DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-9
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

November 19, 2020

Base Realignment and Closure Operations Branch

Mr. Kevin Pierard
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

RE: Revised Final Groundwater Periodic Monitoring Report- January through June 2019, Fort Wingate Depot Activity, McKinley County, New Mexico. EPA# NM62113820974, HWB-FWDA-20-003

Dear Mr. Cobrain:

This letter provides responses to the comments issued in the Disapproval Letter- Final Groundwater Periodic Monitoring Report - January through June 2019 from the New Mexico Environment Department (NMED), dated July 1, 2020. In addition to the comment responses provided in this letter, two (2) hard copies and one (1) electronic (CD) copy of the Revised Final Groundwater Periodic Monitoring Report - January through June 2019, are enclosed for your review and consideration. The enclosures are the Army's responses to comments, detailing where each comment was addressed and cross-referencing the numbered NMED comments. This letter also transmits the revised report and a red-line strike-out electronic copy of the edits.

If you have questions or require further information, please contact me at George.h.cushman.civ@mail.mil, 703-455-3234 (Temporary Home Office, preferred) or 703-608-2245 (Mobile).

Sincerely,

George H. Cushman IV

George H. Cushman IV
BRAC Environmental Coordinator
Fort Wingate Depot Activity
BRAC Operations Branch
Environmental Division

Enclosures

CF:

Kevin Pierard, NMED, HWB
Dave Cobrain, NMED, HWB
Ben Wear NMED, HWB
Michiya Suzuki, NMED, HWB

Chuck Hendrickson, U.S. EPA Region 6
Ian Thomas, BRAC
Steven Smith, USACE
Saqib Khan, USACE
David Becker, USACE
Clayton Seoutewa, SW BIA
George Padilla, BIA, NRO
Sharlene Begay-Platero, Navajo Nation
Mark Harrington, Pueblo of Zuni
Admin Record, NM
Admin Record, Ohio

Attachment

GENERAL COMMENTS

1. Presentation of Analytical Data in the Tables

NMED Comment: Section V.A.2, Monitoring Reports, of the FWDA RCRA Permit states, "the format for periodic monitoring reports shall follow the format included in NMED's General Reporting Requirements for Routine Groundwater Monitoring at RCRA Sites [Reporting Requirements]." The Reporting Requirements clearly state, "data presented in the tables should include the current data plus data from three previous monitoring events...". The Permittee did not provide the three previous monitoring events' data in the Report. Revise all analytical tables to include the required data.

In addition, although applicable screening levels for analytes are included on the last page of each table, the screening levels must be provided on every page for comparison. The data presentation format must follow previous groundwater periodic monitoring reports for consistency.

Permittee Response:

a. Concur. Per the Reporting Requirements, the report Tables have been updated to include three previous monitoring events for all analytical tables. Tables 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 5-10, and 5-11 have been updated.

b. Concur. The data presentation follows previous groundwater periodic monitoring reports by providing the screening levels on every page for comparison.

2. Inaccurate Designation of Wells in the Figures

NMED Comment: Some figures that present analytical data (e.g., Figure 5-1, Northern Area Nitrate and Nitrite in Alluvial Groundwater-April 2019) designate monitoring wells as sentinel, background, primary downgradient, upgradient, dry, or other alluvial or bedrock wells. Although it is appropriate to identify dry wells, other designations may be inaccurate and unnecessary. For example, wells TMW01 and TMW31S are designated as primary downgradient wells in Figure 5-1. However, these wells are located upgradient of the TNT Leaching Beds and Workshop Area, potential source areas for nitrate in groundwater. Therefore, these wells are not considered primary downgradient wells. Remove all unnecessary designations from the monitoring wells and identify them as simply alluvial or bedrock wells in the revised figures.

Permittee Response: Concur. Unnecessary designations have been removed for each corresponding well and are identified as simply alluvial or bedrock wells. Figures 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 5-10, 5-11, and 5-12 have been updated.

3. Omission of Non-sampling Wells in the Figures

NMED Comment: The figures that present analytical data do not include wells that were not sampled for pertinent analytes. For example, Figure 5-11 only depicts wells where TPH- DRO analysis was conducted. The omission of wells from the figures may be misleading. The figures must present other wells in the vicinity even if the analysis was

not conducted. Previously, all wells that were not sampled were presented in the figures and labeled as "not sampled" or "NS". Refer to the figures in previous groundwater periodic monitoring reports for the manner that data was presented and present analytical data in a consistent manner in the revised Report.

Permittee Response: Concur. All wells are presented on the figures and are labeled as “not sampled” or “NS” if the well was not sampled for the particular analyte as in previous groundwater monitoring reports.

SPECIFIC COMMENTS

4. Section 1.1, Site Description and Activities, lines 34-37, page 1-1

Permittee Statement: "The Workshop Area is located south of the Administration Area. This area provided a facility for munitions maintenance and renovation, and included the former trinitrotoluene (TNT) washout facility and the TNT Leaching Beds (solid waste management unit [SWMU] 1)."

NMED Comment: The Permittee conducted soil excavation to depths close to the water table as an interim corrective measure at SWMU 1 in 2018 and 2019. This corrective measure may affect the concentrations of explosive compounds in groundwater samples collected from the wells in the vicinity of the TNT Leaching Beds. Describe implementation of the interim corrective measure at SWMU 1 and discuss how the concentrations of explosive compounds may be affected by the excavation in the revised Report.

In addition, Comment 14 in NMED's Disapproval Final Groundwater Periodic Monitoring Report July through December 2018, dated January 30, 2020, states, "[t]he operation associated with the TNT Leaching Beds soil excavation was complete in October 2019 and the concentrations of explosive compounds are expected to decrease gradually. The changes in RDX concentrations must be discussed in future groundwater monitoring reports. Provide plots that depict the concentrations of RDX over time for wells TMW03, TMW04, TMW23 and TMW40S in future groundwater monitoring reports." The Permittee failed to provide the required plots. Provide figures (concentrations versus time) that present trends for RDX concentrations at wells TMW03, TMW04, TMW23, and TMW40S in the revised Report and all future groundwater periodic monitoring reports.

Permittee Response:

a. Concur. Text has been added describing how the concentrations of explosive compounds may be affected by the interim corrective measures. Executive Summary, page E-2, lines 26-29 and Section 5.2.2, page 5-3, Lines 8-11, and Summary page 6-1, lines 39-41 as follows:

> *“Future concentrations of explosive compounds may be affected by the interim corrective measures conducted at the SWMU 1, in which 75,000 tons of impacted soils at the former TNT washout facility and the TNT Leaching Beds were removed in 2019 to a maximum depth of 30-35 feet below ground surface (bgs).”*

b. Concur. The RDX concentration plots for wells TMW03, TMW04, TMW23 and

TMW40S are now included in Appendix F and will be included in future groundwater periodic monitoring reports. In addition, language discussing the changes to the RDX concentrations has been added to Section 5.2.2, page 5-2, lines 41-43 through page 5-3, line 1 as follows:

> *"Changes in RDX concentrations over time are plotted for wells TMW03, TMW04, TMW23 and TMW40S in Appendix F. The RDX concentration during this sampling event appear to be stable and the impact of the TNT contaminated soil removal is not obvious during this sampling event."*

c. Concur. Figures for RDX concentrations over time have been added for wells TMW03, TMW04, TMW23, and TMW40S in Appendix F.

5. Section 2.2, Groundwater Sampling, lines 25-32. Page 2-2

Permittee Statement: "Well purging was performed until water-quality parameters stabilized within the following ranges.

- pH (±0.5 standard units)
- temperature (±10%)
- specific conductance (±10%)
- DO (±10%)
- turbidity (±10%)
- ORP (±10%)"

NMED Comment: Some water-quality parameters were not stabilized during well purging as specified. For example, according to Appendix A, Field Notes, the last three turbidity readings collected from well BGMW07 are recorded as 0.0, 630, and 749 NTU. Similarly, the last three dissolved oxygen (DO) readings collected from well BGMW08 are recorded as 11.89, 6.96, and 12.20 mg/L. Since the parameters were not stabilized, it is not clear whether the groundwater samples collected from the wells were representative of the formation water. Provide a justification for why the groundwater samples were representative of formation water even though some water quality parameters were not stabilized in the revised Report.

Additionally, the DO readings of 11.89 and 12.20 mg/L exceeded the theoretical maximum value (see Comment 9). The instrument used to measure DO was unlikely calibrated properly. The Permittee must ensure that the instrument is properly calibrated.

Permittee Response:

a. Comment Acknowledged: The groundwater samples are representative of formation water when collected from Wells BGMW07 and BGMW08. The following paragraphs provide a justification for the water collected from both wells is representative of subject formation: Please note that both (BGMW07 and BGMW08) wells do not produce enough water and go dry upon purging. The sampling procedure for these wells is discussed below and this text is added in in the revised report Section 2.2, page 2-2, lines 38-40 through page 2-3 lines 1-10 as follows:

> *"Wells BGMW07 and BGMW08 are not traditional low flow wells, thus*

they do not stabilize as a result of purging. Well BGMW07 was purged using a Reclaimer pump (gas displacement pump) and the turbidity increased as the water column approached the bottom of the well casing and disturbed much of the settled sediment. The well was pumped dry in order to collect the fresh formation water after letting it recharge overnight.

Similarly, Well BGMW08 was purged dry using a hand bailer. Hand bailer was used to collect groundwater from 180 feet below the top of casing and filling the water quality probe cup for data collection, versus using a flow-through cell (which are typically used for low flow dedicated pumps). Air bubbles were most likely trapped on the sensor when the water quality probe was submerged in the cup for data collection, resulting in an increased DO reading.

Both wells were purged dry and were allowed to recharge overnight with fresh formation water. The formation water was sampled the following day for analytical testing. Additional information on wells BGMW07 and BGMW08 are provided in Section 5.4 Variances from the Work Plan."

The text was also updated Section 5.4, page 5-6, lines 5-16 as follows:

"The last three water quality parameters collected from well BGMW07 were not considered stable because the parameters were not within 10% of each other. Please note that these readings were collected prior to the well going dry. The previous two readings were 0.0 NTU and 0.0 NTU, however once the water level reached the bottom of the well casing, the water picks up plenty of settled suspended solids, which caused the discrepancy in nephelometric turbidity units. The field team returned the following day to collect the formation water that had entered the well casing screen during recharge. This illustrates that the water sample is representative of the formation water."

The DO readings collected from well BGMW08 were elevated as shown in the purge log form where the lowest reading was 9.14 mg/L and the highest was 17.65 mg/L. Well BGMW08 was purged dry with a submersible pump. The field team returned the following day to collect formation water that entered through the well casing screen during recharge. Since the well was purged dry all water entering the well is considered representative of the formation water.

b. The variances from the work plan were updated in the revised report in Section 5.4, page 5-6, lines 1-16 as follows:

"INSTRUMENT CALIBARATION: Please note that the water quality instruments are calibrated daily prior to field deployment, however during this event the theoretical maximum for dissolved oxygen (DO) (10 mg/L) was exceeded in a few wells during this sampling event. The instrument was checked and replaced with a separate instrument. The calibration logs are included in Appendix A.

The last three water quality parameters collected from well BGMW07 were not considered stable because the parameters were not within 10% of each other. Please note that these readings were collected prior to the

well going dry. The previous two readings were 0.0 NTU and 0.0 NTU, however, once the water level reaches the bottom of the well casing, the water picks up plenty of settled suspended solids, which causes the discrepancy in nephelometric turbidity units. The well is bailed dry and let to recharge overnight. The field team returned the following day to collect the formation water that had entered the well casing screen during recharge. This illustrate that the water sample is representative of the formation water.

The DO readings collected from well BGMW08 were elevated as shown in the purge log form where the lowest reading was 9.14 mg/L and the highest was 17.65 mg/L. Well BGMW08 was purged dry with a submersible pump. The field team returned the following day to collect formation water that entered through the well screen during recharge. The Army ensures that the water sample is representative of the formation water."

6. Section 4.1.1, Northern Area Alluvial Groundwater System, lines 30-31, page 4-1

Permittee Statement: "This mound may be the result of leakage from the inactive artesian Well 68."

NMED Comment: The designation of the pertinent artesian well may be Well 69. Correct the typographical error, if appropriate. Otherwise, provide more information regarding Well 68 (e.g., location, depth of the screened interval) in the revised Report.

Permittee Response: Concur. The text was intending to discuss Well 69. The typographical error was corrected in Section 4.1.1, page 4-1, line 28-29 as follows:

"However, the groundwater mound is still observed in the water-level data for monitoring well MW02. This mound may be the result of leakage from Well 69."

7. Section 4.1.2, Northern Area Bedrock Groundwater System, lines 41-43, page 4-1, and lines 9-11, page 4-2

Permittee Statements: 'The upper sandstone layer is denoted by monitoring well TMW02, and the remaining bedrock monitoring wells are completed in the lower sandstone layer separated by a thick shale sequence."

and, "Groundwater-level elevation data from monitoring well TMW02 were not used to calculate hydraulic gradients because the monitoring well is completed in a different water-bearing zone than the other bedrock monitoring wells."

NMED Comment: The Permittee's Response to Comment 10 in NMED's Disapproval Final Groundwater Periodic Monitoring Report July through December 2018, dated April 6, 2020, states, "[t]he Army believes that BGMW08 may be in a separate sandstone lens; however, the groundwater at this well originates from the same target formation, similar to existing bedrock well TMW02." Clarify whether well BGMW08 is screened into the same unit where the remaining bedrock wells (except TMW02) are screened. There may be a third separate sandstone layer. Provide a clarification regarding the screened

interval of bedrock monitoring well BGMW08 in the revised Report. Additionally, discuss the appropriateness of the use of well BGMW08 as a background well in the revised Report.

Permittee Response:

a. Comment Acknowledged: Bedrock well may be screened in a separate sandstone lens as described in Section 4.1.2, page 4-2, lines 10-18 as follows:

> *"Bedrock well BGMW08 is screened from 165-185 feet and believed to be set in a separate sandstone lens; however, the groundwater at this well originates from the same target formation similar to existing bedrock well TMW02. The target strata (Painted Desert Unit) had a fluvial depositional environment, causing non-continuous/ nonplanar lenses of sands, silts, and clays. The sandstone lenses are channel deposits and would not exhibit planar bedding. The variance in water levels between BGMW08 and neighboring bedrock monitoring wells could indicate a separate sandstone lens that may represent deposits that are in very poor communications with other sandstone deposits and these have much different piezometric levels, whereas most bedrock wells are in units that are in hydraulic communication and have more consistent piezometric surface."*

b. Comment Acknowledged. Please see response above.

c. Comment Acknowledged: The Army will not refer to BGMW08 as a background well, only as a bedrock well.

8. Section 5.1, Water-Quality Parameters, lines 21-23, page 5-1

Permittee Statement: "pH values below 7 represent acidic conditions and contribute to anaerobic conditions while those above 7 represent basic conditions and aerobic conditions."

NMED Comment: The statement is not representative of the data presented in Table 5-1, April 2019 Stable Groundwater Parameters. According to Table 5-1, page 3 of 3, the pH reading for groundwater in well TMW32 is recorded as 8.49 while the DO reading is recorded as 0.0 mg/L. Similarly, the pH reading for groundwater in TMW48 is recorded as 4.04 while the DO reading is recorded as 7.14 mg/L. Remove or revise the statement for accuracy.

Permittee Response: Concur. The statement describing the pH values was removed.

9. Section 5.1, Water-Quality Parameters, lines 24-26, page 5-1

Permittee Statement: "DO values in the alluvium aquifer ranged from 0.0 in nine total wells to 14.54 milligrams per liter (mg/L) in well TMW31S..."

NMED Comment: Theoretical maximum DO concentration in water at 15 degrees Celsius is approximately 10 mg/L which does not account for elevation above sea level. The groundwater temperature reading from well TMW31S is recorded as 15.17 degrees

Celsius according to Table 5-1. It is not clear how the DO reading {14.54 mg/L) exceeded the theoretical maximum DO value (10 mg/L) in the groundwater sample collected from well TMW31S. Explain (1) whether the instrument was properly calibrated prior to the measurement, (2) the potential causes of the DO reading exceeding the theoretical maximum concentration, and (3) why the instrument operator did not identify a problem with the instrument based on the Inaccurate result in the revised Report.

Permittee Response:

a. Comment Acknowledged. All water quality instruments were properly calibrated prior to deployment. Calibration logs are included in Appendix A.

b. The potential cause of the elevated DO reading is described in Section 5.1, page 5-1, lines 22-30 as follows:

> *"The DO concentrations are an indicator of aerobic or anaerobic conditions in the groundwater. DO values in the alluvium aquifer ranged from 0.0 in nine total wells to 14.54 milligrams per liter (mg/L) in well TMW31S, which exceeds the theoretical maximum of 10 mg/L. The elevated DO in well TMW31S is likely due to the purging method. A submersible pump was used to purge the water into a cup to collect water quality parameters, which likely resulted in air bubbles on the sensor. The bedrock aquifer range for DO was 0.0 in four total wells to 12.20 mg/L in well BGMW08, which also resulted in elevated DO caused by bailing the well dry, collecting the water quality parameters in a cup, creating air bubbles on the sensor. The water quality instruments are calibrated daily prior to field deployment and are documented in Appendix A of this report. Additional information on the DO readings are included in Section 5.4."*

c. The field operator may not have noticed the inaccurate reading.

10. Section 5.1, Water-Quality Parameters, lines 33-34, page 5-1

Permittee Statement: "Low ORP values (<300 mV) indicate that anaerobic conditions are present in areas of FWDA."

NMED Comment: According to Table 5-1, none of the ORP values exceeds 300 mV although aerobic conditions are present in many wells. For example, the ORP reading is recorded as - 110 mV in well FW31 while the DO reading is recorded as 5.90 mg/L. The statement is not representative of the data presented in Table 5-1. Remove or revise the statement for accuracy in the revised Report.

Permittee Response: Concur. The statement describing the ORP values was removed.

11. Section 5.2.1, Nitrate and Nitrite, lines 2-4, page 5-2

Permittee Statement: "Nitrate concentrations have decreased over time from well BGMW02, previous data shows a concentration of 15 mg/L from January to June 2017, 14 mg/L from January to June 2018, and 13 mg/L from July to December 2018."

NMED Comment: The nitrate concentration in the groundwater sample collected from

well BGMW02 in April 2019 is recorded as 10.8 mg/Lin Figure 5-1. According to Appendix E, Historical Data Analysis, the nitrate concentration in the groundwater sample collected from the same well in October 2012 is recorded as 12 mg/L. The nitrate level in April 2019 was slightly lower than previously measured levels; however, it does not demonstrate a clear decreasing trend over time. The nitrate concentrations in groundwater samples collected from BGMW02 rather appear to be stable over time. Remove the statement from the revised Report.

Permittee Response: Concur. The statement describing a decrease in Nitrate concentrations from well BGMW02 was removed.

12. Section 5.2.3, Perchlorate, lines 13-14, page 5-3

Permittee Statement: "The extent of perchlorate groundwater contamination has not been completely delineated."

NMED Comment: The Final Groundwater Supplemental RCRA Facility Investigation Work Plan Revision 4, dated March 23, 2018, proposed installation of multiple wells to address the data gap. In the revised Report, describe what measures are proposed to resolve the data gap in the referenced work plan.

Permittee Response: Concur. Text was added to the Report describing the installation of 32 new groundwater monitoring wells to address the data gap per implementation of the RFI in Section 5.2.3, page 5-3, lines 10-14 as follows:

> *"As a result, thirty-two (32) new groundwater monitoring wells were installed in 2019 throughout the Northern Area to better delineate the contamination plumes. The new 32 wells will be sampled for 1, 4-dioxane for two consecutive events in 2020 and will be sampled and analyzed for the full suite of analytical for four consecutive events starting in year 2021."*

13. Section 5.2.4, Volatile Organic Compounds, lines 29-30, page 5-3

Permittee Statement: "The detected VOCs are primarily associated with chlorinated solvents, petroleum fuels, and their degradation products."

NMED Comment: Carbon disulfide has been detected from both alluvial and bedrock groundwater samples at the site. Carbon disulfide is unlikely associated with chlorinated solvents, petroleum fuels, or their degradation products. Discuss the potential sources of carbon disulfide detections in the revised Report.

Permittee Response: Comment Acknowledged. Language was added to Section 5.2.4, page 5-4, lines 4-5 as follows:

> *"The Army has confirmed that carbon disulfide has not been used at the facility, thus it may be a laboratory contaminant."*

The document was also revised in Section 5.2.4, page 5-4, lines 13-19 to illustrate that:

> *"The sporadic concentration of carbon disulfide cannot be attributed to any FWDA activity. The Army believes it may be a laboratory contamination. The Army contractor will discuss this with its laboratory. Research reveals that carbon*

disulfide may be attributed to a feed stock for carbon tetrachloride and is used in the petroleum industry in refining operations (especially in producing oils and lubricants). It is also found used in the production of synthetic rubber and pesticides, as a grain fumigant, and in farming applications (until approximately 1985). The Army does not believe any of such activities took place at FWDA."

14. Section 5.2.5, Other Organic Compounds, lines 28-33, page 5-4

Permittee Statement: "Pesticide compounds were not detected from any monitoring wells sampled in April 2019, as shown in Figures 5-13 and 5-14. Results from pesticides analysis are summarized in Table 5-7. Pesticide compounds were analyzed using EPA Method 8081A. Herbicides and polychlorinated biphenyls {PCB) compounds were not detected from any monitoring wells sampled in April 2019, as shown in Figure 5-15. Results from the herbicides and PCB analysis are summarized in Table 5-8 and Table 5-9 respectively."

NMED Comment: Since pesticides, herbicides, and polychlorinated biphenyls (PCB) were not detected in any groundwater samples, it is not necessary to include the figures that present these data. Remove the figures from the revised Report.

Permittee Response: Concur. Since pesticides, herbicides, and polychlorinated biphenyls (PCB) were not detected in any groundwater samples, the figures have been removed.

15. Section S.2.6, Metals, lines 3-5, page 5-5

Permittee Statement: "Metals results are not discussed in this PMR. Contaminant plume maps will be generated as part of a future work effort when an agreement between NMED and ARMY has been reached regarding background metal concentrations for total or dissolved metals."

NMED Comment: NMED is in receipt of the Final Groundwater Background Evaluation, dated December 26, 2019, and currently, the document is under review. Once background threshold values for metals presented in the evaluation report are evaluated and approved by NMED, the Permittee must provide a more thorough discussion regarding the detection of metals. No response required.

Permittee Response: Comment acknowledged.

16. Section 5.6, New Findings, lines 6-9, page 5-6

Permittee Statement: "Concentrations for April 2019 in sentinel well MW23 were non detect for six previously trace SVOCs in October 2018; naphthalene (0.51 J µg/L), 1,2-dichlorobenzene (0.48 J µg/L), 1,3-dichlorobenzene (0.49 J µg/L), 1,4-dichlorobenzene (0.51 J µg/L), 1,2,4-trichlorobenzene (0.60 J µg/L), and 2-methylnaphthalene (0.46 J µg/L)."

NMED Comment: The SVOCs detected during the October 2018 sampling event are not listed in Table 5-6, Summary of TPH and SVOC Analytical Results. Comment 1

above requires revision of all analytical tables to include the required data. Accordingly, all compounds detected during the pertinent sampling periods must be listed in the tables. Revise the Report accordingly.

Permittee Response:

a. Concur. Per the Reporting Requirements, the report Tables were updated to include the three previous monitoring events, and all detected compounds are included in the revised report.

b. Concur. Data presentations follow previous groundwater periodic monitoring reports by providing the screening levels on every page for comparison.

c. Concur. All detections have been included in the tables.

17. Section 6.0, Summary, lines 41-42, page 6-1

Permittee Statement: "The boundaries of the alluvial TPH-DRO plume have not been defined."

NMED Comment: The extent of the TPH-DRO plume is presented in Figure 5-11, Northern Area TPH-DRO in Alluvial Groundwater-April 2019; however, the western and southern boundaries of the plume are not delineated. Well TMW46 is the closest well located west of well TMW34 where a TPH-DRO exceedance was observed. Groundwater samples were not collected from well TMW46 for TPH-DRO analysis. Similarly, wells TMW06, TMW07, and TMW21 are the closest wells located south of MW20 where a TPH-DRO exceedance was observed. Groundwater samples collected from these wells were not analyzed for TPH- DRO. In addition, according to Figure 3-10 included in the Final 2019 Interim Northern Area Groundwater Monitoring Plan Version 11, dated April 2020, the TPH-DRO concentration exceeded the applicable screening level in the groundwater sample collected from well MW22D. The extent of TPH-DRO plume is not delineated north of well MW22D. Well TMW10 is the closest well located north of well MW22D where a TPH-DRO exceedance was observed. Groundwater samples were not collected from well TMW10 for TPH-DRO analysis. In order to better delineate the plume, propose to collect groundwater samples from wells TMW06, TMW07, TMW10, TMW21 and TMW46 for TPH-DRO analysis in the next update of the groundwater monitoring plan. Alternately, the Permittee may propose to submit a separate work plan to install new wells to delineate the plume north of well MW22D, west of well TMW34 and south of well MW20.

Permittee Response: Comment Acknowledged. Language has been added to Executive Summary, page ES-2, lines 32-38 and Section 6, page 6-1, line 44 through page 6-2, lines 1-6 as follows:

> *"The boundaries of the alluvial TPH-DRO plume have not been defined. To better delineate the TPH-DRO plume, 5 of the 32 newly installed wells in 2019 were situated near the current TPH-DRO plume. The new wells (BGMW11, BGMW12, MW13S, MW13D, MW-25 through MW-35, MW36S, MW36D, and TMW50 through TMW64) will be incorporated into the full suite of analytical (including TPH-DRO) starting in year 2022. In addition, existing wells TMW06, TMW07, TMW10, TMW21, and TMW46 will be proposed to be included into the TPH-DRO*

and TPH-GRO analytical program starting in year 2021."

18. Table 4-1, Northern Area Groundwater Elevations, page 29 of 38

NMED Comment: The groundwater elevations of bedrock well BGMW08 measured in January and April 2019 are recorded as 6,661.56 and 6,539.25 feet, respectively, according to Table 4-1. The elevation measured in January was more than 100 feet higher than in April. Verify the accuracy of the measurement and explain the cause of the discrepancy in the revised Report.

Permittee Response:

a. Comment Noted. The discrepancy in the 100-foot difference in groundwater elevations of bedrock well BGMW08 measured in January and April 2019 was likely attributed to the presence of a perched water zone that once drained may not recharge each season.

b. The groundwater elevations were all verified through multiple measurements during the field monitoring events and confirmed to accurately record the depth to water. Recharge in this well is documented to take many months following a complete purge. If the connected portions of the aquifer have limited feed (by percolation and recharge) then the water levels in this well can take over three (3) months to recover to previous levels.

19. Table 5-3, Summary of Explosives Analytical Results, page 1 of 2

NMED Comment: The 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene concentrations in the groundwater samples collected from well TMW33 were analyzed and recorded in Table 5-3. However, other explosive compounds (e.g., RDX) were not analyzed for during the April 2019 sampling event. Provide an explanation for why only a limited number of explosive compounds were analyzed for the groundwater samples collected from well TMW33.

In addition, according to Table 2-2, Groundwater Sample Matrix, page 1 of 2, explosive compounds analysis is not required for groundwater samples collected from well TMW33. Explain why a groundwater sample was collected from well TMW33 during the April 2019 sampling event and analyzed for only a limited suite of explosive compounds in the revised Report.

Permittee Response: Comment Noted. TMW33 was not sampled for explosives. Some compounds (2, 4-dinitrotoluene, 2, 6-dinitrotoluene, and nitrobenzene) sampled for VOC's under method 8260 also show up as explosives under method 8330. Eco's database did not screen out the 8260 vs 8330 results properly and falsely created an explosives result column. TMW33 was removed from the explosives Table 5-3 as it was the result of VOC sampling and not the result of sampling a limited number of explosives.

20. Table 5-6, Summary of TPH and SVOC Analytical Results

NMED Comment: Section 6.2.2, Sample Analysis Requirements, of the FWDA RCRA Permit, Attachment states, "[t]o the extent possible all method detection limits and reporting limits shall be less than the applicable cleanup levels included in Permit Attachment 7."

According to Table 5-6, the TPH-DRO concentrations in the groundwater samples collected from wells MW03, MW22D, TMW08 and TMW35 are recorded as <55 µg/L, <52 µg/L, <53 µg/L and <58 µg/L, respectively. The screening level for TPH-DRO is 16. 7 µg/L. Similarly, the screening levels for nitrobenzene, bis(2-ethylhexyl)phthalate, and 1,2-diphenylhydrazine concentrations are lower than their respective detection limits. For example, the 1,2- diphenylhydrazine concentration in the groundwater sample collected from well BGMW0l is recorded as <2.9 µg/L. The screening level for 1,2-diphenylhydrazine is 0.78 µg/L.

The Permittee has previously been directed to provide analyses whose method detection limits, reporting detection limits, and practical quantitation limits are below the applicable screening level for each contaminant of concern. All data provided by analyses where the method detection limit, reporting detection limit, or practical quantitation limit exceed the screening level are considered data quality exceptions and cannot be used to demonstrate compliance. In addition, all data quality exceptions must be identified in the text, tables, and figures where there are presented. Revise the Report accordingly.

Permittee Response:

a. Comment Noted. The Army has contacted many other laboratories and is working towards finding a DOD-certified laboratory that can either meet or achieve levels closer to the NMED suggested screening levels.

b. The Army will provide NMED its findings in the near future. Please note that constituents where the method of detection limit, reporting detection limit, or practical quantitation limit exceed the screening level are considered data quality exceptions and are identified as such in the text, tables, and figures where they are presented.

c. Comment Noted. Language was added to Section 5.5, page 5-6, lines 24-26 as follows:

> *"There are a total of 42 data quality exception compounds where the screening level exceeds the laboratory Limit of Detection (LOD), or Limit of Quantitation (LOQ), as shown in Table 3-1. Below is a list of the data quality exception compounds:" The list is then presented from Section 5.5, page 5-6 lines 27 through page 5-7 lines 1-21.*

21. Figure 4-1, Northern Area Alluvial Groundwater Contour Map - January 2019, and Figure 4-2, Northern Area Alluvial Groundwater Contour Map - April 2019

NMED Comment: The figures indicate that groundwater monitoring well TMW26 and piezometer well PZ04 are positioned in the same location. However, the groundwater

elevations of TMW26 appear to be approximately five feet higher than those of PZ04. Discuss the cause of higher measured groundwater elevations in well TMW26 in the revised Report.

Permittee Response: Comment Noted. Language was added to Section 4.1.1, page 4-1, lines 37-45 through page 4-2, lines 1-2 as follows:

> *"Well TMW26 and piezometer PZ04 are located adjacent to another and display different elevations. The approximate five-foot difference in groundwater elevation between piezometer PZ04 (screened interval 26.8-46.8 feet, installed in 2012) and monitoring well TMW26 (screened interval 45-55 feet, installed in 2002), are within the range of variability between these two locations, given the locations of these two wells within the boundaries of a stream bed (the Rio Puerco), even with close proximity to one another, the slight differences in concentrations of fine silt and clay deposits can create minor perched zones that may reflect the differing elevations. The difference in the two wells is notable through their service life with groundwater elevation in TMW26 being a few feet higher than PZ04. By way of illustration, in July 2014, TMW26 was 2.88 feet higher than PZ04, and 2.34 feet higher in January 2018. However, starting in April 2018, the groundwater elevation started to drop faster in PZ04 than TMW26 and by April 2019 there was a difference of 5.18 feet."*

22. Figure 5-2, Northern Area Nitrate and Nitrite in Bedrock Groundwater-April 2019

NMED Comment: According to Table 5-2, Summary of Nitrate-N and Nitrite-N Analytical Results, page 2 of 2, the nitrate and nitrite concentrations were measured in Well 69 during the April 2019 sampling event. Well 69 is depicted in Figure 5-2; however, the nitrate and nitrite concentrations in groundwater samples collected from Well 69 are not presented in the figure. include the nitrate and nitrite concentrations for Well 69 in a revised Figure 5-2.

Permittee Response:

a. Concur. The nitrate and nitrite concentrations for Well 69 are included in Figure 5-2.

b. A statement was made in Section 5.6, page 5-7, lines 26-27 as follows:

> *"Well 69 is sourced from a different aquifer (artesian aquifer) than all other FWDA monitoring wells."*

23. Figure 5-3, Northern Area Explosives in Alluvial Groundwater - April 2019

NMED Comment: According to Table 5-3, Summary of Explosives Analytical Results, pages 1 and 2, explosive compounds in the groundwater samples collected from well TMW33 and Well 69 were analyzed during the April 2019 sampling event. However, well TMW33 and Well 69 are not depicted in Figure 5-3. Include well TMW33 and Well 69 with corresponding analytical data in a revised figure or provide an explanation for why these wells are not included in the figure.

Permittee Response:

a. Concur. The explosives concentrations for Well 69 are now included in Figure 5-4 (with a note that Well 69 is from a different aquifer than other wells on the figure).

b. Comment Noted. The explosives concentrations for well TMW33 are not included in Figure 5-3, since this well was not sampled for explosives (please see response to Comment #19).

24. Figure 5-6, Northern Area Perchlorate in Bedrock Groundwater - April 2019

NMED Comment: According to Table 5-4, Summary of Perchlorate Analytical Results, page 2 of 2, the perchlorate concentration was measured in Well 69 during the April 2019 sampling event. Well 69 is depicted in Figure 5-6; however, the perchlorate concentration in groundwater samples collected from Well 69 is not included in the figure. Include the perchlorate concentration for Well 69 in a revised Figure 5-6.

Permittee Response: Concur. The perchlorate concentrations for Well 69 are now included in Figure 5-6.

25. Figure 5-8, Northern Area voes in Bedrock Groundwater - April 2019

NMED Comment: According to Table 5-5, Summary of VOC Analytical Results, page 3 of 3, the VOC concentrations were measured in Well 69 during the April 2019 sampling event. Well 69 is depicted in Figure 5-8; however, the VOC concentrations in groundwater samples collected from Well 69 are not included in the figure. Include the VOC concentrations for Well 69 in a revised Figure 5-8.

Permittee Response: Concur. The VOC concentrations for Well 69 are now included in Figure 5-8.

26. Figure 5-10, Northern Area 5VOCs in Bedrock Groundwater - April 2019

NMED Comment: According to Table 5-6, Summary of TPH and SVOC Analytical Results, page 3 of 3, SVOC concentrations were measured in Well 69 during the April 2019 sampling event. Well 69 is depicted in Figure 5-10; however, the SVOC concentrations in groundwater samples collected from Well 69 are not included in the figure. Include the SVOC concentrations for Well 69 in a revised Figure 5-10.

Permittee Response: Concur. The SVOC concentrations for Well 69 are now included in Figure 5-10.

27. Figure 5-12, Northern Area TPH-GRO in Alluvial Groundwater - April 2019

NMED Comment: The extent of the TPH-GRO plume is presented in Figure 5-12; however, the southern boundary of the plume is not delineated. Wells TMW06, TMW07, and TMW21 are the closest wells located south of MW20 where a TPH-GRO exceedance was observed. Groundwater samples were not collected from these wells for TPH-GRO analysis. Propose to collect groundwater samples from wells TMW06,

TMW07, and TMW21 for TPH-GRO analysis in the next update of the groundwater monitoring plan. Alternately, the Permittee may propose to submit a separate work plan to install a well to delineate the plume south of well MW20 (see Comment 17).

Permittee Response: Comment Noted. Language has been added to Section 6, page 6-1, line 44 through page 6-2, lines 1-6 as follows:

> *"The boundaries of the alluvial TPH-DRO plume has not been defined. To better delineate the TPH-DRO plume, 5 of the 32 newly installed wells in 2019 were situated near the current TPH-DRO plume. The new wells (BGMW11, BGMW12, MW13S, MW13D, MW-25 through MW-35, MW36S, MW36D, and TMW50 through TMW64) will be incorporated into the full suite of analytical (including TPH-DRO) starting in year 2021. In addition, existing wells TMW06, TMW07, TMW10, TMW21, and TMW46 will be proposed to be included into the TPH-DRO and TPH-GRO analytical program starting in year 2021."*

Kimberly Rudawsky

From: Christy Esler
Sent: Wednesday, November 25, 2020 10:21 AM
To: kevin.pierard@state.nm.us; dave.cobrain@state.nm.us; Ben Wear; Michiya Suzuki; Chuck Hendrickson (hendrickson.charles@epa.gov); Ian Thomas (ian.m.thomas2.civ@mail.mil); Smith, Steven W CIV USARMY CESWF (USA; Khan, Mohammad Saqib (Saqib) CIV USARMY CESWF (USA; Dave Becker; Clayton Seoutewa; george.padilla@bia.gov; Sharlene Begay-Platero; Mark Harrington
Subject: Revised, Final Groundwater PMR, January - June 2019, Fort Wingate Depot Activity
Attachments: Revised Final GWPMR_January_June 2019_FWDA_19Nov2020_.pdf; Rev Final GWPMR_Jan_June 2019 _FWDA_Attachment_19Nov2020.pdf

Mr. Pierard,

The attached provides responses to the comments issued in the Disapproval Letter- Final Groundwater Periodic Monitoring Report, January through June 2019, Fort Wingate Depot Activity, McKinley County, New Mexico.

If you have any questions or require further information, please contact George H. Cushman IV at George.h.cushman.civ@mail.mil, 703-455-3234 (Temporary Home Office, preferred) or 703-608-2245 (Mobile).

FedEx Tracking- 8132 1177 3190

Sundance Consulting, Inc., under contract with the U.S Army Corps of Engineers, is respectfully submitting the attached letter on behalf of the Army.

Thank you,
Christy Esler | Program Manager
Sundance Consulting, Inc.
Woman-Native American-Owned Small Business
4292 Tallmadge Rd. | Rootstown, OH. 44272
330-578-3024 Office | 330-727-0042 Mobile
330-358-7311 (U.S Army Office|Fort Wingate Army Depot)
cesler@sundance-inc.net
www.sundance-inc.net