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Hazardous Waste Bureau



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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

September 4, 2018

Mark Patterson
BRAC Environmental Coordinator
Fort Wingate Depot Activity
13497 Elton Road
North Lima, OH 44452

Steve Smith
USACE
CESWF-PER-DD
819 Taylor Street, Room 3B06
Fort Worth, TX 76102

**RE: DISAPPROVAL
GROUNDWATER PERIODIC MONITORING REPORT
JULY THROUGH DECEMBER 2017
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-18-003**

Dear Messrs. Patterson and Smith:

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity (Permittee) *Final Groundwater Periodic Monitoring Report, July through December 2017* (December 2017 Report), dated July 2018. NMED has reviewed the December 2017 Report and hereby issues this Disapproval. The Permittee must address the following comments.

GENERAL COMMENTS

1. Negligence to Address NMED's Previous Comments

NMED Comment: Several of NMED's comments provided in the previous groundwater periodic monitoring reports were not addressed in the December 2017 Report. For example, Comment 7 on the November 3, 2017 *Approval with Modifications for the December 2016 Report* and Comment 5 on the November 8, 2017 *Approval with Modifications for the June*

2017 Report direct the Permittee to transfer the laboratory data output into the reports more accurately. However, these comments were not addressed, and the same issues recur in the December 2017 Report. For instance, styrene was positively detected from the groundwater sample collected from well TMW17 during this sampling period according to Appendix C – Attachment 2, *TestAmerica Laboratory Data Output*; however, the detection was neither addressed or discussed in the December 2017 Report. Address all of NMED’s comments in this *Disapproval* as well as previous letters in the revised December 2017 Report and discuss the comments in a response letter, where applicable.

2. Inaccuracies/Discrepancies

NMED Comment: The December 2017 Report contains multiple inaccuracies and discrepancies. Some of them are listed as follows:

- a. **Executive Summary, lines 23-25, page ES-1:** The Permittee states, “[w]ell MW18S has been dry since 2014 and is not listed for sampling in the GMP (Sundance, 2017); however, this well is inspected during groundwater elevation surveys to confirm it continues to be dry.” According to Table 4-1, *Northern Area Groundwater Elevations (Wells Screened in Alluvial Sediments)*, groundwater was present in well MW18S during the July and October 2017 measurements. Similar statements were found throughout the December 2017 Report (e.g., Section 2.2, *Groundwater Sampling*). Correct the inaccurate statements in the revised December 2017 Report or explain why the wells were not sampled when groundwater was present.
- b. **Section 1.2, Hydrogeologic Setting, lines 26-28, page 1-3:** The Permittee states, “[g]roundwater is present at shallow depths in the alluvium along drainages, including the Rio Puerco, with [depth to water] DTW ranging from 12 feet to 69 feet bgs in northern area alluvial aquifer monitoring wells.” According to Table 4-1, the DTW in well PZ07 was recorded as 10.34 feet bgs during the January 2017 measurement. Correct the statement for accuracy in the revised December 2017 Report.
- c. **Section 5.1, Water-Quality Parameters, line 2, page 5-2:** The Permittee states, “[t]he Eh values ranged from -15 millivolts (mV) to 461 mV across the monitoring area.” The highest Eh reading is recorded as 462 mV from the groundwater sample collected from well TMW03 in Table 5-1, *October 2017 Stable Groundwater Parameters*. Correct the statement for accuracy in the revised December 2017 Report.
- d. **Section 5.2.4, Volatile Organic Compounds, lines 28-29, page 5-4:** The Permittee states, “[s]ix VOCs were detected in one or more groundwater samples collected during the October 2017 groundwater sampling event.” Eight VOCs (1,2-dichloroethane, 2-butanone, acetone, carbon disulfide, chloroform, chloromethane, methylene chloride and toluene) were detected in groundwater samples collected at the site according to Table 5-5, *Summary of Volatile Organic Compound Analytical Results (ug/L)*. Correct the statement in the revised December 2017 Report.

- e. **Section 5.2.4, Volatile Organic Compounds, line 2, page 5-5:** The Permittee states, “[c]hloromethane (0.56 J [ug/L] at alluvial monitoring well TMW17) [is the highest chloromethane detection].” Well TMW17 is a bedrock monitoring well, rather than an alluvial monitoring well. Correct the statement in the revised December 2017 Report.
- f. **Section 5.2.5, Other Organic Compounds, lines 19-25, page 5-5:** Detected SVOCs are discussed in the paragraph; however, the Permittee failed to mention the detection of phenanthrene in the groundwater sample collected from well TMW43. Phenanthrene was detected in a field duplicate sample collected from well TMW43 according to Table 5-6, *Summary of Semivolatile Organic Compound and Total Petroleum Hydrocarbons Analytical Results (ug/L)*. Include a discussion of the detection in the revised December 2017 Report.
- g. **Section 5.2.5, Other Organic Compounds, lines 27-28, page 5-5:** The Permittee states, “[o]verall, petroleum hydrocarbons were detected in groundwater samples from four alluvial monitoring wells.” According to Table 5-6, total petroleum hydrocarbons were detected in groundwater samples from three alluvial monitoring wells, rather than four. Correct the statement in the revised December 2017 Report.
- h. **Figure 4-1, Northern Area Alluvial Groundwater Contour Map July 2017:** The groundwater elevation in well MW18S during the July 2017 measurement is recorded as 6,647.80 feet in Table 4-1 while it is recorded as “Dry” in Figure 4-1, *Northern Area Alluvial Groundwater Contour Map July 2017*. Resolve the discrepancy in the revised December 2017 Report. See Comment 2a.
- i. **Figure 4-2, Northern Area Alluvial Groundwater Contour Map October 2017:** The groundwater elevation in well MW18S during the October 2017 measurement is recorded as 6,647.78 feet in Table 4-1 while it is recorded as “Dry” in Figure 4-2, *Northern Area Alluvial Groundwater Contour Map October 2017*. Resolve the discrepancy in the revised December 2017 Report. See Comment 2a.
- j. **Figure 4-4, Northern Area Bedrock Groundwater Contour Map July 2017:** The groundwater elevation in bedrock well TWM02 is not provided in Figure 4-4. Include the groundwater elevation for well TMW02 even if the elevation is not consistent with the contour line. Revise the figure in the revised December 2017 Report.
- k. **Figure 4-5, Northern Area Bedrock Groundwater Contour Map October 2017:** The groundwater elevation in bedrock well TMW02 is not provided in Figure 4-5. Include the groundwater elevation in the revised December 2017 Report.
- l. **Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The RDX concentration in the groundwater sample collected from well TMW04 is recorded as 9.1 J ug/L in Figure 5-3. The RDX plume is depicted with 7 ug/L-concentration contour line in the figure; however, well TMW04 is shown outside of the 7 ug/L-contour line. Correct the figure to be an accurate presentation of the plume in the revised December 2017 Report.

- m. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detections of 1,3,5-trinitrobenzene, 2-amino-4,6-dinitrotoluene, 3,5-dinitroaniline, 4-amino-2,6-dinitrotoluene and nitrobenzene in the groundwater sample collected from well TMW03 are recorded in Table 5-3, *Summary of Explosives Analytical Results (ug/L)*. However, these detections are not shown on Figure 5-3. Provide an accurate figure that includes these detections in the revised December 2017 Report.
- n. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detections of 1,3,5-trinitrobenzene, 2-amino-4,6-dinitrotoluene, 3,5-dinitroaniline and 4-amino-2,6-dinitrotoluene in the groundwater sample collected from well TMW04 are recorded in Table 5-3. However, these detections are not shown on Figure 5-3. Provide an accurate figure that includes these detections in the revised December 2017 Report.
- o. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detections of 1,3,5-trinitrobenzene and 2-amino-4,6-dinitrotoluene in the groundwater sample collected from well TMW22 are recorded in Table 5-3. However, these detections are not shown on Figure 5-3. Provide an accurate figure that includes these detections in the revised December 2017 Report.
- p. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detection of 2-amino-4,6-dinitrotoluene in the groundwater sample collected from well TMW23 is recorded in Table 5-3. However, the detection is not shown on Figure 5-3. Provide an accurate figure that includes the detection in the revised December 2017 Report.
- q. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detections of 1,3,5-trinitrobenzene, 2-amino-4,6-dinitrotoluene, 3,5-dinitroaniline, 4-amino-2,6-dinitrotoluene and nitrobenzene in the groundwater sample collected from well TMW40S are recorded in Table 5-3. However, these detections are not shown on Figure 5-3. Provide an accurate figure that includes these detections in the revised December 2017 Report.
- r. Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2017:** The detections of 1,3,5-trinitrobenzene and 2-amino-4,6-dinitrotoluene in the groundwater sample collected from well TMW44 are recorded in Table 5-3. However, these detections are not shown on Figure 5-3. Provide an accurate figure that includes these detections in the revised December 2017 Report.
- s. Figure 5-4, Northern Area Explosives Concentrations in Bedrock Groundwater, October 2017:** The detections of 2-amino-4,6-dinitrotoluene, 3,5-dinitroaniline and 4-amino-2,6-dinitrotoluene in the groundwater sample collected from well TMW02 are recorded in Table 5-3. However, these detections are not shown on Figure 5-4. Provide an accurate figure that includes these detections in the revised December 2017 Report.

- t. **Figure 5-4, Northern Area Explosives Concentrations in Bedrock Groundwater, October 2017:** The detection of tetryl in the groundwater sample collected from well TMW30 is recorded in Table 5-3. However, the detection is not shown on Figure 5-4. Provide an accurate figure that includes the detection in the revised December 2017 Report.
- u. **Figure 5-8, Northern Area VOC Concentrations in Bedrock Groundwater, October 2017:** The detection of methylene chloride in the groundwater sample collected from well TMW39D is recorded in Table 5-5. However, the detection is not shown on Figure 5-8. Provide an accurate figure that includes the detection in the revised December 2017 Report.
- v. **Figure 5-9, Northern Area SVOC and TPH Concentrations in Alluvial Groundwater, October 2017:** The DRO concentration in the groundwater sample collected from well MW18D is recorded as 0.067 J ug/L in Table 5-6 while it is shown as 0.13 J ug/L in Figure 5-9. Correct the figure or table as necessary to resolve the discrepancy in the revised December 2017 Report.
- w. **Figure 5-9, Northern Area SVOC and TPH Concentrations in Alluvial Groundwater, October 2017:** The phenanthrene concentration in the field duplicate sample collected from well TMW43 is recorded as 0.40 J ug/L while the detection is not shown in Figure 5-9. Provide an accurate figure that includes the detection in the revised December 2017 Report.

The Permittee has presented another document with multiple inaccuracies and discrepancies. The list above is approximately three and a half pages long. It is apparent that a substandard quality assurance review, if any, was performed on the document. NMED has continuously directed the Permittee to ensure accuracy in submitted documents, yet there are 23 instances of inaccuracies listed above. The Permittee often expresses urgency on the part of NMED's review of documents yet continues to provide flawed documents that take longer to review and require extensive revision. This likely increases costs to the Army and has the potential to delay the review of other documents, as well as cause delays in the overall corrective action progress at the facility.

SPECIFIC COMMENTS

3. Executive Summary, lines 20-22, page ES-1

Permittee Statement: "The groundwater samples were analyzed for targeted constituents in accordance with the GMP (Sundance, 2017), and as listed in Table 2-2 of this GPMR."

NMED Comment: The Permittee claims that the work was performed in accordance with a document that had not been submitted to NMED for review at the time of the field work. In addition, the cited document was not approved by NMED and should not be the work plan implemented for the project. Explain how field work was performed in accordance with a document that did not exist.

4. Executive Summary, lines 33-35, page ES-2

Permittee Statement: “The VOC compound [1,2-dichloroethane (1,2-DCA or EDC)] was detected in groundwater samples at concentrations above groundwater screening values. 1,2-DCA was historically used as a gasoline additive and degreasing solvent.”

NMED Comment: Both 1,2-dibromoethane (EDB) and EDC are lead scavengers that were used as leaded gasoline additives until the late 1980s. EDB may be present at sites where EDC has been detected. Therefore, the Permittee must add analysis for EDB to all monitoring wells where gasoline-related contaminations have been detected. The analytical method must be capable of detecting EDB at concentrations less than 0.004 ug/L (e.g., EPA Method 8011). Propose the EDB analysis in the upcoming interim facility-wide groundwater monitoring plan (IFGMP).

5. Executive Summary, lines 3-6, page ES-3

Permittee Statement: “Background groundwater concentrations of dissolved or total metals have not been accepted by NMED for FWDA, so it cannot clearly be demonstrated whether the detected concentrations are a result of natural background conditions or anthropogenic sources of contamination.”

NMED Comment: Installation of background groundwater monitoring wells was approved in the correspondence dated February 16, 2018. The Permittee was directed to submit a well completion report following installation. Background groundwater concentrations of metals must be evaluated in the future after installation of the background wells is completed.

6. Section 1.2, Hydrogeologic Setting, lines 7-13, page 1-3

Permittee Statement: “Groundwater flow in the San Andres-Glorieta aquifer is to the north beneath FWDA and is separated from the shallow groundwater units by shale and claystone across much of FWDA (Anderson et al., 2003). The top of the San Andres-Glorieta aquifer is approximately 1,100 feet below ground surface (bgs) near the Administration Area. Recharge to both the regional aquifer and to shallow groundwater units is from precipitation and snowmelt primarily in the upland areas and along faults south of FWDA. No local FWDA recharge area for this regional aquifer is known or reported to exist.”

NMED Comment: Well 69 is slotted from 1,100 to 1,350 feet bgs according to Figure 4-3, *Well 69 Construction Details*. Well 69 is appropriately screened to investigate presence or absence of contamination in the San Andres-Glorieta aquifer. Well 69 is also suitably positioned in the Administration Area where shallow groundwater contamination has been detected. The Permittee must propose to test for nitrate, nitrite, perchlorate, VOCs, SVOCs, explosive compounds, and metals analyses for groundwater samples collected from Well 69

in 2019. Propose these analyses for groundwater samples collected from Well 69 in the upcoming IFGMP.

7. Section 4.1.1, Northern Area Alluvial Groundwater System, lines 9-11, page 4-2

Permittee Statement: “Although this water supply well [Well 69] is no longer in use, it is possible that welded casing section joints may have deteriorated and are now leaking under artesian pressure into the alluvium.”

NMED Comment: The groundwater mound was expected to attenuate over time in the Administration Area; however, it has persisted for a long time despite the fact that the leaking water storage cistern is no longer in use. If water is leaching into shallow aquifers in the Administration Area, the water will dilute contaminated groundwater and interfere with ongoing groundwater investigations. It is necessary to investigate whether there is a continuous source of water leaking into shallow aquifers in the Administration Area. If the DTW in Well 69 corresponds to the depths of shallow aquifers, it is possible that the water from Well 69 is leaking to the shallow aquifers and affecting the groundwater in the vicinity of the Administration Area. Propose to measure the DTW in Well 69. If the DTW in Well 69 corresponds to the depths of shallow aquifer, propose to submit a work plan to investigate whether Well 69 is leaking (e.g., mechanical integrity test or camera survey). If Well 69 is determined to be hydraulically connected to the shallow aquifers, it must be repaired or abandoned.

8. Section 4.1.2, Northern Area Bedrock Groundwater System, lines 35-36, page 4-2

Permittee Statement: “The confining unit for the bedrock groundwater unit is missing near monitoring wells TMW30 and TMW48.”

NMED Comment: According to boring log TMW30 in the 2007 *Boring Logs & Well Construction Diagrams*, a confining unit (clayey sandstone) is present. Similarly, according to boring log TMW48 in the 2011 and 2012 *Monitoring Well Installation and Abandonment Report Version 1*, a confining unit (clay stone) is also present. Provide clarification in the response letter. If the statement refers to an absence of artesian conditions, the Permittee must discuss the relationship between the apparent DTW in the wells and the depths of groundwater encountered at the time of drilling. Provide a basis for the statement in the revised December 2017 Report.

9. Section 4.1.2, Northern Area Bedrock Groundwater System, lines 37-41, page 4-2

Permittee Statement: “Hydraulic gradients for bedrock groundwater monitoring wells were calculated independent of the geologic structure’s inferred plane in the Workshop Area at approximately 0.001 ft/ft to 0.008 ft/ft. Bedrock groundwater hydraulic gradients were

calculated approximately perpendicular to the geologic structure's inferred plane in the Workshop Area at approximately 0.005 ft/ft to 0.03 ft/ft.”

NMED Comment: Two different ranges of hydraulic gradients for bedrock groundwater in the Workshop Area are presented. Provide a map showing the reference points used to calculate these gradients in the revised December 2017 Report.

10. Section 5.2.2, Explosive Compounds, lines 12-13, page 5-3

Permittee Statement: “Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (1,000 µg/L at alluvial monitoring well TMW40S) [was the highest RDX detection].”

NMED Comment: Alluvial well TMW13 is positioned close to well TMW40S with comparable groundwater elevations. Well TMW13 is not required to be sampled for explosive compounds according to Table 2-2, *October 2017 Groundwater Sample Matrix*; however, the presence of RDX in well TMW13 is possible. Propose to conduct explosive compound analysis for the groundwater samples collected from well TMW13 in the upcoming IFGMP.

11. Section 5.2.3, Perchlorate, lines 10-11, page 5-4

Permittee Statement: “Perchlorate concentrations exceeded the groundwater screening value at alluvial monitoring wells TMW31S and TMW39S during this reporting period.”

NMED Comment: The perchlorate concentrations in groundwater samples collected from well TMW01 have historically exceeded the applicable screening level; the concentrations have consistently reported above 100 ug/L. During the October 2017 sampling event, the perchlorate concentration was 2.9 ug/L, notably lower than historical values. The change in concentrations is not discussed in the December 2017 Report. Discuss the cause of the apparent sudden decrease in the detected perchlorate concentration in the revised December 2017 Report.

12. Section 5.2.3, Perchlorate, lines 11-13, page 5-4

Permittee Statement: “Perchlorate concentrations exceeded the RSL in samples from seven bedrock monitoring wells (TMW30, TMW31D, TMW32, TMW39D, TMW40D, TMW48, and TMW49).”

NMED Comment: The perchlorate concentration in groundwater sample collected from bedrock well TMW39D is recorded as 56 ug/L, exceeding the screening level during the October 2017 sampling event. Bedrock well TMW39D is located furthest east within the perchlorate plume. The eastern extent of perchlorate plume is not defined and must be

investigated. Since no bedrock well further east of TMW39D was proposed in the *Final Groundwater Supplemental RCRA Facility Investigation Work Plan Revision 4*, dated March 23, 2018, the Permittee must submit a work plan to install a bedrock monitoring well east of TMW39D.

13. Section 5.2.5, Other Organic Compounds, lines 29-30, page 5-5

Permittee Statement: “No regulatory groundwater screening values were identified for [total petroleum hydrocarbons detected as diesel (TPH-D)] and [total petroleum hydrocarbons detected as gasoline (TPH-G)].”

NMED Comment: The *Risk Assessment Guidance for Site Investigations and Remediation Volume I Soil Screening Guidance for Human Health Risk Assessments (Guidance)*, dated March 2017, lists the screening level for diesel #2/crankcase oil as 47.3 ug/L. Evaluate the detections relative to the screening level listed in NMED’s 2017 Guidance. Include the screening level in the revised December 2017 Report.

Messrs. Patterson and Smith

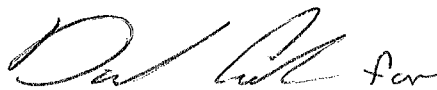
September 4, 2018

Page 10

The Permittee must submit a revised December 2017 Report that addresses all comments contained in this Disapproval. In addition, the Permittee must include a response letter that cross-references where NMED's numbered comments were addressed. The Permittee must also submit an electronic redline-strikeout version of the revised December 2017 Report showing all changes that have been made. The revised December 2017 Report must be submitted no later than **November 30, 2018**. The work plan required by Comment 12 must be submitted no later than **October 1, 2018**. The work plan required by Comment 7 must be submitted no later than **December 31, 2018**. Comment 4, 6 and 10 must be incorporated into the upcoming IFGMP.

Should you have any questions, please contact Michiya Suzuki of my staff at (505) 476-6059.

Sincerely,



John E. Kieling

Chief

Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
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File: FWDA 2018 and Reading, Groundwater, FWDA-18-003