AP-111

AGWMR (4)

2018

NEW MEXICO
ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 22, 2020

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

RE: APPROVAL WITH MODIFICATIONS
ANNUAL GROUND WATER MONITORING REPORT
GALLUP REFINERY – 2018
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-19-017

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has reviewed the *Annual Ground Water Monitoring Report Gallup Refinery - 2018* (Report), dated September 30, 2019, submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this Approval with Modifications. The Permittee must address the following comments provided by both NMED and the New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division (OCD):

Comment 1

In the Executive Summary, *Group A – Wells,* page 2, the Permittee states, "[g]asoline range organics (GRO) were detected in low concentrations in BW-5C in the first and third quarters." Comment 4 in NMED's *Disapproval Annual Groundwater Monitoring Report: Gallup Refinery – 2017,* dated March 21, 2019 states, "since specific sources of hydrocarbon constituents are unknown, the Permittee must compare the DRO and GRO concentrations to the screening level

of unknown oil." The Permittee appropriately compares the total petroleum hydrocarbon (TPH) gasoline range organics (GRO) concentrations with the screening level of unknown oil in the Report. However, NMED's *Soil Screening Guidance for Human Health Risk Assessments* (Guidance) was updated in February 2019. The groundwater screening level for unknown oil was increased from 0.0398 mg/L to 0.0858 mg/L while a much lower groundwater screening level for gasoline (0.0101 mg/L) was established in the 2019 Guidance. The TPH-GRO concentrations in the groundwater samples collected from well BW-5C during the first and third quarters of 2018 are recorded as 0.034 mg/L and 0.024 mg/L, respectively; therefore, exceeding the screening level of 0.0101 mg/L. The Report is not required to be revised at this time. However, the Permittee must include the groundwater screening level of 0.0101 mg/L for TPH-GRO in all future reports and work plans.

Comment 2

In the Executive Summary, *Group A – Wells,* page 2, the Permittee states, "1,1-Dichloroethane and 1,2-dichloroethane were detected in low concentrations at BW-5B and BW-5C." Comment 22 in NMED's *Disapproval Facility Wide Ground Water Monitoring Work Plan – Updates for 2019,* dated July 12, 2019, states, "[c]hlorinated solvents have been detected in the groundwater samples collected at the Facility. The Permittee must prepare to analyze for 1,4-dioxane using EPA Method 8270 SIM for the groundwater samples collected from all monitoring wells where chlorinated solvents have been detected within the past ten years. Report the analytical results for 1,4-dioxane and provide the discussion regarding the detection of 1,4-dioxane in the subsequent 2019 annual groundwater monitoring report." In addition, Comment 32 in NMED's *Disapproval Annual Groundwater Monitoring Report: Gallup Refinery – 2017,* dated March 21, 2019, states, "[i]n addition, if [1,2-dichloroethane] EDC was newly detected in groundwater samples collected from wells during 2017 and [1,2-dibromoethane] EDB analysis was not yet proposed for the wells in the 2018 Facility-wide Groundwater Work Plan, propose to conduct EDB analysis using EPA Method 8011 in the 2019 Facility-wide Groundwater Work Plan." These comments carry over to future groundwater work plans and monitoring reports. No response required.

Comment 3

In the Executive Summary, *Group B – Wells, NAPIS-1, NAPIS-2, NAPIS-3, and KA-3,* page 3, the Permittee states, "[a]ccess to the wells was not permitted during the third and fourth quarters due to high concentrations of H_2S in the atmosphere." Explain whether the high concentration of H_2S persisted throughout the quarters or it coincided with the dates when sampling was scheduled in a response letter. If the scheduled sampling dates coincided with the dates when high concentrations of H_2S was observed in the atmosphere, the sampling could have been delayed and sampling events been conducted on a different date. The Permittee must conduct the required sampling and change the scheduled sampling dates as necessary, if the H_2S concentrations are too high to allow personnel to conduct the sampling event on the scheduled sampling timeframe.

Comment 4
In the Executive Summary, *Additional Sites Monitored, Evaporation Ponds EP-1 through EP-12B,* page 7, the Permittee states, "[t]he constituent chloromethane was detected in EP-11 above the NMED Tap Water standard in 2018." Chloromethane was used as an additive for leaded gasoline. Explain whether chloromethane was previously used in the Facility in the response letter.

Comment 5
In the Executive Summary, *Additional Sites Monitored, Evaporation Ponds EP-1 through EP-12B,* page 7, the Permittee states, "[p]esticides were not detected in the samples collected from EP-3, EP-12A, and EP-12B in 2018." Comment 26 in the NMED's *Disapproval 2017 Annual Groundwater Monitoring Report: Gallup Refinery – 2016,* dated June 4, 2018, states, "[u]nless pesticide constituents are detected [from ponds EP-3, EP-12A, and EP-12B], the pesticides analysis may be discontinued in 2019." Accordingly, the Permittee may discontinue the pesticide analysis in 2019. No response required.

Comment 6
In Section 1.2, *Background Information,* page 13, the Permittee states, "[t]he microbes degrade most of the hydrocarbons into carbon dioxide and water. Five 15-hp mechanical aerators provide aeration in each bay (North and South) in STP-1. Effluent from STP-1 then flows into evaporation pond 2 (EP-2) and is gravitated to the rest of the ponds." The Executive Summary, *Additional Sites Monitored, Outfall STP1 to EP-2,* pages 7 and 8, states that the DRO and GRO concentrations exceeded the applicable standards in the samples collected from outfall STP-1 to EP-2. The wastewater in STP-1 must be treated to the level where all organic constituents are below the applicable standards. However, the Permittee's *Response to Disapproval Annual Groundwater Monitoring Report Gallup Refinery – 2017,* dated July 5, 2019, stated that the wastewater treatment system will be upgraded. Therefore, an implementation of corrective measures may be deferred until the system is upgraded.

Comment 7
In Section 1.3, *Site Characteristics,* page 14, the Permittee states, "[s]urface vegetation consists of native xerophytic vegetation including grasses, shrubs, small junipers and some prickly pear cacti." Comment 15 in the NMED's *Disapproval Facility Wide Ground Water Monitoring Work Plan – Updates for 2019,* dated July 12, 2019, states, "[d]uring the site visit conducted in June 5, 2019, cattails were also observed along the drainage ways. Cattails are associated with seeps or wetlands. The presence of the plants indicates that the soils in the vicinity exhibit wetland characteristics." List cattails in the statement and provide a replacement page.

Comment 8
In Section 2.2, *Sampling Method and Procedures,* page 18, the Permittee states, "[f]ield water quality measurements must stabilize for a minimum of three consecutive readings taken at 2 to 5-minute intervals, within the following limits before purging will be discontinued and sampling

may begin: dissolved oxygen (DO) (10%), specific conductance (10%), temperature (10%), and pH (10%)." The required sampling method and procedures were not followed. For example, the last three dissolved oxygen (DO) readings collected from well MKTF-25 during the first quarter of 2018 are recorded as 39.7%, 30.5% and 25.5% according to Appendix B, *Field Inspection Logs*. The readings were not stabilized with the criterion prior to collecting the samples. Provide a justification for why the method and procedures were not followed; yet, the sampling results were deemed acceptable in the response letter. Additionally, all future DO data must be reported within units of mg/L, rather than %DO.

Comment 9

In Section 2.2, *Sampling Method and Procedures,* page 18, the Permittee states, "[g]roundwater samples obtained for dissolved metals analysis are filtered through a 0.45 µm (micrometer) mesh size disposable filter on site." Previously, the Permittee stated that the groundwater samples were so turbid that the syringe filters quickly became unusable. In order to resolve the issue, Comment 1 in the NMED's *Approval with Modifications [Revised] SMW-2 Area and Boundary Well Installation Report,* dated October 31, 2019 was provided stating, "[c]oarser paper filters with pore size more than 100 micron meters (µm) may be used as an initial step of the filtration process to remove larger suspended solids. The smaller syringe filters may be used to collect the samples for dissolved metals analysis. Use the sequential filtration process for dissolved metals sampling, where applicable." This comment serves as a reminder. No response required.

Comment 10

In Section 3, *Groundwater DTW/DTP,* page 23, the Permittee states, "[g]roundwater elevation data were collected from the wells listed in Table 1, Section 10.0." Table 1 in Section 10 lists monitoring schedule for 2018. The referenced tables are included in Section 9. Revise the statement and provide a replacement page.

Comment 11

In Section 6, *Groundwater Monitoring Results,* page 26, the Permittee states, "[d]ue to requirements for field preservation of samples, some samples have the results for nitrite and nitrate reported as a single value of nitrogen." The Permittee's *Response to Disapproval Facility Wide Ground Water Monitoring Work Plan - Updates for 2019,* dated September 11, 2019, stated that a new field test method was added to report nitrite separately. Incorporate the measure in the future sampling events. This comment serves as a reminder. No response required.

Comment 12

In Section 6.2.2, *Groundwater Monitoring Wells: NAPIS-1, NAPIS-2, NAPIS-3, and KA-3,* page 31, the Permittee states, "[i]n NAPIS-2, chromium (dissolved), barium (total), iron (total and dissolved), and manganese (total and dissolved) were detected at concentration levels exceeding applicable standards in 2018." According to Table 8.8.3, the chromium concentration

in the groundwater sample collected from well NAPIS-2 in April 30, 2018 was recorded as 1.6 mg/L significantly exceeding the applicable standard of 0.05 mg/L. Chromium concentrations were not previously detected in the groundwater samples collected from well NAPIS-2. In the response letter, provide an explanation for possible causes of the sudden increase in 2018 and an analysis of the trend in chromium level with the data collected in 2019. If the causes are not known and the chromium level did not decline in 2019, include hexavalent chromium analysis for the groundwater samples collected from well NAPIS-2 in the two subsequent sampling events in 2020 and report the results no later than **October 30, 2020**.

Comment 13

In Section 6.3.4, *Recovery Wells: RW-1, RW-2, RW-5, and RW-6,* page 40, the Permittee states, "[n]one of the wells [RW-1, RW-2, RW-5, and RW-6] were gauged in the fourth quarter due to the installation of a fluid recovery pump in each well." Since the groundwater level was depressed due to the fluid recovery operation, the Permittee must halt the pumping operation at least 48 hours prior to conducting depth measurements in these wells. Include the provision in the future groundwater monitoring events.

Comment 14

In Section 6.3.4, *Recovery Wells: RW-1, RW-2, RW-5, and RW-6,* page 42, the Permittee states, "[n]o SPH was recovered from RW-5 and RW-6, as new recovery wells were installed, but approval to begin use of the pumps was not granted in 2018." The NMED's *Approval with Modifications Response to Disapproval (Response to Approval with Modifications May 1, 2019) Interim Groundwater Recovery System Work Plan,* dated August 6, 2019, stated, "[t]he Response did not adequately address NMED's May 29, 2019 Disapproval comments; however, because soil and groundwater are already affected by contaminants in the area proposed for the interim groundwater recovery system and the Permittee's plan will likely not adversely affect conditions, the Permittee may proceed with the proposed groundwater recovery system, " and "[t]he first interim status report must be submitted to NMED no later than three months after the recovery system start up." In the response letter, provide a proposed date when the required first interim status report will be submitted to NMED.

Comment 15

In Section 6.4, *Constituent Levels in Group D Monitoring Wells,* page 42, the Permittee states, "[t]he Group D wells include three process/production wells, PW-2, PW-3, and PW-4 that supply water to the refinery and for domestic uses." NMED was notified that the leak from well PW-3 was scheduled to be investigated in December 2019. If the investigation was completed, present the findings in a separate report.

Comment 16

In Section 6.5, *Constituent Levels in Group E Monitoring Wells,* page 45, the Permittee states, "[t]he asphalt in the area of MKTF-36 has been destroyed by truck traffic. MKTF-36 could not be located during the fourth quarter 2018 for gauging or sampling." SPH and high level of

constituent concentrations have been detected from well MKTF-36. Well MKTF-36 is critically positioned to delineate the extent of the plumes and also serves to monitor leak detection from the truck loading rack. If well MKTF-36 can be located and repaired, continue to monitor the well. Otherwise, propose to submit a work plan to replace the well in the response letter.

Comment 17

In Section 6.5, *Constituent Levels in Group E Monitoring Wells,* page 46, the Permittee states, "Vinyl Chloride [concentrations exceeded the applicable standard in the groundwater samples collected from wells] MKTF-2, MKTF-10, MKTF-11, MKTF-15, MKTF-16, MKTF-24, and MKTF-25." The detection of vinyl chloride may be indicative of the occurrence of reductive dechlorination of highly chlorinated compounds. The vinyl chloride concentrations in the groundwater samples collected from well MKTF-2 appear to be increasing. Since vinyl chloride is more toxic than its parent compounds, an accumulate of the compound must be prevented. The Permittee proposed to submit a separate submittal that evaluates natural attenuation of chlorinated solvents in the *Response to Approval with Modifications 2017 Annual Groundwater Report,* dated November 12, 2019. NMED concurs with the Permittee's proposal. The evaluation must be submitted no later than **November 1, 2020**.

Comment 18

In Section 6.6.1, *Evaporation Ponds EP-1 through EP-12B,* page 49, the Permittee states, "[b]enzene was detected above the applicable standard in evaporation pond EP-2 in the first semi-annual event 2018 (Table 8.15). Benzene was detected at concentrations below the applicable standard in EP-2, EP-3, EP-4, EP-5, and EP-12B (Table 8.15)." Benzene should not be present in the evaporation ponds. The wastewater treatment system is underperforming. It appears that the wastewater treatment system and the aerators in STP-1 are not effectively treating the benzene (see Comment 6).

Comment 19

In Section 6.6.4, *Outfall BW to EP-2,* page 51, the Permittee states, "BW is defined as reverse osmosis water coming from the boiler unit. The flow from the boiler unit previously discharged into EP-2 through a 4-inch PVC pipe. The reverse osmosis water no longer discharges to EP-2 and has been rerouted back into the units for reuse. No samples were collected in 2018." The Permittee's *Response to Comments Approval - Hydrocarbon Seep Interim Measures 2019 Second Quarter Status Report*, dated September 5, 2019 states, "[t]his brings us to the current day where the RO Reject is again discharged to Pond 9 while design is currently being conducted for total replacement. Once the replacement installation is completed (anticipated in 2nd or 3rd quarter of 2020), it is anticipated that the remainder of the line will be abandoned, and the new line will carry the RO reject water to pond STP-1." Clarify whether the RO Reject is a retentate and BW is a permeate generated from the reverse osmosis unit. If so, the RO Reject would contain high concentrations of total dissolved solids. The RO Reject is currently discharging directly to pond EP-9; RO Reject discharge samples must be collected from the outfall and analytical results must be reported in the future reports. Additionally, even if the RO

Reject is routed to pond STP-1, the concentrations of total dissolved solids are unlikely to be reduced. When the wastewater treatment system is upgraded, the issues associated with the elevated total dissolved solids concentrations must be addressed.

Comment 20

In Section 7.2, *Group B – Groundwater Monitoring,* page 55, the Permittee states, "[n]o changes [in current monitoring schedule is] required [for LDUs] as repairs were recently conducted in 2018 to ensure no active leaks from the NAPIS." Since water is detected in the East and West LDUs, both the east and west bays are leaking through the secondary containment wall. Although some parts of the NAPIS were repaired in 2018, the NAPIS must be repaired or replaced.

The Permittee must address all comments in this letter and submit a response letter, replacement pages and electronic version of the revised Report no later than **March 27, 2020**. Additionally, a letter report that includes the results of hexavalent chromium analysis for the groundwater samples collected from well NAPIS-2 required by Comment 12 must be submitted no later than **October 30, 2020**, as appropriate. The evaluation of the degradation of chlorinated compounds must be submitted no later than **November 1, 2020**, as required by Comment 17.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

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

Sincerely,

Kevin Pierard
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
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B. Moore, WRG

File: Reading File and WRG 2020 File
HWB-WRG-19-017