,890,000	NA
ABRSC[1]		NA	NA	500	NA	NA	2,500	NA	NA	NA	NA

ABRSC - Alternate Beneficial Reuse Screening Concentration
C - Clay sample
Dup - Duplicate sample
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
Nov - November
P - Pond sample
RSL - Regional screening level
S - Sediment sample
SSL - Soil Screening Level
Std Units - Standard units
SWMU - Solid Waste Management Unit
USEPA - United States Environmental Protection Agency

Notes:
[1] ABRSC values were conditionally approved by the New Mexico Oil Conservation Division in an email dated April 30, 2013.
[2] Italicized text indicates results that exceed the NMED Residential SSL.
[3] Underlined text indicates results that exceed the NMED Construction Worker SSL.
[4] Bold text indicates results that exceed the NMED Industrial SSL.
[5] Shadowed text indicates results that exceed the ABRSC.

Appendix A-5 – TCLP Data Summary

APPENDIX A-5. TCLP DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzene, TCLP (mg/L)	Ethylbenzene, TCLP (mg/L)	Toluene, TCLP (mg/L)	Total Xylenes, TCLP (mg/L)	2,4-Dinitrotoluene, TCLP (mg/L)	Hexachlorobenzene, TCLP (mg/L)
EP2-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP2-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP2-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP2-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP2-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0472)	ND(0.0472)
EP3-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP3-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP3-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP3-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP3-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0488)	ND(0.0488)
EP4-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP4-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0479)	ND(0.0479)
EP4-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP4-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP4-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0471)	ND(0.0471)
EP5-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP5-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0463)	ND(0.0463)
EP5-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP5-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP5-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0464)	ND(0.0464)
EP6-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0471)	ND(0.0471)
EP6-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0452)	ND(0.0452)
EP6-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0451)	ND(0.0451)
EP6-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP6-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP7-1C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP7-1S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP7-2C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP7-2S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP7-PS	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP8-1C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP8-1S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP8-2C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP8-2S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-1C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-1S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-1S Dup	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-2C	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-2S	10/22/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP9-PS	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0481)	ND(0.0481)
EP9-PS Dup	10/20/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.045)	ND(0.045)
EP10-1C	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP10-1S	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0462)	ND(0.0462)
EP10-2C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP10-2S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP10-2S Dup	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP11-1C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP11-1S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP11-2C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP11-2S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12A-1C	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12A-1S	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12A-1S Dup	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.0451)	ND(0.0451)
EP12A-2C	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12A-2S	10/19/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12B-1C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12B-1S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12B-2C	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
EP12B-2S	10/21/20	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.075)	ND(0.05)	ND(0.05)
TCLP Regulatory Limits[1]		0.5	NA	NA	NA	0.13	0.13

C - Clay sample
Dup - Duplicate sample
mg/L - Milligrams per liter
NA - Not applicable
ND - Not detected at the reporting limit
P - Pond sample
S - Sediment sample
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure

Note:
[1] TCLP regulatory limits are from Chapter 40 of the Code of Federal Regulations Subpart 261.24

APPENDIX A-5. TCLP DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachlorobutadiene, TCLP (mg/L)	Hexachloroethane, TCLP (mg/L)	2-Methylphenol, TCLP (mg/L)	3,4-Methylphenol, TCLP (mg/L)	Nitrobenzene, TCLP (mg/L)	Pentachlorophenol, TCLP (mg/L)
EP2-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP2-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP2-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP2-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP2-PS	10/20/20	ND(0.0472)	ND(0.0472)	ND(0.0472)	0.122	ND(0.0472)	ND(0.0943)
EP3-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP3-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP3-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP3-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP3-PS	10/20/20	ND(0.0488)	ND(0.0488)	ND(0.0488)	ND(0.0977)	ND(0.0488)	ND(0.0977)
EP4-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP4-1S	10/22/20	ND(0.0479)	ND(0.0479)	ND(0.0479)	ND(0.0958)	ND(0.0479)	ND(0.0958)
EP4-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP4-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP4-PS	10/20/20	ND(0.0471)	ND(0.0471)	ND(0.0471)	ND(0.0942)	ND(0.0471)	ND(0.0942)
EP5-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP5-1S	10/22/20	ND(0.0463)	ND(0.0463)	ND(0.0463)	ND(0.0926)	ND(0.0463)	ND(0.0926)
EP5-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP5-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP5-PS	10/20/20	ND(0.0464)	ND(0.0464)	ND(0.0464)	ND(0.0928)	ND(0.0464)	ND(0.0928)
EP6-1C	10/22/20	ND(0.0471)	ND(0.0471)	ND(0.0471)	ND(0.0943)	ND(0.0471)	ND(0.0943)
EP6-1S	10/22/20	ND(0.0452)	ND(0.0452)	ND(0.0452)	ND(0.0905)	ND(0.0452)	ND(0.0905)
EP6-2C	10/22/20	ND(0.0451)	ND(0.0451)	ND(0.0451)	ND(0.0902)	ND(0.0451)	ND(0.0902)
EP6-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP6-PS	10/20/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP7-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP7-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP7-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP7-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP7-PS	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP8-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP8-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP8-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP8-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-1S Dup	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP9-PS	10/20/20	ND(0.0481)	ND(0.0481)	ND(0.0481)	ND(0.0962)	ND(0.0481)	ND(0.0962)
EP9-PS Dup	10/20/20	ND(0.045)	ND(0.045)	ND(0.045)	0.146	ND(0.045)	ND(0.0901)
EP10-1C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP10-1S	10/19/20	ND(0.0462)	ND(0.0462)	ND(0.0462)	ND(0.0924)	ND(0.0462)	ND(0.0924)
EP10-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP10-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP10-2S Dup	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP11-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP11-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP11-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP11-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12A-1C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12A-1S	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12A-1S Dup	10/19/20	ND(0.0451)	ND(0.0451)	ND(0.0451)	ND(0.0903)	ND(0.0451)	ND(0.0903)
EP12A-2C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12A-2S	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12B-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12B-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12B-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
EP12B-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.05)	ND(0.1)
TCLP Regulatory Limits[1]		0.5	3.0	NA	NA	2.0	100.0

C - Clay sample
Dup - Duplicate sample
mg/L - Milligrams per liter
NA - Not applicable
ND - Not detected at the reporting limit
P - Pond sample
S - Sediment sample
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure

Note:
[1] TCLP regulatory limits are from Chapter 40 of the Code of Federal Regulations Subpart 261.24

APPENDIX A-5. TCLP DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine, TCLP (mg/L)	2,4,5-Trichlorophenol, TCLP (mg/L)	2,4,6-Trichlorophenol, TCLP (mg/L)	Antimony, TCLP (mg/L)	Arsenic, TCLP (mg/L)	Barium, TCLP (mg/L)
EP2-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP2-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP2-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP2-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP2-PS	10/20/20	ND(0.0472)	ND(0.0472)	ND(0.0472)	ND(0.25)	ND(0.05)	ND(5)
EP3-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP3-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP3-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP3-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP3-PS	10/20/20	ND(0.0488)	ND(0.0488)	ND(0.0488)	ND(0.25)	ND(0.05)	ND(5)
EP4-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP4-1S	10/22/20	ND(0.0479)	ND(0.0479)	ND(0.0479)	ND(0.25)	ND(0.05)	ND(5)
EP4-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP4-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP4-PS	10/20/20	ND(0.0471)	ND(0.0471)	ND(0.0471)	ND(0.25)	ND(0.05)	ND(5)
EP5-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP5-1S	10/22/20	ND(0.0463)	ND(0.0463)	ND(0.0463)	ND(0.25)	ND(0.05)	ND(5)
EP5-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP5-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP5-PS	10/20/20	ND(0.0464)	ND(0.0464)	ND(0.0464)	ND(0.25)	ND(0.05)	ND(5)
EP6-1C	10/22/20	ND(0.0471)	ND(0.0471)	ND(0.0471)	ND(0.25)	ND(0.05)	ND(5)
EP6-1S	10/22/20	ND(0.0452)	ND(0.0452)	ND(0.0452)	ND(0.25)	ND(0.05)	ND(5)
EP6-2C	10/22/20	ND(0.0451)	ND(0.0451)	ND(0.0451)	ND(0.25)	ND(0.05)	ND(5)
EP6-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP6-PS	10/20/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP7-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP7-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP7-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP7-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP7-PS	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP8-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP8-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP8-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP8-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-1C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-1S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-1S Dup	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-2C	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-2S	10/22/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP9-PS	10/20/20	ND(0.0481)	ND(0.0481)	ND(0.0481)	ND(0.25)	ND(0.05)	ND(5)
EP9-PS Dup	10/20/20	ND(0.045)	ND(0.045)	ND(0.045)	ND(0.25)	ND(0.05)	ND(5)
EP10-1C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP10-1S	10/19/20	ND(0.0462)	ND(0.0462)	ND(0.0462)	ND(0.25)	ND(0.05)	ND(5)
EP10-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP10-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP10-2S Dup	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP11-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP11-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP11-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP11-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12A-1C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12A-1S	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12A-1S Dup	10/19/20	ND(0.0451)	ND(0.0451)	ND(0.0451)	ND(0.25)	ND(0.05)	ND(5)
EP12A-2C	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12A-2S	10/19/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12B-1C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12B-1S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12B-2C	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
EP12B-2S	10/21/20	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(5)
TCLP Regulatory Limits[1]		5.0	400.0	2.0	NA	5.0	100.0

C - Clay sample
Dup - Duplicate sample
mg/L - Milligrams per liter
NA - Not applicable
ND - Not detected at the reporting limit
P - Pond sample
S - Sediment sample
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure

Note:
[1] TCLP regulatory limits are from Chapter 40 of the Code of Federal Regulations Subpart 261.24

APPENDIX A-5. TCLP DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Beryllium, TCLP (mg/L)	Cadmium, TCLP (mg/L)	Chromium, TCLP (mg/L)	Cobalt, TCLP (mg/L)	Lead, TCLP (mg/L)	Mercury, TCLP (mg/L)
EP2-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP2-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP2-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP2-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP2-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP3-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP3-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP3-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP3-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP3-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP4-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP4-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP4-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP4-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP4-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP5-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP5-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP5-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP5-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP5-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP6-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP6-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP6-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP6-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP6-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP7-1C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP7-1S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP7-2C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP7-2S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP7-PS	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP8-1C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP8-1S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP8-2C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP8-2S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-1C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-1S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-1S Dup	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-2C	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-2S	10/22/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-PS	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP9-PS Dup	10/20/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP10-1C	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP10-1S	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP10-2C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP10-2S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP10-2S Dup	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP11-1C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP11-1S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP11-2C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP11-2S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12A-1C	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12A-1S	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12A-1S Dup	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12A-2C	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12A-2S	10/19/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12B-1C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12B-1S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12B-2C	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
EP12B-2S	10/21/20	ND(0.015)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.0016)
TCLP Regulatory Limits[1]		NA	1.0	5.0	NA	5.0	0.2

C - Clay sample
Dup - Duplicate sample
mg/L - Milligrams per liter
NA - Not applicable
ND - Not detected at the reporting limit
P - Pond sample
S - Sediment sample
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure

Note:
[1] TCLP regulatory limits are from Chapter 40 of the Code of Federal Regulations Subpart 261.24

APPENDIX A-5. TCLP DATA SUMMARY, SWMU 2 PRELIMINARY SAMPLING
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Nickel, TCLP (mg/L)	Selenium, TCLP (mg/L)	Silver, TCLP (mg/L)	Vanadium, TCLP (mg/L)	Zinc, TCLP (mg/L)
EP2-1C	10/22/20	0.0261	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP2-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP2-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP2-2S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	0.202
EP2-PS	10/20/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP3-1C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP3-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP3-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP3-2S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP3-PS	10/20/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP4-1C	10/22/20	0.0343	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP4-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP4-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP4-2S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP4-PS	10/20/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP5-1C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP5-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP5-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP5-2S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP5-PS	10/20/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP6-1C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP6-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP6-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP6-2S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP6-PS	10/20/20	0.0449	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP7-1C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP7-1S	10/21/20	0.0352	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP7-2C	10/21/20	0.079	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP7-2S	10/21/20	0.101	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP7-PS	10/21/20	0.0838	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP8-1C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP8-1S	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP8-2C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP8-2S	10/21/20	0.0266	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-1C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-1S	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-1S Dup	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-2C	10/22/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-2S	10/22/20	0.033	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-PS	10/20/20	0.083	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP9-PS Dup	10/20/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP10-1C	10/19/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP10-1S	10/19/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP10-2C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP10-2S	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP10-2S Dup	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP11-1C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP11-1S	10/21/20	0.0598	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP11-2C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP11-2S	10/21/20	0.0406	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12A-1C	10/19/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12A-1S	10/19/20	0.0392	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12A-1S Dup	10/19/20	0.0346	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12A-2C	10/19/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12A-2S	10/19/20	0.0316	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12B-1C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12B-1S	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12B-2C	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
EP12B-2S	10/21/20	ND(0.025)	ND(0.1)	ND(0.025)	ND(0.1)	ND(0.2)
TCLP Regulatory Limits[1]		NA	1.0	5.0	NA	NA

C - Clay sample
Dup - Duplicate sample
mg/L - Milligrams per liter
NA - Not applicable
ND - Not detected at the reporting limit
P - Pond sample
S - Sediment sample
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure

Note:
[1] TCLP regulatory limits are from Chapter 40 of the Code of Federal Regulations Subpart 261.24

Appendix B – Standard Operating Procedure – Soil Sampling

memorandum

To: Sampling Team Members
From: Project Manager
Date: March 15, 2023
Re: Standard Operating Procedure – Sediment Sampling

1.0 INTRODUCTION

Sediment sampling related to site characterization and site clean-up is expected to involve source sampling of potentially contaminated sediments for characterization and profiling. Sediment sampling is expected to occur in and around the Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Solid Waste Management Unit 2 – Evaporation Ponds.

All personnel involved in sediment 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 sediment 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 current 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 in 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 sediment sampling, the only field monitoring equipment used will be a flame ionization detector (FID) and it will be calibrated and operated according to manufacturer's recommendations.

4.0 EQUIPMENT

The following equipment is recommended for sediment sampling:

- Required personal protective equipment (PPE), listed in the site-specific health and safety plan (HASP) (generally nitrile gloves, waders, life preserver, rope and safety glasses)
- Sediment sampling devices (i.e., hand auger, hand shovel, etc.)
- Sampling beaker, bottles, labels, and preservatives
- Gloves
- Chain-of-custody/sample-analysis-request forms
- FID
- 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 sediments may be difficult to access, and sampling will involve the use of specialized sediment sampling equipment. Specific analytical requirements and sampling frequencies are specified in the work plan.

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

appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a teflon-lined lid.

Saturated and underwater sediment samples will be collected using a hand auger, geoprobe, sediment sampler or a similar device. Samples will be collected from each preselected sampling location. Underwater samples will be capped prior to breaking the surface of the water to prevent agitation of the sample and to assist in core characterization. In addition, care will be taken to prevent mixing when collecting saturated and underwater samples. Sediment will be placed in sample containers provided by the laboratory and filled to the top to minimize headspace. If necessary, several cores may be collected from each location to provide adequate sample volume for the laboratory. The sample containers will be labeled with endelible ink. Filled sample containers should 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° C and ensure that the container remains intact prior to final packing and shipment.

Field screening may involve the use of an FID. In this case, the sample will be split into two aliquots. The bag containing Aliquot #1 will be sealed and shaken gently to expose the sediment to the air trapped in the container. 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. 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 FID value and the ambient air temperature will be recorded on the field boring log for each interval. Aliquot #1 will be used for FID screening only. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

The Aliquot #2 materials that correspond to the sample depths selected for laboratory analysis will be transferred into the appropriate glass sample jar, labeled, and placed in a cooler. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory. All samples shall be screened as close to the same ambient temperature as possible to obtain consistent results.

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

Field logbooks, sediment 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.

memorandum

To: Sampling Team Members
From: Project Manager
Date: March 15, 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) Solid Waste Management Unit 2 – Evaporation Ponds.

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.

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
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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 clean brass or stainless steel sampling rings, a thin-walled tube sampler, or a shovel or hand trowel. The sampling device will be driven completely into the material manually or using

a manually operated auger, drive hammer, or mallet. The sampling device will then be extracted from the material using a shovel or trowel as needed. If used, filled sampling rings or the thin-walled tube will then be removed from the sampling device and immediately sealed on both ends with teflon sheeting and plastic caps. Otherwise, the material will be placed directly from the trowel or other appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a teflon-lined lid.

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

Field screening may involve the use of a PID. In this case, the sample will be split into two aliquots. The bag containing Aliquot #1 will be sealed and shaken gently to expose the soil to the air trapped in the container. 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. 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 will be used for PID screening only. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

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

Field logbooks, soil sampling field log, and photograph logs will provide a written record of field data gathered, field observations, field equipment calibrations, the samples collected for analysis, and sample custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

697-097-001

Appendix C – Example Field Form

Sediment Field Form

Project Name: _____ Sample Media: _____
Sample ID: _____ Sample Date: _____
Sample Location: _____ Sample Time: _____
Samplers: _____ Photo Taken? (Y/N) _____
Weather: _____

Sample Description

Sampling Equipment: _____
Sample Depth: _____
Sample Recovery: _____
Latitude: _____
Longitude: _____

Sample Description: (Color, grain size, odor, organic matter, etc.) _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 197642

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 197642
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes-Only	3/15/2023