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September 28, 2021

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

RE: RESPONSE TO APPROVAL WITH MODIFICATIONS
ANNUAL GROUNDWATER MONITORING REPORT GALLUP REFINERY – 2019
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
MCKINLEY COUNTY, GALLUP, NEW MEXICO
EPA ID # NMD000333211
HWB-WRG-20-013

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has reviewed the *Response to Approval with Modifications Annual Groundwater Monitoring Report Gallup Refinery - 2019* (Response), dated July 31, 2021 and received August 4, 2021, submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this letter with the following comments.

COMMENTS FOR ATTACHMENT 1 (RESPONSE TO COMMENTS)

Comment 1

The Permittee's Response to Comment 2a from NMED's May 4, 2021 Approval with Modifications states, "the primary containment for the NAPIS is a 3/16 thick stainless steel (SS 316) liner that was fabricated and installed within each existing concrete bay of the NAPIS." The primary containment well liners are also designated as the SS 316 liner in Attachment 3 (NAPIS Inspection Report). There appears to be a typographical error in reporting the designated liner because according to Drawings 42400-105 (General Arrangement API Separator and Oil Recovery Sump Plan View Liner Installation) and 42400-106 (General Arrangement API Separator and Oil Recovery Sump Elevation View Liner Installation) included in Attachment 2 (NAPIS/LDU Drawings), the primary containment walls appear to be identified as 304SS liners. Clarify which liner was installed in the primary containment wells or identify the location of the primary containment wells that are utilizing the SS 316 liner in the figures.

Comment 2

The Permittee's Response to Comment 3 from NMED's May 4, 2021 Approval with Modifications states, "[g]auging did occur during the December 2019 sampling event; however, the data were stored on a computer that was inadvertently wiped without a backup to the MGR database [and the m]onitoring wells gauging data during the December 2019 sampling event were lost and are not included in this report." Appendix D (Field Inspection Logs) in the *2019 Annual Groundwater Monitoring Report* (2019 Report) provides a copy of handwritten notes with the gauging data collected during the December 2019 event. The Permittee must use the gauging data from the Appendix D to generate new tables reporting the December 2019 sampling event and must include the gauging data collected from the December 2019 sampling event in future reports.

Comment 3

The Permittee's Response to Comment 4 from NMED's May 4, 2021 Approval with Modifications states, "[t]he revised tables are included as Attachment 4." Attachment 4 (Replacement Pages) did not include any of the analytical summary tables required by Comment 4. Although Attachment 3 included Tables 8.8 through 8.10.2, the pertinent tables (e.g., revised Table 8.5) were not included with the Response. Address Comment 4 and provide the revised analytical tables.

Comment 4

The Permittee's Response to Comment 5 from NMED's May 4, 2021 Approval with Modifications states, "MGR plans to complete a site-wide background concentration study based on the approved work plan "Response to Disapproval Investigation Work Plan Background Concentrations" dated September 26, 2019." NMED issued an approval to the September 26, 2019 Work Plan on March 30, 2021 that states, "[i]f the Permittee elects to submit a revised work plan, submit the required document for NMED's review no later than **July 30, 2021**. If the Permittee elects implementation of the investigation based on this approved plan, a report summarizing the results of the investigation must be submitted no later than **December 31, 2022**." As of the date of this letter, the Permittee has not provided NMED with a notice to begin work for the approved work plan. State if the activities from the approved work plan have been implemented and include the start date. In addition, the Permittee is reminded that a report summarizing the results of the investigation must be submitted no later than December 31, 2022.

Comment 5

The Permittee's Response to Comment 8 from NMED's May 4, 2021 Approval with Modifications states, "[p]esticides applied on-site were used in accordance with manufacturers recommendations and would not constitute a waste. MGR will not be investigating the source of bromomethane at the Refinery." The statement is irrelevant because the bromomethane concentrations in the sample collected from evaporation pond EP-2 exceeded applicable

screening levels. The source of bromomethane may potentially be ethylene dibromide (EDB) detected at the Facility. As such, the Permittee must demonstrate that the detected bromomethane concentrations are not the result of Refinery operations. The Permittee must investigate the source of bromomethane or the Permittee must conduct pesticide analysis for samples collected from evaporation pond EP-2 using EPA Method 8081 in the upcoming groundwater monitoring work plan for the next two consecutive sampling events. Failure to comply with NMED's direction will constitute as noncompliance and may result in an enforcement action.

Comment 6

The Permittee's Response to Comment 10 from NMED's May 4, 2021 Approval with Modifications states, "[f]ield parameters will be measured and recorded while bailing, with the understanding that the process of hand-bailing may prevent stabilization of field parameters." Downhole probes/sondes are available to measure dissolved oxygen concentrations and many other in- situ water quality parameters. In-situ measurement may be an effective alternative for water quality parameters when bailers are used to collect samples. Propose to use in-situ measurement tools for wells where bailers are used for sampling in the upcoming groundwater monitoring work plan, as appropriate.

Comment 7

The Permittee's Response to Comment 11 from NMED's May 4, 2021 Approval with Modifications states, "Table 2.1 has been included with this response letter in Attachment 4." Table 2.1 was not included in Attachment 4. Provide the required table with the response letter (see also Comment 3).

Comment 8

The Permittee's Response to Comment 14 from NMED's May 4, 2021 Approval with Modifications states, "[t]his and future reports will present the mercury data in µg/L." Table 8.8.2 included in Attachment 3 still presents the mercury data in mg/L. Although the replacement pages are not necessary for the 2019 Report, the Permittee must ensure that all future reports must present the mercury data in µg/L. No response required.

COMMENT FOR ATTACHMENT 2 (NAPIS/LDU DRAWINGS)

Comment 9

According to Drawing 42400-100 (API Separator and Oil Recovery Sump Plan View), the area where the polyurethane coating was applied appear to be limited to the vicinity of the leak detection pipes. However, it is not clear if the coating was applied across the entire surface of the secondary containment walls or at localized to the vicinity of the leak detection pipes. State whether or not the coating was applied across the entire surface of the secondary containment walls or limited to the vicinity of the leak detection pipes in the response letter.

COMMENTS FOR ATTACHMENT 3 (NAPIS INSPECTION REPORT)

Comment 10

In the *Summary of NAPIS Construction*, page 2, paragraph 1, the Permittee states, "[t]he NAPIS bays were retrofitted in 2007 with a 60 – 100 mil polyurethane coating applied to the concrete followed by installation of a 3/16-inch (") stainless steel grade 316 (SS 316) [sic?] liner. A 3/8" interstitial space separates the steel liner from the concrete wall. This interstitial space is monitored by the LDU for each respective bay." Provide a schematic depicting (a) stainless-steel liner (primary containment wall), (b) interstitial space, (c) concrete wall (secondary containment wall), (d) polyurethane coating, and (e) a leak detection unit (LDU) including horizontal and vertical sections of the pipe.

Comment 11

In the *Summary of NAPIS Construction*, page 2, paragraph 1, the Permittee states, "[t]he LDU's are called out on Siemens IFC drawings 42400-100 and 105 (plan views) and in detail on IFC drawing 42400-109 (Detail L) all of which are included in Attachment 1." There is a typographical error in referencing the correct attachment with drawings 42400-100, 105, and 109. The referenced drawings are included in Attachment 2 (NAPIS/LDU Drawings) rather than Attachment 1 (Response to Comments). Correct the typographical error in future correspondence.

Comment 12

In the *LDU Evaluation and Recharge Test*, page 2, paragraph 4, the Permittee states, "[w]ater levels within the LDU monitoring wells were recorded prior to evacuation of the water from the monitoring wells using a vacuum truck." Clarify whether the term "LDU monitoring wells" reference includes the neighboring groundwater monitoring wells (e.g., NAPIS wells) or just the East and West LDUs themselves. If the East and West LDUs are designated as monitoring wells, the designation would be misleading because they are not wells. Clarify the designation of the LDUs in the response letter and future correspondence, as appropriate.

Comment 13

In the *LDU Evaluation and Recharge Test*, page 2, paragraph 6, the Permittee states, "Table 2 presents the calculated recharge rate in gallons per minute and milliliters/min (mL/min), based on the water levels in the LDUs presented in Table 1." No recharge to the LDUs should be observed regardless of the amount of hydraulic pressure exerted by the wastewater stored in the NAPIS Bays if the stainless-steel liner (primary containment wall) is intact. The presence of the fluids in the LDU indicates that the primary containment wall was compromised regardless of the recharge rate. Therefore, the test confirms that the primary containment wall of the East and West Bays have been leaking. The Permittee must investigate whether the secondary containment wall of the NAPIS Bays is still intact. Submit a work plan to investigate whether the secondary containment wall of the NAPIS Bays is intact (e.g., tracer test) no later than **March 31, 2022**.

Comment 14

In the *LDU Evaluation and Recharge Test*, page 2, paragraph 6, the Permittee states, "Figure 3 presents a combined view of the historical water levels in monitoring wells adjacent to the NAPIS, and also includes the graph of water levels shown in Figure 2." According to Table 2 (LDU Recharge Rate), the highest recharge rates in the West and East LDUs are recorded as 98.12 and 11.48 mL/min, respectively. The observed recharge rates are not significant enough to affect the depth to water (DTW) readings in the NAPIS wells. Furthermore, NMED is of the opinion that the comparison of the DTW readings in the LDUs and NAPIS wells is not an appropriate method to evaluate the condition of the NAPIS because the DTW reading in the LDUs corresponds to the discharge rate from the primary containment walls rather than the discharge rate from the secondary containment walls of the NAPIS. The discharge from the second containment walls of the NAPIS potentially affects the DTW reading in the NAPIS wells but the discharge from the primary containment walls does not directly influence the DTW reading in the NAPIS wells. No response required.

Comment 15

In the *Onsite Inspection of the NAPIS LDU*, page 3, paragraphs 1 and 2, the Permittee discusses the onsite inspection of the East Bay. Based on the inspection there were signs of corrosion and holes observed on the walls. The West Bay was not inspected because wastewater was being stored at the time. According to Table 1, the maximum recharge rate observed from the West Bay was approximately ten times greater than that of the East Bay; therefore, the walls of the West Bay may potentially be more corroded than those of the East Bay. Although 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. The Permittee may be required to switch to using the East Bay, based on the explanation.

Comment 16

In the *Onsite Inspection of the NAPIS LDU*, page 3, paragraph 2, the Permittee states, "[p]hotographs of this area are included in Attachment B." There is a typographical error in referencing the correct attachment that the photographs are located. The photographs are included in Attachment 2 (Photo Log – NAPIS Investigation). Correct the typographical error in future correspondence.

Comment 17

In the *Comparison of LDU and NAPIS Wells Historical Analytical Data*, page 3, paragraph 3, the Permittee states that "[m]anganese and chromium [are] components of stainless steel. Chromium is present in the LDU [but is] largely absent in the surrounding NAPIS wells while manganese concentrations in the LDUs are much higher than those in NAPIS-2. This indicatesr that water samples collected from the LDUs contain higher concentrations of water which is exposed to the SS 316 liner and conversely that associated impacts to groundwater are not present." It must also be noted that the LDUs are constructed with stainless steel while the NAPIS wells are constructed with PVC. The elevated chromium and manganese concentrations

in the samples collected from the LDUs may or may not indicate the corrosion of the primary containment walls; rather, they may be indicative of the degradation of the LDU casings themselves. Regardless, the difference in the metal concentrations in the samples collected from the LDUs and NAPIS wells does not completely demonstrate that the secondary containment walls and polyurethane coating are properly intact. The Permittee must provide the work plan as required by Comment 13 of this letter.

Comment 18

In the *Evaluation Findings*, page 4, bullet 2, the Permittee states that "[a] leak within the LDU would result in a continued increase in the recharge level to equilibrium with the surrounding groundwater level. Therefore, the data suggests that there is no hydraulic communication the NAPIS East Bay and the surrounding groundwater." According to Figure 3 (NAPIS LDU Recovery Test Data Summary), the elevations for the bottom of the East and West LDUs are recorded as approximately 6,907 feet and 6,907.5 feet, respectively. The groundwater elevations for all NAPIS wells gauged in 2019 were recorded below 6,907 feet according to the 2019 Report. Based on this information, the groundwater levels for the NAPIS wells depicted in Figure 3 are not accurate. Figure 3 shows that the groundwater elevations for wells NAPIS-1, NAPIS-2, and NAPIS are more elevated than the termination depths of the East and West LDUs, which is misleading. Since the groundwater elevations are lower than the termination depths of the LDUs, groundwater would be migrating from, rather than to entering the LDU casings. In addition, the LDUs are stainless-steel pipes without screens; therefore, it is unlikely that the fluids stored in the LDUs have the potential to leak into the surrounding environment. Although hydraulic communication between the LDUs and the surrounding groundwater is unlikely, it does not preclude the possibility that the fluids stored in the NAPIS Bays are leaking from the secondary containment walls and leaching into the groundwater. Submit the work plan required by Comment 13 to investigate whether the fluids stored in the NAPIS Bays are leaking and leaching into the groundwater.

Comment 19

In the *Evaluation Findings*, page 4, bullet 4, the Permittee states, "[t]he West LDU recharge rate over the period June 2 to June 8, 2021 (148.7 hours) was 0.16 mL/min, or a total of 1.4 liters. The East LDU recharge rate over the same period was 0.03 mL/min, or a total of 0.27 liters. These rates and cumulative totals were based on the level changes in the LDUs over that period. Therefore, there does appear to be leakage through the SS 304 liners on both NAPIS bays. As shown in Table 2, these leakage rates are extremely low." According to Table 2 (LDU Recharge Rate), the highest recharge rates in the West and East LDUs are recorded as 98.12 and 11.48 mL/min, respectively. The higher recharge rates may correspond to the higher fluid levels in the NAPIS Bays. Provide a discussion regarding the correlation between the fluid levels in the NAPIS Bays and recharge rates in the respective LDUs.

Comment 20

In the *Evaluation Findings*, page 4, bullet 5, the Permittee states, "[i]f the West LDU water level

returns to the level of water within the West Bay NAPIS, the evidence for the absence of a leak from the West LDU and NAPIS West Bay into groundwater is stronger." The statement is unclear. It can be deduced that if there is no leak from the primary containment walls of the NAPIS Bay, the fluids would not accumulate in the LDUs and would not be detected. However, if the water level in the LDU equilibrates with the water level in the respective NAPIS Bay, such conditions would indicate failure of the primary containment. Clarify the statement in the response letter.

Comment 21

In the *Evaluation Findings*, page 4, bullet 6, the Permittee states, "[s]everal analytes including manganese and chromium are elevated in the LDU wells relative to the NAPIS monitoring wells. These analytes are components of stainless steel, of which the NAPIS liner was constructed. This also suggests that groundwater is not a source for the water detected in the LDUs. Alternatively, the absence of chromium in NAPIS monitoring wells suggests that the LDU's are not leaking to area groundwater." The elevated chromium and manganese concentrations in the samples collected from the LDUs may or may not indicate the corrosion of the primary containment walls; rather, may be indicative of degradation of the LDU casings themselves (see Comment 17). Regardless, the difference in metal concentrations in the samples collected from the LDUs and NAPIS wells does not completely demonstrate that the secondary containment walls and polyurethane coating are intact and the NAPIS is not leaking. The Permittee must investigate whether or not the fluids stored in the NAPIS Bays are leaking from the secondary containment walls to the environment (see also Comment 13).

Comment 22

In the *Conclusions*, page 4, bullet 1, the Permittee states, "[t]he current data suggest that there is no leakage from the NAPIS or LDUs into groundwater. The chromium historical analytical data for the LDU and NAPIS monitoring wells underscores this conclusion." The current data suggests that the groundwater may not enter the casings of the LDUs; however, there has been no demonstration that indicates that the fluids stored in the NAPIS Bays will not have the potential to leak into the groundwater. The elevated chromium concentrations in the samples collected from the LDUs may potentially be originating from the corroded LDU casings themselves. In order to verify the cause of the elevated metal concentrations in the samples collected from the LDUs, 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 although the Permittee may need to continue collecting these samples in the future to help monitor the corrosion of the LDU casings.

Comment 23

In the *Conclusions*, page 4, bullet 2, the Permittee states, "[t]he addition of a polyurethane coating on the concrete walls prior to installation of the SS 316 liner prevents leakage into groundwater." Although the polyurethane coating may prevent wastewater from permeating

through the concrete walls, some organic compounds with electronegative properties similar to polyurethane may not be retained by the coatings. Evaluate the compatibility of the contaminants of concern (COCs) detected at the site with the polyurethane coating and discuss the potential for the COCs to permeate through the coating in the response letter.

The Permittee must address all comments in the attachment to this letter and submit a response letter, tables, and a schematic no later than **December 31, 2021**. A work plan required by Comment 13 must be submitted no later than **March 31, 2022**.

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

Sincerely,

Dave Cobrain
Program Manager
Hazardous Waste Bureau

cc: L. Tsinnajinnie, NMED HWB
M. Suzuki, NMED HWB
L. Barr, EMNRD OCD
L. King, EPA Region 6 (6LCRRC)

File: Reading File and WRG 2021 file