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**Certified Mail - Return Receipt Requested**

August 22, 2022

John Moore  
Environmental Superintendent  
Western Refining, Southwest LLC, Gallup Refinery  
92 Giant Crossing Road  
Gallup, New Mexico 87301

**RE: DISAPPROVAL  
AREA OF CONCERN 15 – NEW API SEPARATOR AND AREA OF CONCERN 16 – NEW API  
SEPARATOR OVERFLOW TANKS INVESTIGATION WORK PLAN  
WESTERN REFINING SOUTHWEST LLC, GALLUP REFINERY  
MCKINLEY COUNTY, GALLUP, NEW MEXICO  
EPA ID # NMD000333211  
HWB-WRG-22-004**

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has completed its review of the Marathon Petroleum Company dba Western Refining Southwest LLC, Gallup Refinery (Permittee) *Area of Concern 15 – New API Separator and area of Concern 16 – New API Separator Overflow Tanks Investigation Work Plan* (Work Plan), dated March 31, 2022 and received on March 30, 2022. NMED has reviewed the Work Plan, and hereby issues this Disapproval with the following comments.

**Comment 1**

In Section 2.0 (Site Conditions), page 7 of 15, paragraph 2, the Permittee states, “[t]he NAPIS west bay has been used to process only remediation and stormwater fluids since the idling of the Refinery in August 2020. The NAPIS east bay was taken out of service when the Refinery idled, due to the reduction in process fluids which eliminated the need for redundant bays.” The detection of fluids in the NAPIS east bay has been regularly reported since August 2020 when it was taken out of service. Provide an explanation for the detection of fluids in the NAPIS east bay in the revised Work Plan. In addition, Comment 15 of the NMED’s September 28, 2021 *Response to Approval with Modifications Annual Groundwater Monitoring Report Gallup Refinery – 2019* states, “[a]lthough both the East and West Bays are leaking and must be repaired, the leak from the East Bay appears to be less severe. Explain why the West Bay, where the leakage rate is greater, is still in use rather than the East Bay. The Permittee may be

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required to switch to using the East Bay, based on the explanation.” The December 17, 2021 Permittee response to the comment states that the sequence of [east] bay use will be evaluated as the Work Plan is developed. The Work Plan does not include any discussion regarding the consideration of switching the bay use from the west to the east. Address Comment 15 of the NMED’s September 28, 2021 correspondence in the revised Work Plan.

**Comment 2**

Section 3.1 (AOC 15 – NAPIS), pages 8 through 9 proposes two separate investigation approaches for AOC 15. The first part of the investigation is to collect soil samples to determine the extent of potential impacts caused by the NAPIS and the second part of the investigation is to conduct dye tracer testing to evaluate the integrity of the NAPIS secondary containment wall. Although the investigation approaches are satisfactory, Comment 22 of NMED’s September 28, 2021 correspondence states that the Permittee must also “propose to collect (a) the NAPIS influent samples (fluid samples prior to entering the NAPIS Bays) and (b) the fluid samples collected from the NAPIS Bays in the work plan as required by Comment 13. These samples must be analyzed for total and dissolved metals for two consecutive monitoring events.” The Permittee must include the sampling and analytical requirements from Comment 22 of NMED’s September 28, 2021 correspondence in the revised Work Plan.

**Comment 3**

In Section 3.1, page 8 of 15, paragraph 3, the Permittee states, “[a]nalytical results will be compared to their respective NMED Residential and Industrial Soil Screening Levels (SSL) (NMED 2021c).” Since the soil samples are also proposed to be collected from deeper than one foot below ground surface (bgs), where the NMED Construction SSLs are applicable, the soil analytical results must also be compared to respective NMED Construction Worker SSLs. Revise all applicable sections of the Work Plan (e.g., Sections 4.2 and 4.3) accordingly.

**Comment 4**

In Section 3.1, page 8 of 15, step 1a, the Permittee states, “[t]he temporary wells will be installed using an air-knife rig or a hand auger to 1 ft below groundwater (if groundwater is encountered) or 1 ft below the bottom of the NAPIS, with gravel pack and PVC well screen installed to 2 ft bgs.” The Permittee’s July 31, 2021 *Response to Approval with Modifications Annual Groundwater Monitoring Report Gallup Refinery – 2019* indicates that the highest recharge rates in the West and East LDUs are recorded as 98.12 and 11.48 mL/min, respectively. This data indicates that the discharge rate from the primary containment well is low and unlikely to influence groundwater quality in a short period of time even if the NAPIS secondary containment wall is compromised. The wastewater potentially discharged from the NAPIS secondary containment wall may not be laterally migrating within the soil column above the water table right after release because the discharge rate would be low. After the soil column is saturated with wastewater, it may gradually leach into groundwater. If the temporary wells are screened above the water table, potential breakthrough of the dye tracer is unlikely to be detected and the temporary wells will likely remain dry. On the other hand, there is

potential for the discharged wastewater to laterally migrate with groundwater once it reaches the groundwater. Therefore, in order to detect potential breakthrough of the dye tracer, the temporary wells must be screened below the water table. Based on this information, the top of the screened interval for the temporary wells should be set at a depth of one foot above the water table. For example, the top of the southern temporary well screen should be set comparable to the bottom depth of the west LDU unit (e.g., 8.28 feet below ground surface (bgs)). It is also important that the bottom of the screened interval should be set at a depth of two feet below the water table in order to detect potential breakthrough of the dye tracer. Include this provision in the revised Work Plan.

Furthermore, if the temporary wells are located too close to the NAPIS wall, potential breakthrough may not be detected because the location of a potential leak (e.g., holes, cracks) may not be aligned with the groundwater flow path (e.g., cross-gradient from potential leak locations). Therefore, it is important that the temporary wells be sufficiently distanced from the westside of the NAPIS wall to detect potential breakthrough. The minimum distance of the temporary wells necessary from the NAPIS wall must be evaluated and discussed in the revised Work Plan.

**Comment 5**

In Section 3.1, page 8 of 15, step 1b, the Permittee states, “the northern temporary well will be installed to approximately 6 ft bgs and the southern temporary well will be installed to approximately 11 ft bgs, if groundwater is not encountered.” It is essential to install the temporary wells below the water table (see Comment 4 above). If groundwater is not encountered, propose to adjust the location and depth of the wells until the requirement included in Comment 4 is met. If groundwater is not encountered after several attempts, NMED must be contacted to discuss this issue and to evaluate an alternate testing method. Revise the Work Plan accordingly.

**Comment 6**

In Section 3.1, page 9 of 15, step 2, the Permittee states, “[f]luorescent dye will be added to the active west NAPIS bay.” The Permittee did not provide any information regarding the concentration of the fluorescent dye tracer in the NAPIS bay to be maintained or discuss the duration which the dye tracer will be continuously applied to the NAPIS bay. The Permittee must provide this information in the revised Work Plan. Furthermore, NMED recommends using the following calculation below in order to provide the information:

$$C_1 \times V_1 = C_2 \times V_2$$

where:

$C_1$  = concentration of the dye tracer in the NAPIS bay to be maintained

$C_2$  = minimum detectable concentration of dye tracer in the temporary well (e.g., 100 µg/L or 10 µg/L as observed with a black light)

$V_2$  = pore volume between the NAPIS wall and the temporary well

$$V_2 = D \times W \times H \times \text{effective porosity}$$

where:

D = hypothetical distance from the NAPIS bay to the temporary well

W = hypothetical width of the flow path where the dye tracer migrates with groundwater

H = hypothetical thickness of the flow path where the dye tracer migrates with groundwater (e.g., length of well screen below the water table)

$V_1$  = volume of wastewater discharge from the secondary containment wall that contains dye tracer

$$V_1 = T \times F$$

where:

T = duration which dye tracer is continuously applied to the NAPIS bay

F = hypothetical discharge rate from the NAPIS secondary containment wall (e.g., not more than 98.12 mL/min)

Two parameters ( $C_1$  and T) should be optimized using the hypothetical input parameters defined above. All hypothetical input parameters used in the calculation must be evaluated and discussed in the revised Work Plan if the Permittee elects to follow this recommendation. Provide the calculations and results in an appendix of the revised Work Plan, as appropriate.

#### **Comment 7**

In Section 3.1, page 9 of 15, step 2a, the Permittee states, “[d]aily observation of the fluid in the LDUs and temporary dye monitoring wells will be conducted for 14 days.” Since hydraulic conductivity at the site varies from 0.01 to 10,000 feet per year, the proposed daily 14-day monitoring plan may or may not be sufficient. If breakthrough of the dye tracer is not observed within the initially proposed timeframe (14 days), the temporary wells must be continuously monitored for an extended period of time (e.g., monthly for one year). Revise the Work Plan accordingly.

#### **Comment 8**

In Section 3.1, page 9 of 15, step 3, the Permittee states, “[a]fter 14 days, the inactive east

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NAPIS bay will be filled with water and a different color of fluorescent dye will be added to the east bay.” The duration which the dye tracer is continuously applied to the west NAPIS bay may need to be longer than 14 days. Furthermore, the investigation for the east NAPIS bay should be initiated when the dye tracer application from the west NAPIS bay is completed. It is not clear from the discussion in Section 3.1 if the dye tracer used in each NAPIS bay could interfere with one another. In addition, as described in Comment 6, provide the information regarding the concentration of the fluorescent dye tracer in the east NAPIS bay to be maintained and the duration which the dye tracer is continuously applied to the east NAPIS bay in the revised Work Plan.

**Comment 9**

In Section 3.1, page 9 of 15, step 3a, the Permittee states, “[d]aily observation of the fluid in the LDUs and temporary dye monitoring wells will be conducted for another 14 days and recorded in the logbook.” As stated in Comment 7, the temporary wells must continuously be monitored for an extended period of time (e.g., monthly for one year) if breakthrough of the dye tracer is not observed within the proposed timeframe (i.e., 14-day monitoring).

**Comment 10**

Sections 3.1, page 8 of 15, paragraph 2, 3.2 (AOC 16 – NAPIS Overflow Tanks), page 9 of 15, paragraph 4, 4.2 (AOC 15 Investigation), page 11 of 15, bullet 1a, and 4.3 (AOC 16 Investigation), pages 11 and 12, bullet 1, state that the soil samples will be collected at three locations: the surface, the interval with the highest PID reading, and the boring termination depth (e.g., 5 feet bgs for AOC 15 and 10 feet bgs for AOC 16). However, if field screening evidence (e.g., visual, olfactory, PID reading) for hydrocarbons is observed at the termination depth above the water table, the borings must be extended to the depth where the contamination is no longer detected or to be terminated at a minimum of five feet below the water table. Soil samples must then be collected from the extended termination depth in order to delineate the vertical extent of contamination. Include this provision in the revised Work Plan.

**Comment 11**

In Section 3.2, page 9 of 15, paragraph 5, the Permittee states, “[s]ome of the proposed sample locations are not accessible by the drill rig. In particular, the proposed sample locations represented by the two southern green triangles on Figure 4 are not accessible by the drill rig and samples will therefore be collected with a hand auger.” The accessibility issue at the two southern locations appears to be from the structure associated with the dissolved gas floatation (DGF) tank. The DGF tank is no longer in use and there have been no discussions about returning it to service. In addition, AOC 16 is also located adjacent to the dike of evaporation pond 1 (EP-1). The Permittee’s September 22, 2021 *Closure Plan for Solid Waste Management Unit 1 (SWMU-1)* proposed the removal of EP-1. It maybe more appropriate to defer the AOC 16 investigation until the DGF tank and EP-1 are removed so that the area can be investigated more thoroughly. Provide a basis for conducting the AOC 16 investigation now

rather than later in a response letter or revise the Work Plan to exclude the sections related to AOC and to propose to defer the investigation to coincide with the removal of EP-1.

**Comment 12**

In Section 3.2, page 9 of 15, paragraph 5, the Permittee states, “[s]oil and groundwater samples will be analyzed by an accredited laboratory for MTBE and BTEX by Method 8260; TPH-GRO, TPH-DRO, and TPH-MRO by Method 8015; and RCRA 8 metals by Method 6010.” Based on the historical groundwater analytical data collected from the wells in the vicinity of AOCs 15 and 16 (NAPIS wells), other volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) may potentially be present in the soils within AOCs 15 and 16. All VOCs and SVOCs detected in the groundwater samples collected from wells NAPIS-1, NAPIS-2, NAPIS-3 and KA-3 in the past 5 years of sampling events must also be retained as potential contaminants of concern (PCOCs) and the soil samples collected from the borings must also include analysis for the PCOCs from wells NAPIS-1, NAPIS-2, NAPIS-3 and KA-3. Revise all applicable sections of the Work Plan (e.g., Sections 4.2 and 4.3) accordingly.

**Comment 13**

In Section 4.1 (Sample Collection Procedures), page 10 of 15, paragraph 4, the Permittee states, “[a]fter collecting the PID reading, sample jars will be filled, labeled, and placed in a cooler.” It is not clear from the statement if the Permittee will use the soil collected in the glass jars for both the PID readings and the laboratory samples or if separate soil samples will be collected to submit for laboratory analysis. Since some VOCs can potentially be volatilized and lost from the soil during the collection of the PID readings, the Permittee must not use the same soil samples for submittal to the laboratory. Soil samples collected for VOC analyses must be obtained using Encore or equivalent sampling devices or other method to collect undisturbed samples approved by NMED. Clarify the statement and include the provision in the revised Work Plan.

**Comment 14**

In Section 4.5 (Data Evaluation and Waste Management), page 13 of 15, paragraph 1, the Permittee states, “[a]ny wastes determined to be hazardous will be disposed of within 90 days.” The investigation derived wastes determined to be hazardous must be appropriately characterized and disposed at landfills regulated under RCRA subtitle C. Revise the statement for clarity. In addition, a copy of the hazardous waste manifests must be included in the investigation report.

**Comment 15**

In Appendix C (Standard Operating Procedure – Soil Sampling), Section 1.0 (Introduction), page 1, paragraph 1, the Permittee states, “[s]oil sampling is expected to occur around the Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery) (Refinery) Process Area.” The area where the investigation will take place is in the vicinity of AOCs 15 and 16 rather than AOC 26 (Process Area). Revise the statement for accuracy.

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**Comment 16**

In Appendix C, Section 3.0 (Preparation), page 1, paragraph 5, the Permittee states, “[t]he Sampling Team Members will review available surface water level data before leaving for the sampling site.” The Permittee further states that “[t]his preparation ensures that the proper equipment and personnel are available at the site.” Although AOCs 15 and 16 are located in the vicinity of EP-1 and the Aeration Lagoons, it is not clear whether surface water level data in the ponds is relevant to this investigation. Provide an explanation for collecting surface water level data in the revised Work Plan. Also, provide an example to describe the situation where equipment and personnel are selected based on variable surface water level data in the revised Work Plan.

The Permittee must submit a revised Work Plan that addresses all of the comments contained in this Disapproval. Two hard copies and an electronic version on a CD/DVD of the revised Work Plan must be submitted to the NMED. The Permittee must also include a redline-strikeout version in an electronic format showing where all revisions to the Work Plan have been made. The revised Work Plan must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED’s numbered comments. The revised Work Plan must be submitted to NMED no later than **November 30, 2022**.

If you have questions regarding this letter, please contact Michiya Suzuki of my staff at 505-690-6930.

Sincerely,

**Rick Shean**

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Rick Shean  
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Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
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