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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 21, 2019

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

**RE: DISAPPROVAL
SMW-2 AREA AND BOUNDARY WELL INSTALLATION REPORT
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-19-008**

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has reviewed the *SMW-2 Area and Boundary Well Installation Report* (Report), dated April 2019, submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this Disapproval. The Permittee must address the following comments.

Comment 1

The cover letter states, “[t]his report was prepared in response to New Mexico Environmental Department (NMED) comments in the 2013 and 2014 Annual Facility-Wide Ground Water Monitoring Reports.” More accurately, the Report was submitted based on the Permittee’s Investigation Work Plan and NMED’s comments. No response is necessary.

Comment 2

The Executive Summary, page E-i, states, “[t]he sample was very turbid and dissolved metals analyses were not performed.” A turbid groundwater sample should have been filtered to remove excessive suspended solids. Turbidity in groundwater should not prevent collection of

groundwater samples for dissolved metals analysis. Provide a more detailed explanation in a response letter.

Comment 3

The Executive Summary, page E-i, states, “[c]hloride was detected at a concentration (1,400 mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L.” There are currently no other groundwater monitoring wells west of these boundary wells. The extent of groundwater contamination west of pond EP-9 is not delineated. Comment 1 in NMED’s *Disapproval Annual Groundwater Monitoring Report: Gallup Refinery – 2017*, dated March 21, 2019, requires installation of more wells west of these boundary wells. These new wells are intended to delineate the contaminant plumes west of Pond EP-9. In addition, other organic constituents (e.g., MTBE, EDC) were detected in the groundwater sample collected from well BW-5C according to Appendix E (Groundwater Analytical Reports). Revise the Report for accuracy.

Comment 4

In Section 2.1 (SMW-2 Area), page 2-1, the Permittee states, “MTBE has been detected in groundwater samples collected at SMW-2, but has remained below the screening level.” According to the *2017 Annual Groundwater Monitoring Report*, the MTBE concentration in the groundwater sample collected from well SMW-2 exceeded the screening level in August 2015. Revise the Report for accuracy.

Comment 5

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, “[o]ther organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-1 include benzene, toluene, and total xylenes.” According to the *2017 Annual Groundwater Monitoring Report*, the MTBE, ethylbenzene, and EDC concentrations in groundwater samples collected from well OW-1 were also detected (below the screening levels). The detection of MTBE in the groundwater samples collected from well OW-1 prompted further groundwater investigation west of well OW-1 (see Comment 3). Revise the Report for accuracy.

Comment 6

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, “[o]rganic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-10 include 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene.” According to the *2017 Annual Groundwater Monitoring Report*, the cis-1, 2-DCE, 1, 2, 4-trimethylbenzene, toluene, ethylbenzene, and xylenes were also detected at concentrations below the screening levels in groundwater samples collected from well OW-10. Revise the Report for accuracy.

Comment 7

Section 3.1.1 (Boundary Wells), page 3-1, states, “[n]o discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate any potential contamination.” As stated numerous times in previous NMED’s comments, it is necessary to

collect soil samples for laboratory analysis even though field screening did not indicate any potential contamination. At a minimum of three soil samples should have been collected from each boring (e.g., from the bottom of boring, at the water table, and from vadose zone at the depth with the highest PID readings). Include the provision for all future work plans. No revision required.

Comment 8

Section 3.1.2 (SMW-2 Area), page 3-2, states, “[o]ne discrete soil sample was collected from each soil boring. The samples were from the interval exhibiting the highest soil vapor reading.” Soil samples should have been collected from each boring to delineate the extent of chloride exceedance. In addition, one discrete sample per boring is not adequate (see Comment 7). NMED’s *Approval, Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]*, dated May 16, 2019 requires the Permittee to submit a work plan to install soil borings to investigate the extent of chloride exceedances. If soil data had been collected from the borings, it could be used to guide the investigation. It is important to collect soil data to provide characterization data for the site.

Comment 9

Section 4.3.1 (Well Installation and Groundwater Sample Collection) includes two subsections titled as “Boundary Wells” and “SMW-2 Areas”. The section numbers of “Boundary Wells” and “SMW-2 Areas” are presented incorrectly. The sections regarding “Boundary Wells” and “SMW-2 Areas” are numbered as Section 3.3.1.1 and 3.3.1.2, respectively. These sections should be numbered as Section 4.3.1.1 and 4.3.1.2. Correct the typographical errors in the revised Report.

Comment 10

Section 3.3.1.1 (sic) (Boundary Wells), page 4-7, states, “[t]he well [BW-5A] was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. The screen was set to intercept possible groundwater that may exist in the gravel and sand encountered from 12 feet bgl to 14 feet bgl and the very fine grain sands encountered within the silty clay from 14 feet bgl to 20.50 feet bgl.” The screened interval of well BW-5A should have been set deeper with longer screen. The lithology description for the boring (page 4-6) indicates that the targeted sandy layers were dry. Potential water presence is first recorded at the depth of 30 feet bgs in nearby boring BW-5B. Therefore, groundwater production is unlikely at the depth shallower than 30 feet bgs at the location. In addition, the depth-to-water (DTW) measurements in the closest upgradient groundwater monitoring well MKTF-44 ranged from 22.85 to 31.16 feet bgs in 2017. Since the upper sandy layer and Chinle/Alluvial Interface are unlikely to be different water bearing zones, the groundwater elevation at the location of BW-5A is expected to be comparable to that of well MKTF-44. The DTW data in MKTF-44 should have been used to guide the decision regarding the placement of the well screen. In the future, in order to make appropriate decisions regarding the placement of screened intervals in unconfined or semi-confined aquifers, review the boring logs for nearby wells for the depths where water is potentially present and historic groundwater elevation data in nearby wells. Also, a longer screen (e.g., 20 feet) is acceptable to intercept the water table and to accommodate the trend of decreasing groundwater levels in recent years.

Include the measure to appropriately select screened intervals in future work plans. No revision is required.

Comment 11

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, “[t]he sampling was terminated at 58.5 feet bgl.” The statement is misleading. No soil samples were collected from the boring. The statement “[t]he sampling was terminated at...” appears multiple times in the Report. Revise this statement as well as all similar statements that appear in the Report for clarity.

Comment 12

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, “[n]o apparent saturated sediments were encountered [at boring BW-5B].” Although no apparent saturated sediments are encountered, groundwater is produced from well BW-5B. Indications of saturation are not always obvious in tight clay characteristic of the Chinle formation. A 24-hour delay prior to well construction to allow water to enter the boring could aid in appropriate screened interval selection. No response required.

Comment 13

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, “[t]he screen [for well BW-5B] was set to intercept possible groundwater that may exist in the sandstone encountered within the silty clays from 48 feet bgl to 54 feet bgl.” Well BW-5B is screened across the Chinle/Alluvial Interface according to Table 7 (Fluid Levels). However, since the sandstone describes the Sonsela formation, well BW-5B is likely screened across Sonsela/Chinle rather than Chinle/Alluvial Interface. Additionally, the DTW measurements for well BW-5B ranged from 8.65 to 10.57 feet bgs according to Table 7. The higher groundwater elevation in well BW-5B in comparison to that of upgradient well MKTF-44 is indicative of confined conditions, typically seen in the Sonsela formation. Revise the Report accordingly or provide explanation for why the Permittee believes well BW-5B is screened to Chinle/Alluvial Interface.

Comment 14

In Section 5 (Regulatory Criteria), page 5-2, the Permittee states, “[o]nly one constituent (di-n-octyl-phthalate) was detected in groundwater that does not have a screening level.” Table 8.2.3 (OW-59 and OW-60 Semi-Volatile and Volatile Organic Compounds, Analytical Results Summary) does not present the detection of di-n-octyl-phthalate. Include all detections of SVOCs and VOCs regardless of presence or absence of screening levels in the table. Revise the Report accordingly.

Comment 15

In Section 6.2 (Groundwater Analytical Results), page 6-3, the Permittee states, “[g]roundwater samples were also analyzed for the following total metals using the indicated analytical methods.” Cyanide and mercury are listed following the statement. However, cyanide is not a RCRA metal. Revise the Report accordingly.

Comment 16

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, “[d]etectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels.” The tables presenting the analytical results for groundwater samples collected from well BW-4B are not included in the Report. Provide these tables in the revised Report.

Comment 17

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, “[i]n the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels. Detectable concentrations of 1,1-dichloroethane, 1,2-dichloroethane, acetone, MTBE, benzoic acid, di-n-octyl phthalate, and GRO were reported in the sample collected from BW-5C.” According to Table 8.1 (BW-5B and BW-5C BTEX and MTBE Analytical Result Summary) and Table 8.1.1 (BW-5B and BW-5C General Chemistry and DRO/GRO/MRO Analytical Result Summary), MTBE and GRO are detected below the screening level in the groundwater sample collected from well BW-5B; however, these detections are not included in the statement. In addition, the detections of acetone and benzoic acid in the groundwater samples collected from well BW-5B are not presented in any tables included in the Report. Similarly, the detections of 1,1-dichloroethane, 1,2-dichloroethane, acetone, benzoic acid, and di-n-octyl phthalate are not presented in any tables included in the Report. Revise the Report for accuracy and include the analytical data tables pertinent to the discussion in the revised Report.

Comment 18

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, “[d]etectable concentrations of 1,2,4-trimethylbenzene, acetone, MTBE, and benzoic acid, were reported in the groundwater sample collected from OW-59.” The tables presenting the detection of 1,2,4-trimethylbenzene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report.

Comment 19

In Section 6.2 (Groundwater Analytical Results), page 6-6, the Permittee states, “[d]etectable concentrations of 4-isopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2-ethylhexyl) phthalate were reported in the groundwater sample collected from OW-60.” The tables presenting the detection of 4-isopropyltoluene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report. In addition, toluene is not detected from well OW-60 according to Table 8.2 (OW-59 and OW-60 BTEX, MTBE, General Chemistry and DRO/GRO/MRO Analytical Result Summary). Revise the Report for accuracy.

Comment 20

In Section 6.3 (SMW-2 Area – Additional Sampling), page 6-7, the Permittee states, “[b]ased on the flow direction of groundwater and the reported concentrations, the elevated chloride concentrations in SMW-2 may be originating from a source located in the area of the OCD Central landfarm, or further up-gradient.” The laboratory reports included in the *Response to*

Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report] indicate that the chloride concentrations in the soil samples collected from the OCD Central Landfarm range from 170 mg/kg to 570 mg/kg. With exception of one sample, the chloride concentrations in soil samples collected from the landfarm did not exceed the screening level of 500 mg/kg. Although the chloride concentrations in the excavation confirmation samples, collected from depths of approximately six feet bgs, exceed the screening level in multiple locations, these soil samples were likely collected within the footprint of Evaporation Pond (EP)-10 or native soils below the pond, rather than shallow soils within the OCD Landfarm. Therefore, the landfarm is not the likely source of chloride in groundwater. Since the landfarm overlies former Pond EP-10 and Pond EP-10 may be the source of the chloride contamination in groundwater, the depth of Pond EP-10 must be identified and the soils below the landfarm must be investigated (see Comment 8). Note that the OCD has regulatory authority regarding the chloride and sulfate exceedances in groundwater. Ensure that OCD is included on all correspondence related to this issue.

Comment 21

In Section 6.3 (SMW-2 Area – Additional Sampling), page 6-7, the Permittee states, “[t]he sulfate concentrations increase across the OCD Central landfarm moving down-gradient, with the highest reported concentrations in the area in the groundwater sample collected in OW-59. This could suggest the OCD Central landfarm is a source of the sulfate.” The laboratory reports included in the *Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]* indicate that the sulfate concentrations in the soil samples collected from the OCD Central Landfarm range from 400 mg/kg to 770 mg/kg. Since the sulfate concentration in groundwater sample collected from well OW-59 is recorded as 3,000 mg/L, the landfarm is not the likely source of sulfate in groundwater. Pond EP-10 that underlies the landfarm may be the source of the sulfate contamination in groundwater; thus, the soils below the landfarm also must be investigated for sulfate contamination (see Comment 20).

Comment 22

In Section 7 (Conclusions and Recommendations), page 7-1, the Permittee states, “[i]t is recommended to install additional monitoring wells to better determine if a local source of chloride and/or sulfate is present. An Investigation Work Plan for additional monitoring wells was submitted in August, 2018 pursuant to NMED’s request.” NMED issued a disapproval for the work plan on February 20, 2019 and required a revised work plan by August 9, 2019. This comment serves as a reminder. No response is required.

Comment 23

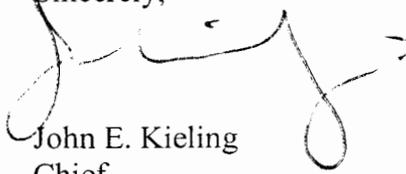
The groundwater elevation data collected from well SMW-2 is not included in Figure 5 (Chinle/Alluvium Interface Potentiometric Map September 2017). Although well SMW-2 is screened to the Chinle/Alluvial Interface, the groundwater elevation in well SMW-2 is significantly higher compared to the rest of the wells screened within the same formation in the area. Provide an explanation for the higher groundwater elevation in well SMW-2 in the revised Report.

Mr. Moore
May 21, 2019
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The Permittee must address all comments in this Disapproval and submit a revised Report. Two bound hard copies and an electronic version of the revised Report must be submitted to NMED. In addition, include a red-line strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where revisions have been made, cross-referencing NMED's numbered comments. The revised Report must be submitted to NMED no later than **October 4, 2019**.

If you have questions regarding this Disapproval, please contact Michiya Suzuki of my staff at 505-476-6059.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

cc: K. Van Horn, NMED HWB
D. Cobrain, NMED HWB
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L. King, EPA Region 6 (6LCRRC)
B. Moore, WRG

File: Reading File and WRG 2019 File
HWB-WRG-19-008