NEW MEXICO
ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

December 16, 2009

Mr. Randy Schmaltz
Environmental Manager
Western Refining, Bloomfield Refinery
P.O. Box 159
Bloomfield, New Mexico 87413

RE: NOTICE OF DISAPPROVAL
INVESTIGATION REPORT GROUP 2
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY
EPA ID# NMD089416416
HWB-GRCB-09-004

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) has reviewed Western Refining Southwest Inc., Bloomfield Refinery's (Western) *Investigation Report Group 2 (SWMU No. 2 Drum Storage Area North Bone Yard, SWMU No. 8 Inactive landfill, SWMU No. 9 Landfill Pond, SWMU No. 11 Spray Irrigation Area, and SWMU No. 18 Warehouse Yard)* (Report), dated May 2009. NMED hereby issues this Notice of Disapproval (NOD). The Permittee must address the following comments in the revised Report.

Comment 1

In Section 2 (Background), Section 2.4 (SWMU No. 11 Spray Irrigation Area), page 6, paragraph 2, Western states "[m]anganese was detected at low concentrations that are above the standard but it is likely these concentrations are representative of background concentrations. Similar manganese concentrations were detected in MW-8, which is also in an up-gradient location relative to site operations."

Western has not established background concentrations for either soil or groundwater at the Facility. Therefore, it is unknown whether the detected manganese concentrations are

representative of a background value. Western must revise the Report to remove the reference to background.

Comment 2

In Section 2 (Background), Section 2.2 (SWMU No. 8 Landfill), page 4, Western states "[t]here is no record of any other waste materials being placed in the landfill with the possible exception of minor quantities of catalyst fines and sulfur."

Western must revise the Report to identify the type of catalyst fines placed in the inactive landfill. Additional investigation and sampling may be warranted to ensure that catalyst fines and sulfur are not a concern.

Comment 3

In Section 2 (Background), sub-section 2.5 (SWMU No. 18 Warehouse Yard), page 7, paragraph 1, Western states "[a]n above ground storage tank that contains gasoline is located within the yard and it has secondary containment."

Western must revise the Report to describe the type of secondary containment used for the above ground storage tank (e.g., concrete, clay, soil berm). In addition, Western must briefly address the product history of the above ground storage tank (i.e., the other types of product stored in this tank, if any and dates of use).

Comment 4

In Section 3.1 (Soil Boring and Monitoring Well Installation), page 8, paragraph 1, Western states "[t]o accomplish this objective, soil borings and monitoring wells were installed at the North Bone yard (SWMU No. 2), the Landfill (SWMU No. 8), the Landfill Pond (SWMU No. 9), and the Warehouse Yard (SWMU No. 18)."

This paragraph does not provide detail as to what occurred during the investigation. Western must revise this Section of the Report to provide the number of soil borings, frequency of sampling, temporary wells, and monitoring wells installed at each SWMU during the investigation.

Comment 5

In Section 3.3 (Collection and Management of Investigation Derived Waste), page 8, Western states "[d]rill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings was contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered."

Western must revise the Report to provide more information about the management of soil IDW. The information must include, but is not limited to, the following: the volume of soil generated, the analytical methods (if any) used for characterization, and the location where the IDW was disposed.

Comment 6

Western discusses surface conditions at the facility in Section 4.1 but does not mention the SWMUs that were investigated. Western must revise the Report to incorporate SWMUs 2, 8, 9, 11, and 18 in the surface conditions description.

Comment 7

In Section 4.3 (Subsurface Conditions), page 13, paragraph 2, Western states "[o]ne underground pipeline is present in the area included in the SWMU Group No. 2 investigation. This wastewater line runs beneath SWMU No. 8 (Inactive Landfill) as shown on Figure 6 and does not appear to have had any impacted on contaminant migration."

Western must describe the type of wastewater that flows within the pipeline (e.g., process wastewater, sanitary wastewater) and specify where the pipeline begins and ends. In addition, Western must demonstrate the pipeline does not serve as a conduit for contaminant migration since contaminants were detected in some of the borings (MW-52, SWMU8-5, SWMU8-6, SWMU8-7, and SWMU8-8) located close to the pipeline. Western must revise the Report accordingly.

Comment 8

In Section 4.4 (Monitoring Well Construction, Boring, or Excavation Abandonment), page14, paragraph 3 states "[s]ince saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13 to 14 feet bgl. As seen on the well construction log the Nacimiento Formation was encountered at 18 feet below ground surface."

The well construction log does not use the term Nacimiento formation, but at 18 feet, states "Sand/Sandstone (SP/SS) Fine grain, compact, damp, light brown to tan." NMED recommends revising the text of the Report to reference the sandstone as the Nacimiento formation.

Comment 9

In Section 4.4 (Monitoring Well Construction, Boring, or Excavation Abandonment), pages 15-17, Western discusses the drilling activities that occurred at the SWMU No. 8 Landfill and the installation of monitoring wells MW-52 and MW-53. In the text, Western includes the saturation depth for MW-52 (34 feet below ground surface (bgs)), but does not address the saturation depth for MW-53. In addition, the well construction sheet for MW-53 does not show a saturation/water depth but states "not encountered."

Western must revise the Report to include the measured depth to water for MW-53 and revise the wells construction sheets to include initial measured depth to water for each well.

Comment 10

In Section 4.4 (Monitoring Well Construction, Boring, or Excavation Abandonment), SWMU No. 9 (landfill pond), page 17, Western briefly discusses the installation of one soil boring and the conversion to a temporary well. Western must revise the Report to further describe the investigation of this SWMU (e.g., field screening evidence of contamination and associated depths, sample depths, depth of saturation, screen interval of the temporary well). The information provided for each SWMU must be consistent (e.g., the level of detail provided for SWMU No. 9 must be comparable to the detail provide for SWMU No. 2 and SWMU No. 8).

Comment 11

In Section 4.4 (Monitoring Well Construction, Boring, or Excavation Abandonment), SWMU No. 18 (Warehouse Yard), page 18, Western discusses the drilling of MW-54. During the installation of MW-54, the initial borehole was abandoned because the lead auger became unattached and was lost during removal. Western then drilled a second borehole and labeled it as MW-54 which is within five feet of the original MW-54 boring. In the revised Report, Western must clearly describe all activities related to the drilling, abandonment and installation of MW-54 in the second boring.

Comment 12

In Section 4.5 (Ground Water Conditions), page 19, paragraph 2, Western states "[n]o separate phase hydrocarbon (SPH) was measured in any of the new wells installed during this investigation and based on historical data only SWMU No. 18 (Warehouse yard) is located in an area that had SPH present in the past."

RW-1 is located in the vicinity of the SWMU No. 18 and, based on the *2008 Groundwater Remediation and Monitoring Annual Report* dated April 2009, RW-1 is an active recovery well that collects and pumps SPH and hydrocarbon contaminated water to the API separator for SPH recovery. Western must revise the Report to clarify that SWMU No. 18 is in a location where SPH is currently present.

Comment 13

Western addresses the Regulatory Criteria in Section 5, page 21 and states "[t]he Order specifies a hierarchy of screening levels, with the screening levels based on NMED guidance taking precedence over EPA's Region VI Human Health Medium Specific Screening Levels. NMED guidance used to establish cleanup levels includes the *Technical Background Document for Development of Soil Screening Levels* and *Total Petroleum Hydrocarbon (TPH) Screening Guidelines* [TPH Screening Guidelines]. For non-residential properties (e.g., the Bloomfield Refinery), the soil screening levels must be protective of commercial/industrial workers

throughout the upper two feet of surface soils and construction workers throughout the upper ten feet."

Western only mentions the TPH Screening Guidelines document to be used to establish cleanup levels and discusses non-residential properties and commercial and industrial worker levels but never mentions the document from which these soil screening levels are derived. Western must revise the Report to specify the name of the document and the version from where non-residential, commercial, and industrial screening levels were derived from (e.g., New Mexico Environment Department Technical Background Documents for Development of Soil Screening Levels, August 2009, Revision 5.0 (NM SSLs)). In addition, since the refinery is no longer in operation, residential cleanup levels are appropriate for those portions of the refinery where operations have ceased.

Comment 14

In Section 5.0 (Regulatory Criteria), page 21, Western states "[i]n addition, soils must be protective of the underlying ground water. Table 6 provides a list of the available NMED and EPA soil screening levels for commercial/industrial properties. The lowest applicable screening level is bolded. For some constituents, such as benzo(b)fluoranthene, there is more than one "lowest" applicable screening level. In this example, the screening level for industrial workers is the lowest NMED screening level but since it only applies to the upper two feet, the soil screening level for protection of ground water is also applicable and it applies to all soils below two feet."

Western must compare the analytical results to the NM SSLs residential scenario and, if contamination is present at depths greater than two feet below ground surface, to the DAF of 1 at this stage of investigation.

Comment 15

In Section 5 (Regulatory Criteria), page 21, Western states "[f]or non-residential properties (e.g., the Bloomfield Refinery), the soil screening levels must be protective of the commercial/industrial workers throughout the upper two feet of surface soils and construction workers throughout the upper ten feet."

The above paragraph uses the term commercial/industrial worker. NMED is assumes that Western compared soil samples collected from the upper two feet to the NMED's Industrial/Occupational soil screening standard. Western must revise the Report to correct this discrepancy.

Comment 16

In Section 5 (Regulatory Criteria), page 21, Western states "[t]able 6 provides a list of the available NMED and EPA soil screening levels for commercial/industrial properties. The lowest screening level is bolded."

The following comments apply to Table 6; Western must revise the Report as indicated below:

a. Western must revise Table 6 to include a footnote that identifies what the bold text represents. Although this was stated in the text of Section 5.0, it must also be explained in the table.

b. The column headings in the Table states "NMED" and "EPA" and, the rows below show the applied soil screening standards (e.g. Industrial/occupational, residential). In the revised Report, Western must revise the footnotes to reference the guidance document(s) that are the source of these standards (e.g., NMED = NMED Technical Background Document for Development of Soil Screening Levels August 2009, EPA Human Health Medium Specific Screening Levels August 2008 or Regional Screening Levels).

c. Table 6 shows the DAF 20 value for mercury as 2.09 mg/kg; however, the NMSSL DAF 20 for mercury is .0029mg/kg (2.09E-03 mg/kg). Western must revise Table 6 and all other applicable Tables to correct the listed DAF20 value for mercury.

d. Western must revise the Report to indicate in the footnotes the source of the Diesel Range Organics (DRO), Gasoline Range Organics (GRO), and Motor Oil Range Organics (MRO) standards (i.e., *Total Petroleum Hydrocarbon (TPH) Screening guidelines.*) In addition, Western must apply the "unknown oil" value or demonstrate in the text why a different value may be applicable.

e. For purposes of clean up, Western must revise Table 6 to include the residential and DAF 1 standards.

Comment 17

In Section 5 (Regulatory Criteria), page 21, Western states "[t]able 7 presents the ground water cleanup levels, with the applicable cleanup level highlighted. The following comments apply to Table 7; Western must revise the Report as indicated below:

a. Define the acronym names in the Table in a footnote (e.g., WQCC = New Mexico Water Quality Control Commission, MCL = Maximum Contaminant Level, etc.).

b. Define the letters in the EPA TapW_Key column in the footnotes (e.g., c = carcinogen).

c. Revise Table 7 to include a footnote that defines the meaning of the bold text. Although the bold text is defined in Section 5.0, it must also be explained in the table.

d. The cleanup levels for DRO, MRO, and GRO are shown as WQCC standards but these cleanup levels are listed in the NMED TPH Screening Guidelines. Western must revise Table 7 to state that the DRO, MRO, and GRO standards are derived from the NMED TPH Screening Guidelines. In addition, Western must apply the unknown oil standard for DRO. (Note, the table incorrectly lists the standards for MRO and DRO as (#3 and #6 Fuel Oil) 134,000 and (Diesel #2/crankcase oil) 172,000 µg/L; however these levels are listed as 1,340 and 1,720 µg/L, respectively).

Comment 18

In Section 6.1.2 (SWMU No.8 Landfill), page 26, Western states "On September 23, 2008 discrete soil samples were collected from all soil boring locations at SWMU No. 8 except SWMU 8-6A for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. It is unclear why samples were not collected from SWMU 8-6A. Western must revise the Report to explain why discrete soil samples were not collected from SWMU 8-6A.

Comment 19

In Section 7 (Conclusions and Recommendations), under the (Drum Storage Area North Bone Yard (SWMU No. 2)), page 35, paragraph 3, Western discusses the detection of low concentrations of metals that exceed the groundwater standards and states "Ground water samples were collected from 7 temporary wells and 2 permanent wells located at SWMU No. 2…[l]ow concentrations of metals were detected, including three locations with arsenic with a maximum value of 0.012 mg/l vs. a screening level of 0.01 mg/l. Similarly, lead was detected at five locations at concentrations slightly over the screening levels (i.e., max concentrations of 0.034 vs. 0.015 mg/l). Because the wells were purged and sampled using a bailer it is most likely that the presence of arsenic and lead above their respective screening levels is due to suspended sediment in the samples collected for "totals" analyses. There are also single occurrences of barium, beryllium, and chromium at concentrations above their respective screening levels that are attributable to entrained sediment. All of the detections of low concentrations of arsenic, barium, beryllium, chromium, and lead are believed to be an artifact of sample collection and not related to site contamination. The absence of any petroleum constituents at these same locations is a strong indicator that the low concentrations of metals are not the result of on-site refinery operations."

Given that metals are detected in groundwater above the screening levels, and without the establishment of background levels, it is unknown if the contaminants are the result of operations at the refinery. Western must revise the report to remove all statements indicating that elevated detections of metals are exclusively from suspended sediment during sample collection. See also Comment 20

Comment 20

In Section 7 (Conclusions and Recommendations), under the (Landfill Pond (SWMU No. 9)), page 38, Western states "[a] groundwater sample was collected from a temporary well installed in soil boring SWMU 9-1…[s]everal of the total metals analyses contained concentrations exceeding the screening levels (i.e., cadmium, cobalt, manganese, and nickel); however, the ground water sample collected from the temporary well was turbid and the entrained sediment caused artificially high concentrations to be reported for metals. The clearest example of this effect is reported concentrations of 6 mg/l for nickel, which in its elemental form is insoluble in water. The ground water sample contained concentrations of chloride, sulfate, and nitrogen (nitrate and nitrite) above screening levels but these constituents are all naturally occurring and based on all available information appear to be unrelated to site waste management activities (i.e., background concentrations)."

The statement that metals detections in groundwater are attributed to the sample collection methods does not necessarily demonstrate that the metals concentrations are not from refinery operations. In addition, Western states that the detection of metals, chlorides, sulfates, and nitrogen are naturally occurring and result from background concentrations. It is unknown if the detections of metals, chlorides, sulfates, and nitrogen are naturally occurring because background concentrations at the facility have not been established in groundwater or soil and these constituents also are associated with refinery operations. Western must revise the Report to qualify all references related to background and naturally occurring constituents. All statements claiming that contaminants are exclusive of refinery operations and waste management practices must be substantiated. See also Comment 19.

Comment 21

The following Comments apply to Tables 8 through 10; Western must revise the Report accordingly:

a. The tables are difficult to read and the text is small. Western must revise these tables to increase the font size. The SWMU locations and data must be clearly legible.

b. The first three columns of each table are titled "Screening Level 0-2', Screening Level 2-10', Screening Level >10." Western must revise these columns to identify what NMED soil screening level is being applied.

c. Western must revise the tables to include footnotes that define any abbreviations. denote what bold indicates. and include the source of all standards (e.g.. NMED Residential Soil Screening Level = NMED Technical Background Document For Development of Soil Screening Levels Revision 5.0. August 2009).

d. Identify the source of the DRO. GRO. and MRO cleanup levels.

e. The tables show "NR" in some columns which are defined as "not reported" in the footnotes. Western must explain why the value was not reported.

Comment 22
In Table 14 (Groundwater Analytical Results). Western includes a footnote that states "bolded value exceeds screening level." Lead was detected at 0.02 mg/L in monitoring well MW-50. MW-52. and MW-53 which exceeds the standard of 0.015 mg/L and was not bolded. Western must revise the Report to bold this value and review all tables to ensure that all exceedances have been bolded or otherwise highlighted.

Comment 23
In Table 10. the constituent 1-Methylnaphthalene and 2-Methylnaphthalene under the column "NMED Residential Soil Screening Level." the value is denoted as 22^{1} and 310^{1}, respectively. Western must provide the explanation for the superscript 1 in the footnotes. In addition. some of the values for the 1 and 2-Methylnaphthalene are bolded. Western must also identify what the bold values denote in the footnotes. Western must revise the tables throughout the Report accordingly.

Comment 24
In Tables 8, 9, and 10. the results for 1-Methylnaphthalene and 2-Methylnaphthalene are mostly designated with NR (not reported). Western must revise the Report to explain why results for 1-Methylnaphthalene and 2-Methylnaphthalene are not reported instead of providing data from the laboratory reports (e.g., Table 9 sample location SWMU 8-2 (1.5'-2.0') indicates NR for 2-methylnaphthalene and the laboratory report states ND<0.26 mg/kg). Western must revise the tables accordingly or provide an explanation in the text why the values were not included or include the correct date from the laboratory report(s).

Comment 25
Table 14 provides the groundwater analytical results from the temporary and monitoring wells. The Table includes a column titled "Screening Levels." Western must revise Table 14 to identify the screening level being applied (WQCC, MCL, NMED TPH screening Guidelines) and include a footnote that identifies the sources of the standards.

Comment 26
Figure 9 must be revised to include the location of RW-1. In addition, the symbol x-x within the figure must also be defined in the legend. Western must revise Figure 9 and all applicable figures throughout the Report as necessary.

Comment 27
In Figure 13 (Manganese Map), Western states in the legend that "manganese concentration (mg/l) (August – October 2008 where available, otherwise historic data)." It is not clear how to differentiate between the data collected during August through October 2008 and the historic data and dates of the historical data are not provided. Western must revise the legend to clarify this discrepancy. This comment also applies to Figure 15, and 16 (pertaining to chlorides and sulfate, respectively).

Comment 28
In Table 14, some of the practical quantification limits (PQL)/method detection limits are higher than the cleanup standards (e.g., MW-50 for benzene states <1.0 and the MCL is .005). It is not possible to determine if benzene is present because the listed detection limit is above the MCL. Western must address this issue in the revised Report.

Comment 29
The well construction sheets provided in Appendix B depict the screened intervals for the monitoring wells on a diagram but do not notate the depths of the screened interval. Although these depths are included in the text, Western must revise the well construction sheets to notate the screened interval depths.

Comment 30
In Appendix D (Photographs), Western includes photographs for all SWMU's except SWMU No. 9 (Landfill Pond). Western must revise Appendix D to include photographs of SWMU 9.

Comment 31
A requirement for this investigation, established in Comment 2 of NMED's Approval with Modifications Investigation Work Plan Group 2 dated August 11, 2008, states "Western states in Section 5.1 (Drilling Activities) that "[s]oil borings will be drilled three feet beneath the deepest evidence of waste materials or other signs of contamination. In addition to the above, specifically at SWMU No. 8 (Inactive Landfill), Western must drill to a minimum of three feet below the landfill material at each location."

It is not clear from the Report if Western drilled to a minimum of three feet below the landfill material at each location. Western must revise the Report to state whether or not the borings were drilled to depths three or more feet below the landfill and also discuss the depth and dimensions of the landfill.

Comment 32

The revised Report must address monitoring well development, provide consistency when discussing sampling activities that occurred during the investigation at each SWMU (e.g., compare the level of detail found in Section 4.4 and Section 6 for SWMU No. 2 verses the lower level of detail provided for SWMU No. 9), and elaborate on the sampling methods and procedures that were applied while sampling.

Western must address all comments contained in this NOD and submit a revised Report to NMED on or before March 29, 2010. The revised Report must be submitted with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. In addition, an electronic version of the revised Report must be submitted that shows all changes made to the Report in red-line strikeout format.

If you have any questions regarding this letter, please contact Hope Monzeglio of my staff at (505) 476-6045.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
H. Monzeglio, NMED HWB
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A. Hains, Western
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