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Certified Mail - Return Receipt Requested

April 4, 2024

George H. Cushman
Headquarters, Department of the Army
Office of the DCS, G-9
Army Environmental Office, Room 5C140
600 Army Pentagon
Washington, DC 20310-0600

**RE: DISAPPROVAL
GROUNDWATER PERIODIC MONITORING REPORT
JULY THROUGH DECEMBER 2022
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-23-008**

Dear Mr. Cushman,

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity (Permittee) *Groundwater Periodic Monitoring Report July through December 2022* (Report), dated November 2023. NMED has reviewed the Report, and hereby issues this Disapproval with the following comments.

GENERAL COMMENTS

1. Inaccuracies/Discrepancies

NMED Comment: Although the quality of the report content has notably improved compared to the previous ones, some inaccuracies/discrepancies were still identified in the Report. Examples are listed as follows:

- a) **Figure 5-1, Northern Area Nitrate and Nitrite in Alluvial Groundwater – October 2022:** The nitrate concentration in the groundwater sample collected from well MW37 is depicted as <0.040 J mg/L in the figure, while it is reported as 0.040 J mg/L in Table 5-2, *Summary of Inorganic Anions Analytical Results*. Correct the typographical error in the revised Report.

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- b) **Figure 5-7, Northern Area Fluoride and Phosphate in Alluvial Groundwater – October 2022:** The phosphate concentration in the groundwater sample collected from well SMW01 is depicted as <1.2 mg/L in the figure, while it is reported as <1.25 mg/L in Table 5-2. Resolve the discrepancy in the revised Report.
- c) **Figure 5-7, Northern Area Fluoride and Phosphate in Alluvial Groundwater – October 2022:** The phosphate concentration in the groundwater sample collected from well TMW08 is depicted as <1.2 mg/L in the figure, while it is reported as <1.25 mg/L in Table 5-2. Resolve the discrepancy in the revised Report.
- d) **Figure 5-9, Northern Area Explosives in Alluvial Groundwater – October 2022:** The 4-amino-4,6-dinitrotoluene concentration in the groundwater sample collected from well TMW03 is depicted as <0.02 J µg/L in the figure, while it is reported as 0.92 J µg/L in Table 5-3, *Summary of Explosives Analytical Results*. Resolve the discrepancy in the revised Report.

Revise the Report to address the inaccuracies and discrepancies.

2. Missing References

NMED Comment: Some references are not listed in Section 7.0, *References*. For example, although Section 1.0 states, “[b]ased on the information described in the Interim Northern Area Groundwater Monitoring Plan, Version 10, Revision 1, Request for Work Plan Deviations letter dated November 12, 2020 (Army, 2020),” the referenced document (i.e., Army, 2020) is not listed in Section 7.0. Include all cited references in the revised Report.

SPECIFIC COMMENTS

3. Section 1.1, Site Description and Activities, lines 32-33, page 1-1

Permittee Statement: “[T]he Missile Defense Agency currently leases and uses portions of FWDA for missile testing.”

NMED Comment: Describe the nature of missile testing and associated activities conducted by the Missile Defense Agency (MDA) at the leased portions of the site in the revised Report. If the activities conducted by the MDA can cause potential adverse effects to human health/environment or contaminate the site with potential chemical releases, they must be reported to NMED, to which NMED will further provide directions to address the issue.

4. Section 2.2, Groundwater Purging and Sampling, lines 2-7, page 2-2

Permittee Statement: “For purposes of sampling, eight monitoring wells were considered dry during the October 2022 groundwater sampling event: FW35 (dry since 2015), MW18S

(dry since installation in 1994), MW22S (dry since fall 2016), and TMW11, TMW40S, TMW54, TMW56, and TMW60 (dry since 2021). Well TMW56 was measured with over 6 inches of water during groundwater gauging but did not recharge with 6 inches of water after purging dry.”

NMED Comment: The directions regarding dry wells FW35, MW18S, MW22S and TMW54 were previously provided in separate covers as follows:

- a) Comment 15 of the NMED’s May 23, 2023 *Disapproval Groundwater Periodic Monitoring Report January through June 2021, and Groundwater Periodic Monitoring Report July through December 2021* states, “[p]ropose to submit a work plan to abandon wells FW35, MW18S and MW22S in the revised Reports.”
- b) Comment 36 of the NMED’s January 25, 2022 *Disapproval Final Northern Area Groundwater RCRA Facility Investigation Report* states, “[s]ubmit a work plan to replace well TMW54 with a well that is constructed with a more appropriate screened interval no later than June 30, 2022.”

Since these comments will be addressed in separate covers, no response is required. This part of the comment serves as a reminder. In addition, address the following directions for wells TMW11, TMW40S, TMW56, and TMW60:

- I. Alluvial well TMW11 is not located to delineate the boundaries of contaminant plumes. Well TMW11 must continue to be monitored and sampled, as groundwater is available; however, a replacement well for well TMW11 is not warranted at this time.
- II. The RDX concentrations in the groundwater samples collected from alluvial well TMW40S with a screened interval of 50 to 60 feet below ground surface (bgs) were consistently the highest among those of the alluvial wells when groundwater was available. Although the groundwater elevations at well TMW40S has decreased in recent years, RDX is likely to be detected in the vicinity of the well. Therefore, a replacement well for well TMW40S must be installed, as practicable. Bedrock well TMW40D (screened interval of 135 to 155 feet bgs), which is located adjacent to TMW40S, has not been impacted by the overlying RDX plume. Seventy-five (75) feet of soil column is present from the bottom of the screened interval of well TMW40S (i.e., 60 feet bgs) to the top of screened interval of well TMW40D (i.e., 135 feet bgs). The alluvial aquifer in the vicinity of the well may extend deeper than 60 feet bgs. Evaluate whether a replacement well with a deeper screened interval that targets the same hydrogeologic unit (i.e., alluvium) can be advanced adjacent to well TMW40S. Review the boring logs and provide a discussion in the response letter. In addition, provide the boring logs for wells TMW40S and TMW40D with the

response letter.

- III. Alluvial well TMW56 is critically located to delineate the boundary of the perchlorate plume. It is essential to retain a groundwater sample for perchlorate analysis from well TMW56. If the groundwater in well TMW56 is limited after purging, collect a perchlorate sample first or extend the time for groundwater recharge, as necessary, and document the deviation associated with sampling procedures in future groundwater periodic monitoring reports.
- IV. Alluvial well TMW60 is critically located to delineate the boundaries of the nitrate and RDX plumes; however, wells TMW21 and TMW43 also define the plume boundaries of nitrate and RDX in the vicinity of well TMW60. In addition, the screened intervals of wells TMW21 and TMW43 are comparable to that of well TMW60. Thus, alluvial well TMW60 must continue to be monitored and sampled, as groundwater is available; however, a replacement well for well TMW60 is not warranted at this time.

5. Section 2.2, Groundwater Purging and Sampling, pages 2-2 and 2-3

NMED Comment: Section 2.2 states that wells were purged with dedicated low-flow pneumatic, Bennet, BESST, portable stainless-steel electronic submersible pumps or bailers. However, the Report does not include a table that presents the purging method utilized for each well. Include a table that identifies the purging method for each well in the revised Report. In addition, it is unclear how and why wells were purged with various purging methods. It would be appropriate to utilize a low-flow sampling method for every well, where applicable. Provide a justification for wells where sampling was conducted by methods other than low-flow sampling method in the revised Report.

6. Section 4.1.1, Northern Area Alluvial Groundwater System, lines 27-28, page 4-1

Permittee Statement: "The flattest gradients were found in the central portion of the Northern Area, and the steepest gradients in the southeast portions of the monitoring area."

NMED Comment: Section 4.1.2, *Northern Area Bedrock Groundwater System*, provides a more detailed discussion with the calculated values of hydraulic gradients for the bedrock aquifer. Provide the same level of detail for the discussion regarding hydraulic gradients of the alluvial aquifer as in Section 4.1.2 in the revised Report.

7. Section 4.1.2, Northern Area Bedrock Groundwater System, lines 37-39 and 42-43, page 4-1

Permittee Statements: “A third water-bearing sandstone unit is assumed since groundwater from well BGMW08 was measured at over 100-feet lower than the DTW of other bedrock wells.”

and,

“Bedrock groundwater elevations in July 2022 ranged from 6,674.81 ft. (TMW30) to 6,516.18 ft. (BGMW08) and in September 2022 ranged from 6,674.80 ft. (TMW30) to 6,541.61 ft. (BGMW08).”

NMED Comment: According to Figure 4-3, *Northern Area Bedrock Groundwater Contour Map – July 2022*, the groundwater elevation recorded for well BGMW08 (6,516 feet) was not used to generate contours because it was too low relative to the neighboring wells (e.g., 6,674 feet for well BGMW07 and 6,643 feet for well BGMW09). The Permittee’s December 22, 2023 *Final Groundwater Periodic Monitoring Report, January through June 2022* states, “Appendix G in the July to December 2020 PMR shows the well [BGMW08] is still recharging (water elevation increasing) in the six months between sampling events.” The statement indicates that the groundwater elevation reported for well BGMW08 has not reached equilibrium. It is necessary to evaluate the equilibrated groundwater elevation in well BGMW08. In the response letter, propose to investigate the equilibrated groundwater elevation in well BGMW08; continue gauging groundwater elevations in well BGMW08, and halt purging/sampling until the investigation is complete.

8. Section 4.1.2, Northern Area Bedrock Groundwater System, lines 5-6, page 4-2

Permittee Statement: “Hydraulic gradients in the bedrock unit beneath the Workshop Area range from approximately 0.006 ft/ft across the Administration Area to 0.027 ft/ft across the Workshop Area.”

NMED Comment: The groundwater elevation data of specific wells that were used to calculate the hydraulic gradients are not identified in the Report. Identify the wells used to calculate the hydraulic gradients in the revised Report. In addition, NMED is not aware of any bedrock wells advanced within the Administration Area. Provide clarification in the response letter and revise the statement, as appropriate. Furthermore, hydraulic gradients would significantly vary depending on the selected wells across the Workshop Area. For example, according to Figure 4-3, the groundwater elevations of bedrock wells TMW52, TMW58, and TMW64 are recorded as 6,645 feet, 6,664 feet, and 6,668 feet, respectively. Well TMW64 is located at the eastern boundary of the Workshop area while wells TMW52 and TMW58 are closely located at the northwestern boundary of the Workshop area. The distances between well TMW64 and wells TMW52/TMW58 are approximately 1,800 feet; therefore, hydraulic gradients between well TMW64 and wells TMW52/TMW58 are calculated as 0.012 and 0.002 feet/feet, respectively. The hydraulic gradients across the

Workshop area must not be generalized because groundwater flow direction has not been fully characterized in the bedrock aquifer beneath the Workshop area. Revise the Report accordingly. As a reminder, Comment 6 of the May 23, 2023 *Disapproval Groundwater Periodic Monitoring Report January through June 2021*, and *Groundwater Periodic Monitoring Report July through December 2021* provides directions to resolve this issue.

9. Section 5.1, Water-Quality Parameters, lines 30-33 and 35-40, page 5-1

Permittee Statements: “Groundwater-specific conductance values measured during the reported sampling event in the alluvial aquifer ranged from 1.18 millisiemens per centimeter (mS/cm) in well BGMW13D to 19.2 mS/cm in well TMW08; and in the bedrock aquifer the range was 1.54 mS/cm in well TMW53 to 25.0 mS/cm in well BGWM07.”
and,

“Specific conductance values can be converted to TDS by multiplying the conductivity by an empirically determined conversion factor. This conversion factor may vary from 0.55 to 0.9, depending on the soluble components of the water and on the temperature of measurement (American Public Health Association [APHA], 1992). Due to the range of the appropriate conversion factors at the Site, some wells may exceed the USEPA secondary MCL for TDS of 500 mg/L (USEPA, 2021).”

NMED Comment: While the highest groundwater-specific conductance (i.e., 25.0 mS/cm) is multiplied by the highest conversion factor (i.e., 0.9), the total dissolved solids (TDS) value will not exceed 500 mg/L; thus, none of the wells exceed the secondary MCL for TDS of 500 mg/L. Alternatively, while the lowest groundwater-specific conductance (i.e., 1.18 mS/cm) is converted to microsiemens per cm ($\mu\text{S}/\text{cm}$) and the value (i.e., 1,180 $\mu\text{S}/\text{cm}$) is multiplied by the lowest conversion factor (i.e., 0.55), the TDS value will exceed 500 mg/L. Therefore, all wells exceed the secondary MCL for TDS of 500 mg/L. Provide a more detailed explanation to support the statement regarding the exceedance of the USEPA secondary MCL for TDS of 500 mg/L relative to the observed groundwater-specific conductance and/or revise the statement for accuracy in the revised Report.

10. Section 5.2.1, Anions, lines 21-23, page 5-2

Permittee Statement: “Nitrite concentrations in 1 out of the 66 monitoring wells analyzed in the alluvial aquifer exceeded the EPA MCL/NM WQCC screening level of 1.0 mg/L. The highest nitrite concentration in the alluvial groundwater was found in MW20 (61 mg/L).”

NMED Comment: The nitrite concentrations in groundwater samples collected from well MW20 were not previously detected. The sudden increase of nitrite concentration in well MW20 may or may not be representative of natural conditions of the aquifer. In the response letter, provide the analytical results of nitrite concentrations in groundwater samples collected from well MW20 during the April and October 2023 sampling events and provide a discussion regarding the nitrite concentrations in well MW20.

11. Section 5.3, Variances from the Work Plan, lines 24-25, page 5-5

Permittee Comment: “Analytical and data quality methods and procedures used during this sampling event were performed in accordance with the QSM (DoD/DoE, 2021).”

NMED Comment: The 2019 Quality Systems Manual (QSM) was proposed to be evaluated for analytical data quality in the 2022 *Interim Northern Area Groundwater Monitoring Plan*. The reference suggests that the QSM was updated in 2021. State if the update occurred in 2021 in the response letter. Also, provide an additional detail of the variance associated with analytical data quality evaluation in the revised Report.

12. Section 5.4, Data Quality Exceptions, lines 27-28, page 5-5

Permittee Statement: “There are a total of 42 data quality exception compounds where the LOD, LOQ, or both, exceed the screening level as shown in Table 3-1.”

NMED Comment: The limits of detection (LOD)/quantitation (LOQ) values of some analytes listed as data quality exception compounds in Section 5.4 (e.g., 2,4-dinitrotoluene, 2,6-dinitrotoluene, nitrobenzene, PETN, alpha-BHC) did not exceed the selected screening levels during the October 2022 sampling event. These compounds must not be listed as data quality exception compounds in the Report. Evaluate whether the LOD/LOQ values of 42 analytes listed as data quality exception compounds exceeded the selected screening levels during the October 2022 sampling event. Remove the compounds from the list if the LOD/LOQ values did not exceed the screening levels. Revise the Report accordingly.

13. Table 5-5, Summary of VOC Analytical Results, page 1 of 7

NMED Comment: Appendix D-2, *EMAX Electronic Data Deliverables* and Figure 5-13, *Northern Area VOCs in Alluvial Groundwater – October 2022*, indicates that the naphthalene concentration in the groundwater sample collected from well MW20 was 0.59 J µg/L. However, the detection of naphthalene is not recorded in Table 5-5. All detections of constituents must be reported in Table 5-5. Revise Table 5-5 accordingly.

14. Table 5-5, Summary of VOC Analytical Results, page 5 of 7

NMED Comment: Appendix D-2, *EMAX Electronic Data Deliverables* and Figure 5-14, *Northern Area VOCs in Bedrock Groundwater – October 2022*, indicates that the bromodichloromethane concentration in the groundwater sample collected from well BGMW07 was 0.15 J µg/L. However, the detection of bromodichloromethane is not recorded in Table 5-5. All detections of constituents must be reported in Table 5-5. Revise Table 5-5 accordingly.

Mr. Cushman
April 4, 2024
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The Permittee must submit the revised Report that addresses all comments contained in this letter. Two hard copies and an electronic version of the revised Report must be submitted to the NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied by a response letter that details where all revisions have been made to the Report, cross-referencing NMED's numbered comments. The revised Report must be submitted to NMED no later than **June 28, 2024**.

Should you have any questions, please contact Michiya Suzuki of my staff at 505-690-6930.

Sincerely,

Ricardo Maestas

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Ricardo Maestas
Acting Chief
Hazardous Waste Bureau

cc: N. Dhawan, NMED HWB
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