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Army Environmental Division - BRAC Operations Branch

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

RE: Disapproval, 2024 Interim Northern Area Groundwater Monitoring Plan, Fort Wingate Depot Activity, McKinley County, New Mexico. EPA# NM6213820974, HWB-FWDA-24-001

Dear Mr. Maestas:

This letter provides responses to the comments issued in the Notice of Disapproval (NOD) letter from the New Mexico Environment Department (NMED) dated March 19, 2024, for the 2024 Interim Northern Area Groundwater Monitoring Plan. In addition to the comment responses provided in this letter, two (2) hard copies and two (2) electronic (CD) copies of the above-mentioned document are enclosed for your review and consideration. The electronic transmittal includes a redline-strikeout version of the above-mentioned report showing where all revisions were made.

In addition, the Army is providing responses to the comments contained in NMED's July 19, 2022, NOD letter for the 2023 Interim Northern Area Groundwater Monitoring Plan as an attachment to this letter.

General Comments:

1. Withdraw of the 2023 Plan

NMED Comment: NMED received the Permittee's *Response to Disapproval, 2023 Interim Northern Area Groundwater Monitoring Plan* (Response), dated August 31, 2022. Subsequently, the Permittee submitted the *Withdraw Request for Final 2023 Interim Northern Area Groundwater Monitoring Plan, Revision 1* (Withdraw Request) on November 10, 2023; then, NMED approved the Withdraw Request on November 27, 2023. Since the Withdraw Request was submitted and approved, the Response was no longer subject to NMED's review, and all of the comments contained in the July 19, 2022, *Disapproval 2023 Interim Northern Area Groundwater Monitoring Plan* (Disapproval) were redirected to the *2024 Interim Northern Area Groundwater Monitoring Plan* (2024 Plan), where applicable. During the review of the 2024 Plan, NMED found that the comments contained in the July 19, 2022, Disapproval did not appear to be clearly addressed. In order to verify whether or not the comments were addressed in the 2024 Plan, submit a response letter that identifies the sections, tables, and/or figures of the 2024 Plan where each comment contained in the July 19, 2022, Disapproval was addressed. If some of the comments are no longer relevant to the 2024 Plan or have already been addressed previously, explain why they are no longer relevant to the 2024 Plan or how they were previously addressed in the response letter.

Permittee Response: Concur. This response letter contains, as an attachment, responses to the comments contained in the July 19, 2022, *Disapproval 2023 Interim Northern Area Groundwater Monitoring Plan*. Please see the enclosed attachment.

The 2024 Interim Northern Area Groundwater Monitoring Plan (2024 GWMP) was not changed as a result of this comment.

2. Objectives of the Plan

NMED Comment: Permit Section V.A.4 states, “[t]he Permittee shall revise and update the Interim Plan annually to propose changes to the monitoring plan (e.g., to include monitoring wells installed pursuant to Sections VI and VII; to remove wells not providing valid data; to evaluate new off-site wells that have the potential to be impacted; to make any other appropriate changes)." Since the objective of the Interim Groundwater Monitoring Plan generally pertains to the changes to the groundwater monitoring plan for an upcoming year, it is critical for NMED to review, provide comments, as necessary, and approve such changes, as appropriate, in a timely manner so that the Permittee can implement updated groundwater monitoring activities with NMED approval prior to the initial groundwater monitoring/sampling event (i.e., April) and the rest of the year. However, the Plan contains a) 74 pages of text with unnecessary details, 14 pages of figures, 95 pages of tables, and appendices A, B, and C. While NMED agrees that some information contained in the Plan is essential to support its purpose, the Plan should be more simplified and narrowly focus on its purpose to receive a timely approval from NMED. For example, the Plan includes a lengthy discussion of previous investigations (i.e., Section 2.2 and the subsections). It is unclear why and how such discussion is pertinent to the Plan; the discussion regarding previous investigations must be reduced in the future, as appropriate. The structure of all future plans must be modified to focus on its purpose. Also, refer to Comments 1 and 3 of July 19, 2022, Disapproval. Although no revision is required to the Plan, acknowledge this provision in the response letter.

Permittee Response: Concur. Future GWMPs will be significantly simplified. Please see the initial proposed reductions in Section 2.2.

SPECIFIC COMMENTS:

3. Section 2.2, Previous Investigations, lines 10-11, page 25

Permittee Statement: "Results from previous investigations are briefly discussed for each report in the following subsections."

NMED Comment: Subsections of Section 2.2 (i.e., Sections 2.2.1 through 2.2.24) provide a summary of previous investigations. NMED did not verify accuracy of the description contained in Sections 2.2.1 through 2.2.24. The purpose of the Plan, as described in the Permit Section V.A.4 and Section 1.3 of the Plan, does not pertain to the details of previous investigations; therefore, NMED is neither required to verify the accuracy nor provide comments regarding the description of previous investigations. Approval of the Plan does not constitute agreement with the description contained in Sections 2.2.1 through 2.2.24. Although no Revision is required to the Plan, address this comment in the future plans.

Permittee Response: Concur. See response to Comment No. 2 above.

4. Section 2.3, Semiannual RCRA Groundwater Monitoring Reports and Updated Groundwater Monitoring Plans - Ongoing, lines 26-28, page 30

Permittee Statement: " The Interim Facility-wide GWMP is updated annually and the Northern Area GWMP is submitted as a stand-alone document per NMED request dated October 22, 2018, (NMED, 2018a)."

NMED Comment: An annual update of the Interim Facility-wide Groundwater Monitoring Plan is also required by the Permit Section V.A.4. Correct the statement for accuracy or provide a clarification in the revised Plan.

Permittee Response: Concur. Clarification was made as requested to specify the RCRA permit requirement. The referenced statement was revised to read as follows:

"*The Interim GWMP is updated annually per RCRA Permit Section V.A.4 and per NMED letter dated October 22, 2018 (NMED, 2018a).*"

5. Section 3.4.3, Hydrogeology, lines 4-5, page 35

Permittee Statement: "Currently, Well 69 (screened in the San Andres-Glorieta aquifer) produces groundwater continuously; and it may be used for non-potable purposes occasionally."

NMED Comment: The Permittee submitted the January 2024 *Field Summary Report Abandon and Plug Artesian Wells #68 and #69*, which describes the abandonment activities at Wells 68 and 69. Section 3.4.4, *Northern Area Alluvial Groundwater System* also states that Well 69 was abandoned in 2023. The statement does not appear to describe the current status of Well 69. Revise the statement for accuracy, as appropriate.

Permittee Response: Concur. The 3rd sentence in the 2nd paragraph of Section 3.4.3 was revised to read as follows:

"*Well, 69 was screened in the San Andres-Glorieta aquifer and produced groundwater until it was abandoned in October 2023 (Army, 2024).*"

The citation for the January 2024 Field Summary Report Abandon and Plug Artesian Wells #68 and #69 was added to the reference section.

6. Section 3.4.5, Northern Area Bedrock Groundwater System, lines 1-3, page 37

Permittee Statement: "A third water-bearing sandstone unit is assumed since groundwater from well BGMW08 was measured at 100-feet lower than those of other bedrock wells."

NMED Comment: The Permittee's December 22, 2023, *Final Groundwater Periodic Monitoring Report, January through June 2022* (Report) 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. Include this provision in the revised Plan.

Permittee Response: Concur. The Army has ceased purging and sampling of well BGMW08 as of the April 2024 sampling event. The 2024 GWMP was revised throughout to reflect this change, including Sections 3.4.5 and 7.0 and Table 5-2.

7. Section 3.4.5, Northern Area Bedrock Groundwater System, lines 6-9, page 37

Permittee Statement: "A comprehensive survey was performed in October 2019 for all the Northern Area groundwater network monitoring wells by DePauli Engineering and Surveying LLC using the New Mexico State Plane West, Zone Grid North American Datum of 1983 (NAD 83). In general, most wells measured 0.7- to 1.1-foot higher with the new survey without changing any flow patterns."

NMED Comment: According to Table 3-1, *Northern Area Water-level Measurements by Groundwater Zone*, the updated well TOC elevations for applicable wells are recorded in July 2019. It appears that the survey was performed before October 2019. Correct the statement for accuracy in the revised Plan, as appropriate.

Permittee Response: Concur. Table 3-1 was corrected to indicate the new survey data was collected in October 2019.

8. Section 3.5, Nature and Extent of Groundwater Contamination, lines 12-20, page 37

Permittee Statement: "Nitrate, perchlorate, explosives, one VOC, and metals are consistently detected in groundwater samples at concentrations above the screening levels. Thirteen groundwater contaminant plumes have been identified: two nitrate plumes, one in the alluvial aquifer and one in the bedrock aquifer; one explosives plume in the alluvial aquifer; two perchlorate plumes, one in the alluvial aquifer and one in the bedrock aquifer; one VOC plume for 1,2-DCA in the alluvial aquifer; two TPH-DRO plumes, one in the alluvial aquifer and one in the bedrock aquifer; one TPH-GRO plume in the alluvial aquifer; two chloride plumes, one in the alluvial aquifer and one in the bedrock aquifer; and two sulfate plumes, one in the alluvial aquifer and one in the bedrock aquifer (Eco, 2023)."

NMED Comment: The first sentence states that nitrate, perchlorate, explosives, one volatile organic compound (VOC), and metals are consistently detected; however, the latter sentences state that nitrate, explosives, perchlorate, one VOC, TPH-DRO, TPH-GRO, chloride and sulfate plumes are identified. The analytes mentioned in these two statements are not consistent and need clarification or correction. Resolve the discrepancy in the revised Plan.

Permittee Response: Concur. The referenced sentences were revised to read as follows:

"*Anions, explosives, perchlorate, one VOC, TPH-DRO, TPH-GRO, and metals are consistently detected in groundwater samples at concentrations above the screening levels. Nine groundwater contaminant plumes have been identified: two nitrate plumes, one in the alluvial aquifer and one in the bedrock aquifer; one explosives plume in the alluvial aquifer; two perchlorate plumes, one in the alluvial aquifer and one in the bedrock aquifer; one VOC plume (1,2-DCA) in the alluvial aquifer; two TPH-DRO plumes, one in the alluvial*

aquifer and one in the bedrock aquifer; and one TPH-GRO plume in the alluvial aquifer (Eco, 2023)."

9. Section 3.5, Nature and Extent of Groundwater Contamination, lines 20-23, page 37

Permittee Statement: "While metals are consistently detected in groundwater samples at concentrations above the screening levels, background groundwater concentrations have not been accepted for FWDA and it cannot be demonstrated whether the detected concentrations are a result of natural conditions or anthropogenic sources."

NMED Comment: Background groundwater concentrations for anions and metals have not been established at the site; thus, it is unknown if the detected concentrations resulted from background or anthropogenic sources (refer also to Comment 5 of the July 19, 2022, Disapproval). Anions (i.e., chloride and sulfate) are identified as plumes in the Plan, but metals are not. If the exceedances of the anion concentrations are identified as plumes, the exceedances of the metal concentrations must also be identified as plumes for consistency. Revise the Plan accordingly.

Permittee Response: Concur. Major anions other than nitrate are not identified as plumes in the revised 2024 GWMP, consistent with the presentation of metals.

In addition, the referenced sentence was revised as follows to add anions:

"*While metals and anions are consistently detected in groundwater samples at concentrations above the screening levels, background groundwater concentrations have not been established for FWDA and it is unknown whether detected concentrations are a result of natural conditions or anthropogenic sources. Therefore, metal and anion (other than nitrate) concentrations have not been mapped as contaminant plumes.*"

10. Section 3.5, Nature and Extent of Groundwater Contamination, lines 25-31, page 37

Permittee Statement: "Figure 3-1 and Figure 3-2 present the alluvial and bedrock groundwater elevations generated from the April 2022 water-level measurement event. Plume boundaries defined by iso-concentration contours at the contaminant screening-level concentration were generated from the April 2022 monitoring event. Northern Area alluvial contaminant plumes for select contaminant concentrations that can be contoured are provided in Figures 3-3 through 3-10; and Figures 3-11 through 3-13 cover the Northern Area bedrock groundwater contaminant plumes. Analytical results corresponding to the contaminant plumes are presented in Appendix B."

NMED Comment: The changes to the monitoring plan must be evaluated based on the data collected from the most recent monitoring event that is available to the Permittee at the time the Plan is prepared. The Plan pertains to the forthcoming monitoring events; therefore, it is essential to evaluate the most recent data to propose any changes to the monitoring plan. No revision is required to the Plan.

Permittee Response: Concur. Future submittals of the Interim GWMP will utilize the latest available data.

The 2024 GWMP was not changed as a result of this comment.

11. Section 3.5, Nature and Extent of Groundwater Contamination, lines 3-5, page 38

Permittee Statement: "The explosives plume in bedrock appears to have the same potential source areas as nitrate and metals, which originate near the TNT Leaching Beds (SWMU 1) and Building 528 Complex (SWMU 27) (Figure 3-11)."

NMED Comment: According to Figure 3-11, *Groundwater Monitoring Bedrock Wells - Nitrate, Explosives, Metals*, the nitrate plume is depicted south (i.e., upgradient) of the TNT Leaching Beds; however, the explosive plume is not depicted. NMED is not aware of the presence of the explosives plume in the bedrock aquifer. Verify the accuracy of the statement and correct the statement in the revised Plan, as appropriate. Also revise Figure 3-11 to depict the explosive plume in the revised Plan, as appropriate.

Permittee Response: Concur. The inaccurate statement was removed from the 2024 GWMP as there is no explosives plume in the bedrock groundwater.

12. Section 4.1, Scope of Activities, lines 5-6 and 11-13, page 41, and Section 4.3, Groundwater Sampling, lines 15-18, page 42

Permittee Statement: "The different types of sampling and purging methods described in this section are identified in Table 4-1." and, "Low-flow purging and sampling is the preferred sampling method at FWDA. In addition, borehole purging is proposed at wells with poor recovery as is consistent with previously approved monitoring plans." and "Monitoring well sampling at FWDA involves a variety of purging and sampling methods, as shown in Table 4-1. Wells are sampled either with dedicated low-flow pumps (i.e., BESST and Zone Isolation Sampling Technology [ZIST]), high-volume dedicated pumps (Bennett), portable submersible pump, or hand bail."

NMED Comment: According to Table 4-1, *Northern Area Groundwater Purge Method*, traditional low flow, submersible pump, hand bail, ZIST low flow, Bennett pump, and reclamation pump have been proposed to purge wells. However, the purging/sampling methods described in the text and Table 4-1 are not consistent. Resolve the discrepancy or provide a clarification in the revised Plan. In addition, it is unclear how and why wells were purged with the various purging/sampling methods listed in Table 4-1. Determine the suitability for the low-flow method for each well and provide a justification for those wells where purging/sampling was conducted by other methods in the revised Plan. Furthermore, Comment 12 of the July 19, 2022 Disapproval, which pertains to low-flow method, was not addressed in the 2024 Plan. Although the comment was addressed in the Response, the Response is no longer subject to NMED's review (see Comment 1 above). Therefore, the July 19, 2022 Disapproval Comment 12 must be addressed in the revised 2024 Plan.

Permittee Response: Concur. The third paragraph of Section 4.1 was revised to state:

"*Current wells not sampled via the low-flow method will be evaluated to determine their suitability for the low-flow method based on 2024 purge rates and drawdown. Wells determined to be suitable for low-flow sampling will be proposed for low-flow sampling in future sampling events as appropriate.*"

13. Section 4.1, Scope of Activities, line 14, page 41

Permittee Statement: "Groundwater samples will be analyzed for one or more of the following COPCs."

NMED Comment: Per- and polyfluoroalkyl substances (PFAS) were not included as a Contaminants of Potential Concern (COPCs) in Section 4.1. Although Comment 1 of NMED's August 3, 2021, *Final 2022 Interim Northern Area Groundwater Monitoring Plan Revision 2, Army's Responses to the Approval with Modifications dated March 8, 2021* states, "[p]ropose to conduct PFAS analysis for the groundwater samples collected from the pertinent wells in the next groundwater monitoring plan update," the comment was not addressed or acknowledged in the 2023 Plan. Comment 2 of the July 19, 2022, Disapproval also reminded the Permittee of the provision of PFAS sampling. However, this provision was not addressed or acknowledged in the 2024 Plan. Include PFAS as part of the list of COPCs and propose to collect groundwater samples for PFAS analysis in the revised Plan. Potential PFAS releases to the environment must be investigated under the February 2015 Fort Wingate Depot Activity Resource Conservation and Recovery Act Permit (Permit). PFAS are emerging contaminants of concern that meet the statutory definition for hazardous waste defined in New Mexico Hazardous Waste Act Section 74-4-3.K, Section 1004(5) of the Solid Waste Disposal Act, and Section 6903(5) of the United States Resource Conservation and Recovery Act and are defined as such in the Permit as required by 40 Code of Federal Regulations 270.32(b)(2) for protection of human health and the environment. Failure to follow NMED direction constitutes noncompliance and may result in an enforcement action.

Permittee Response: Comment acknowledged. As an emerging contaminant, federal Department of Defense policy is to conduct PFAS investigations under the CERCLA process (https://www.acq.osd.mil/eie/eer/ecc/pfas/data/cleanup-pfas.html); a decision not at the discretion of the Permittee. The Army recently completed a PFAS Site Inspection (SI) at FWDA that will soon be submitted to NMED. Based on the results of the SI, the Army is initiating a PFAS Remedial Investigation (RI) at FWDA. The Army requests a meeting to discuss NMED's involvement in the upcoming PFAS investigation. The Army respectfully requests that NMED's direction in this comment on PFAS sampling be deferred pending further discussions.

The 2024 GWMP was not changed as a result of this comment.

14. Section 4.3.2, Low-Flow Pump Purging, line 30, page 43, and lines 1-2, page 44

Permittee Statement: "Dedicated pumps are constructed of Delrin™ (acetal homopolymer) plastic, or stainless steel, and the tubing is Teflon™-lined polyethylene. Tubing fittings that contact the sample stream are stainless steel."

NMED Comment: Some materials used for pumps and tubing are not compatible with PFAS sampling (e.g., Teflon™). Ensure that all materials that contact the sample stream are compatible with PFAS and propose to replace all incompatible pumps and tubing for the wells where PFAS sampling is proposed in the revised Plan, as applicable.

Permittee Response: Concur. See the response to Comment No. 13 above.

The 2024 GWMP was not changed as a result of this comment.

15. Section 4.3.2, Low-Flow Pump Purging, line 30, page 43, and lines 1-2, page 44

Permittee Statement: "The ZIST packer system have (sic) not proven to be consistently effective in the long-term, and to not consistently provide an appropriate seal. The Army proposes removal of the ZIST system from TMW14A and TMW17, and sampling in accordance with Section 4.3.4 (see on following page)."

NMED Comment: Section 4.3.4, *Alternative Groundwater Purging and Sampling Procedures* discusses alternative methods (i.e., hand bailing with disposable bailers, a submersible pump, or a dedicated piston pump) of purging and sampling due to extremely low-yield/low-water levels. According to the drawdown data included in the November 2023 *Groundwater Periodic Monitoring Report July through December 2022* (Report), the water level drawdown of wells TMW14A and TMW17 are recorded as 2.49 feet and 0.06 feet, respectively. The drawdown for well TMW14A is greater than 0.3 feet, which indicates that the recharge rate at well TMW14A may be too slow for the use of low-flow purging and sampling; therefore, another method may be applicable. According to the November 2023 Report, the pumping rate for TMW14A is recorded as 150 mL/min. Propose to reduce the pumping rate from 150 mL/min to 100 mL/min and evaluate whether drawdown can be reduced in the revised Plan. If the drawdown still exceeds 0.3 feet after reducing the pumping rate, the use of another purging/sampling method for TMW14A would be appropriate. On the contrary, the water level drawdown for well TMW17 appears to be appropriate (i.e., less than 0.3 feet); therefore, the groundwater samples collected from well TMW17 continue to be representative of the formation water. Continue to conduct purging/sampling at well TMW17 using the ZIST system. Furthermore, propose to conduct biennial inspection for the integrity of the ZIST system in the revised Plan.

Permittee Response: Concur. Section 4.3.2 was revised to propose lowering the flow rate for TMW14A as much as possible until water level stabilization is acquired, but the well isn't expected to sustain low-flow pumping without drawdown, which is why the ZIST was initially installed.

Section 4.3.2 was revised to propose biennial inspection for the integrity of the ZIST system in wells TMW14A and TMW17.

The following was added to the end of Section 4.3.2:

"*Significant drawdown in well TMW14A indicates that the ZIST seal is not functioning. The flow rate for well TMW14A will be lowered as much as possible until water level stabilization is acquired. If water level stabilization is not acquired, an alternative purging and sampling method will be proposed in a subsequent Interim GWMP update. In addition, the Army will perform biennial inspection for the integrity of the ZIST system in wells TMW14A and TMW17.*"

16. Section 4.3.2.1, Traditional Low-Flow and ZIST Low-Flow Dedicated Pumps, Traditional Low-Flow, lines 32-34, page 45

Permittee Statement: "Once water quality readings are stabilized (Step 9), the established water-level drawdown must not be more than 4 inches/0.33 foot from stabilization until the end of sample collection."

NMED Comment: Table 4-1, *Northern Area Groundwater Purge Method*, identifies wells where traditional low-flow purge method has been used. According to the drawdown data included in the November 2023 Report, the water level drawdown exceeds 0.33 feet in wells where traditional low-flow purge method is utilized (e.g., SMW01 and TMW24). Propose to reduce the pumping rate, where applicable, and to evaluate whether the water level drawdown can be reduced less than to the criteria (4 inches/0.33 feet) in the revised Plan. If the drawdown still exceeds the criteria after reducing the pumping rate, the low-flow method would not be considered appropriate. In this case, propose to change the purging/sampling method for the wells in the future plans.

Permittee Response: Concur. According to EPA low-flow sampling guidance (EQASOP-GW4, Revision Number: 4, July 30, 1996; Revised September 19, 2017), during pump start-up, drawdown may exceed the 0.33 feet target and then "recover" somewhat as pump flow adjustments are made. However, continued drawdown greater than 0.33 feet would result in a well not being considered acceptable for low-flow purging and sampling methods.

The following was added to Section 4.3.2.1:

"*In wells where drawdown exceeds 0.33 feet during the water quality parameter stabilization and sampling, the pumping rate will be reduced until the water level drawdown is less than 0.33 feet. If water level drawdown cannot be reduced to 0.33 feet then the well will no longer be considered appropriate for low-flow purging and sampling and a new purging/sampling method will be proposed in the subsequent Interim GWMP.*"

17. Section 4.3.2.1, Traditional Low-Flow and ZIST Low-Flow Dedicated Pumps, Traditional Low-Flow, lines 35-37, page 45

Permittee Statement: "If stabilization of water quality readings is not reached within 1 hour, and at least eight water-quality readings have been collected, samples will be collected from the well at this time."

NMED Comment: This sampling criterion is not described in the NMED's October 2001 *Position Paper Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring*, and the Permittee did not provide a reference for this condition. Provide a reference or justify the acceptability of the groundwater samples where stabilization is not achieved in the revised Plan.

Permittee Response: Concur. According to EPA low-flow sampling guidance (EQASOP-GW4, Revision Number: 4, July 30, 1996; Revised September 19, 2017), if after 2 hours of purging, indicator field parameters have not stabilized, samplers may discontinue purging and collect samples.

The referenced sentence was revised to read as follows:

"*If stabilization of water quality readings is not reached within 2 hours, samples will be collected from the well at this time (EPA, 2017).*"

Citation to the EPA Guidance was added to the reference section.

18. Section 4.3.3, Groundwater Sample Collection by Low-Flow Pump, lines 10-12, page 46

Permittee Statement: "Continue to monitor DTW to assure that the water level does not decrease more than 0.33 foot (4-inches) from the established pumping level during sampling (not for ZIST-equipped wells)."

NMED Comment: The ZIST system is a modified low-flow purge method. It is not clear why the water level drawdown criterion of 0.33 foot does not apply to the ZIST system. Provide an explanation in the response letter.

Permittee Response: Concur. Depth to water will be monitored in all wells that are sampled using the low-flow purge method. The phrase "*…(not for ZIST-equipped wells)*" has been removed from the 2024 GWMP. The Army notes that the ZIST system functions by isolating the screen interval, and the water level above the seal should not change.

19. Section 4.3.4, Alternative Groundwater Purging and Sampling Procedures, lines 5-8, page 47

Permittee Statement: "Prior to purging, an additional DO measurement with a downhole probe will be collected on all wells without a dedicated pump. DO is the only parameter that shows a potential affect from pumping the water through a flow-through cell by possible introduction of air into the system."

NMED Comment: It is unclear why a dedicated pump cannot be pulled out from wells and a down hole probe is used to measure dissolved oxygen (DO) concentrations. Explain why a dedicated pump cannot be pulled out or propose to use a downhole probe for DO measurements for all wells, where applicable, in the revised Plan.

Permittee Response: Concur. As described in the NMED HWB Position Paper on Low-Flow Sampling, equipment should be installed in the well a minimum of 12 hours prior to the purging and sampling event to allow the equipment to equilibrate with well conditions. The Army considers that removing dedicated pumps, which are equilibrated with well conditions, has the potential to affect the groundwater samples. Removal of pump and tubing assembly will cause significant disturbance to the water column within the well and may have impacts to data quality. In addition, removing and reinstalling pumps will co-mingle stagnant oxygenated water above the pump with water drawn laterally from the formation. Collection of the downhole DO readings from wells with dedicated pumps present an increased risk of affecting the groundwater samples.

The 2024 GWMP was not changed as a result of this comment.

20. Section 4.4.3, Sample Shipping, lines 18-20, page 51

Permittee Statement: "Samples will be transported to Eurofins Environment Testing (Eurofins) located at 4955 Yarrow Street in Arvada, Colorado for analytical testing. If requested by USACE, a second laboratory (chosen by USACE) will be used to analyze triplicate samples."

NMED Comment: Comment 2a of the NMED's July 19, 2022, Disapproval required the Permittee to propose to split the nitrite samples collected from wells MW27, MW35, and

TMW59 and use two different analytical laboratories to conduct nitrite analysis. If this provision has not previously been addressed, include the provision in the revised Plan.

Permittee Response: Concur. Split samples from wells MW27, MW35, and TMW59 were collected during the April 2023 sampling event and will be discussed in the January through June 2023 PMR.

The 2024 GWMP was not changed as a result of this comment.

21. Section 4.5, Decontamination, lines 1-2, page 52

Permittee Statement: "Scrub the surfaces of the equipment using distilled water and a non-phosphate detergent-cleaning solution and reusable-dedicated decontamination brushes."

NMED Comment: Some cleaning solutions (e.g., Alconox®) are ideal for decontamination. In order to verify if an appropriate cleaning solution was selected, provide the product name of the cleaning solution and MSDS (if the cleaning solution is not Alconox®) that is currently used in the revised Plan.

Permittee Response: Concur. Alconox® is used and was specifically named in the 2024 GWMP. The referenced sentence was revised to read as follows:

"*Scrub the surfaces of the equipment using distilled water and a non-phosphate detergent-cleaning solution (Alconox®) and reusable-dedicated decontamination brushes.*"

22. Section 4. 7 .2, Sample Collection Quality Control and Quality Assurance, lines 30-32, page 53

Permittee Statement: "Due to recurring detections of bis(2-ethylhexyl) phthalate, a plasticizer and a common laboratory and sampling contaminant, the use of materials containing bis(2-ethylhexyl) phthalate will be avoided in the field and laboratory."

NMED Comment: NMED acknowledges the proposed modification regarding the elimination of the use of materials containing bis(2-ethylhexyl) phthalate. In the future groundwater monitoring reports, discuss whether the modification reduced/eliminated the detections of bis(2-ethylhexyl) phthalate. No revision is required to the current Plan.

Permittee Response: Concur. Future PMR submittals will discuss detections of bis(2-ethylhexyl) phthalate, or lack thereof.

The 2024 GWMP was not changed as a result of this comment.

23. Section 5.0, Monitoring and Sampling Program, lines 2-4, page 56

Permittee Statement: "Interim groundwater monitoring and sampling at FWDA allows the Army to track contaminant plume concentrations and migration at previously identified groundwater impact areas while the remedial facility investigation (RFI) and corrective measures study (CMS) are completed."

NMED Comment: In the *List of Abbreviations and Acronyms*, page 14, acronym "RFI" is identified as "Resource Conservation and Recovery Act Facility Investigation". For consistency, the same acronym must not be applied to different meanings (i.e., Resource Conservation and Recovery Act Facility Investigation and remedial facility investigation). Spell out remedial facility investigation to avoid confusion. Revise the Plan accordingly.

Permittee Response: Concur. The referenced sentence was revised to read as follows:

"*Interim groundwater monitoring and sampling at FWDA allows the Army to track contaminant plume concentrations and migration at previously identified groundwater impact areas while the RFI and corrective measures study (CMS) are completed.*"

24. Section 5.1, Interim Groundwater Monitoring Analytical Program, lines 27-28, page 56

Permittee Statement: "Forty-two analytes in Table 5-1 have screening values lower than the laboratory limit of quantitation (LOQ), or limit of detection (LOD); thus, are identified as data quality exceptions."

NMED Comment: According to the December 22, 2023, Report, the limits of detection (LOD)/quantitation (LOQ) values of some analytes listed as data quality exception compounds (e.g., 2,4-dinitrotoluene, 2,6-dinitrotoluene, nitrobenzene, PETN, alpha-BHC) did not exceed the selected screening levels. Although these analytes have been identified as data quality exception compounds at one point, they have not always been identified as such. The distinction may be caused by a difference in dilutions used by the laboratory. The listed forty-two analytes may or may not be data quality exception compounds; therefore, the statement can be misleading. Resolve the issue in the revised Plan. In addition, all laboratory analyses must be conducted by using minimum attainable dilution factors without adversely affecting equipment in order to reduce LOD/LOQ, where applicable. Acknowledge this provision in the revised Plan.

Permittee Response: Comment acknowledged. The 2024 GWMP was revised to remove data quality exceptions, since these are sample-specific and may change for each sampling event. In addition, data quality exceptions are listed in each PMR.

The Army acknowledges that laboratory analyses must be conducted using the minimum attainable dilution factors.

25. Section 5.2, Monitoring Location and Frequency, line 5, page 58

Permittee Statement: "Table 5-2 contains the sampling matrix in accordance with this GWMP."

NMED Comment: Table 5-2, Northern Area Groundwater Sampling Matrix, does not include the provisions required by the NMED's July 19, 2022, Disapproval. Address the following issues:

a) Comment 2b of the NMED's July 19, 2022, Disapproval states, “[t]he Permittee recommended conducting additional groundwater sampling and analysis of herbicides for wells MW36S, BGMW13D, and BGMW07 in the May 6, 2022 letter. However, herbicide analysis was not proposed for wells

MW36S and BGMW13D in the Plan. Propose to conduct herbicide analysis for these wells in the revised Plan." Table 5-2 does not indicate that herbicide analysis is proposed for these wells. Propose to conduct the required analysis or provide an explanation for why the analysis is not proposed in the revised Plan.

b) Comment 2c of the NMED's July 19, 2022, Disapproval states, "[p]ropose to conduct pesticides analysis for the groundwater samples collected from wells TMW40S and TMW52, as required by Comment 53 of the NMED's January 25, 2022 Disapproval." Table 5-2 does not indicate that pesticides analysis is proposed for these wells. Propose to conduct the required analysis or provide an explanation for why the analysis is not proposed in the revised Plan.

c) It is unclear whether or not Comments 2d through i of the NMED's July 19, 2022. Disapproval were addressed in the 2024 Plan. Explain whether or not these comments were addressed in the response letter. Address them in the revised Plan, as applicable

Permittee Response:

a) Concur. Analyses for herbicides in wells MW36S and BGMW13D have been conducted since 2021. Analyses for herbicides in well BGMW07 have been conducted since 2018. As described in Section 7.0 of the 2024 GWMP, the Army proposes to remove analyses for herbicides in wells MW36S, BGMW13D, and BGMW07 based on no detections above screening levels for four or more sampling events.

b) Concur. Analyses for pesticides in well TMW52 have been conducted since 2021. Analyses for pesticides in well TMW40S have been conducted since 2017. Per the NMED April 24, 2024, Approval to Response No. 1 to Disapproval 2024 GWMP, the Army continued analysis for pesticides in TMW40S and TMW52 in the April 2024 sampling event. As described in Section 7.0 of the 2024 GWMP, the Army proposes to remove analyses for pesticides in wells TMW52 and TMW40S based on no detections above screening levels for four or more sampling events.

c) Concur. See the response to Comment No. 1 above and the attached letter with responses to all comments from NMED's July 19, 2022, letter.

The 2024 GWMP was not changed as a result of this comment.

26. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Perchlorate Plume, lines 23-25, page 58

Permittee Statement: "To monitor plume migration along the downgradient boundary of the plume, TMW03, TMW13, and TMW41 are designated for perchlorate analysis."

NMED Comment: Alluvial well TMW56 is also 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 field sampling procedures in future groundwater periodic monitoring reports. Revise the Plan accordingly.

Permittee Response: Concur. The referenced sentence was revised to read as follows:

"*To monitor plume migration along the downgradient boundary of the plume, TMW03, TMW13, TMW41, and TMW56 are designated for perchlorate analysis.*"

Well TMW56 is proposed for perchlorate analysis in Table 5-2.

27. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Other Organics Monitoring, lines 9-10, page 59

Permittee Statement: " The GRO releases are monitored by wells MW01, MW02, MW03, MW18D, MW20, MW22D, and TMW33."

NMED Comment: Comment 2h of the NMED's July 19, 2022, Disapproval states, "Comment 27 of the NMED's July 1, 2020, Disapproval states, "[p]ropose to collect groundwater samples from wells TMW06, TMW07, and TMW21 for TPH-GRO analysis." Although it appears that this comment was addressed, the discussion was not included in the Plan." TPH-GRO analysis was required for the groundwater samples collected from wells TMW06, TMW07, and TMW21 in addition to the above-listed wells. Although Table 5-2 indicates that TPH-GRO analysis is proposed for wells TMW06, TMW07, and TMW21, the statement does not include these three wells. Resolve the discrepancy in the revised Plan.

Permittee Response: Concur. The referenced sentence was revised to read as follows:

"*The GRO releases are monitored by wells MW01, MW02, MW03, MW18D, MW20, MW22D, TMW06, TMW07, TMW21, and TMW33.*"

28. Section 5.2.2, Northern Area Bedrock Groundwater Monitoring Design, Perchlorate Plume, lines 28-30, page 59

Permittee Statement: "To monitor the plume boundary wells TMW32, TMW36, TMW38, TMW39D, and TMW40D are designated as downgradient wells. Additional wells were installed in 2019 to further assess the perchlorate plume."

NMED Comment: The discussion in all relevant sections of the Plan must incorporate the new wells installed in 2019. The Plan pertains to year 2024 groundwater monitoring and the content of the Plan must be updated to include the new wells installed in 2019. Revise the Plan accordingly.

Permittee Response: Concur. The referenced sentence was revised to read as follows:

"*To monitor the plume boundary wells TMW32, TMW36, TMW38, TMW39D, TMW40D, TWM43, TMW44, and TMW47 are designated as downgradient wells.*"

29. Section 5.3.2, Analytical Data Quality Requirements, Precision, lines 16-18, page 61

Permittee Statement: “The relative percent difference of field duplicates, laboratory duplicates, and MS/MSD pairs will be calculated and evaluated with the limits included in Table 5-1.”

NMED Comment: Table 5-1 provides the screening level for each analyte. The relative percent difference of field duplicates, laboratory duplicates, and MS/MSD pairs are not relevant to the listed screening levels. Include a table that presents the criteria for relative percent difference of field duplicates, laboratory duplicates, and MS/MSD pairs in the revised Plan.

Permittee Response: Concur. Table 5-1 was revised to include the criteria for relative percent difference of field duplicates, laboratory duplicates, and MS/MSD pairs.

30. Section 5.3.2, Analytical Data Quality Requirements, Accuracy and Bias, lines 20-21, page 61

Permittee Statement: “Accuracy is the degree of agreement between a sample result and a reference value. Bias refers to the systematic inaccuracy associated with a measurement process.”

NMED Comment: PFAS analysis is required for future groundwater sampling events. In order to ensure accuracy and precision of PFAS analytical results, NMED recommends using the isotope dilution quality assurance, which will quantify the lost quantity of analytes through entire laboratory procedures. Include the provision in the revised Plan, as appropriate.

Permittee Response: Comment acknowledged. Please see response to Comment No. 13 above regarding PFAS.

The 2024 GWMP was not changed as a result of this comment.

31. Section 5.3.2, Analytical Data Quality Requirements, Accuracy and Bias, lines 28-30, page 61

Permittee Statement: “The percentage recovery of laboratory control samples and MS samples will be evaluated with the percentage limits in Table 5-1.”

NMED Comment: Table 5-1 provides the screening level for each analyte. The percentage recovery of laboratory control and MS samples is not relevant to the screening level. Include a table that presents the criteria for the percentage recovery of laboratory control and MS samples in the revised Plan.

Permittee Response: Concur. Table 5-1 was revised to include the criteria for the percentage recovery of laboratory control and MS samples.

32. Section 5.3.2, Analytical Data Quality Requirements, Comparability, lines 13-16, page 62

Permittee Statement: "Also, field triplicate samples may be collected if directed by USACE, sent to a different laboratory (to be determined), and results compared to the field results. Data will be considered in disagreement if the difference in values exceeds criteria for relative percent difference listed in Table 5-1."

NMED Comment: Address the following:

a) Comment 2a of the NMED's July 19, 2022, Disapproval states, "[t]he nitrite concentrations in groundwater samples collected from wells MW27, MW35, and [T]MW59 may have been reported inaccurately. Propose to split the nitrite samples collected from the wells and use two different analytical laboratories to conduct nitrite analysis in the revised Plan, as appropriate." Address this comment in the revised Plan.

b) Table 5-1 provides the screening level for each analyte. The relative percent difference will not be evaluated with the screening level. Include an additional table that presents the criteria for relative percent difference in the revised Plan.

Permittee Response:

a) Concur. Split samples from wells MW27, MW35, and TMW59 were collected during the April 2023 sampling event and will be discussed in the January through June 2023 PMR.

   The document was not changed as a result of this comment.

b) Concur. Table 5-1 was revised to include the criteria for relative percent difference.

33. Section 6.0, Schedule, lines 2-3, page 65

Permittee Statement: "The first sample collection under this Interim Northern Area GWMP took place in April 2008 and has continued each April and October to date."

NMED Comment: It is NMED's opinion that it is essential for the Permittee to attain an approval of the plan update before April of each year so that the Permittee can conduct the first sampling event in accordance with the approved plan. However, multiple deficiencies are identified in the Plan, as documented in this letter. An issuance of a disapproval makes it impossible for the Permittee to conduct upcoming groundwater monitoring/sampling events in accordance with the updated plan. In order to expedite NMED's review and attain approval, it is crucial that the contents of the updated plan align with its purpose (see Comment 2 above), and the previous NMED comments relevant to the updated plan are addressed. No revision is required to the Plan.

Permittee Response: Concur. The Army appreciates NMED’s timely review and approval of Response No. 1 to the NOD on the 2024 GWMP and hopes that NMED will also find Response No. 2 to be acceptable. Also, please see response to Comment No. 2 above.

The 2024 GWMP was not changed as a result of this comment.

34. Section 7.0, Sampling Changes from Previous Plan, line 9, page 66

Permittee Statement: "The revised analytical program is listed in Table 5-2."

NMED Comment: Comment 1 of the NMED's July 19, 2022, Disapproval states, "[a]lthough Section 7.0 (Sampling Changes from Previous Plan) briefly discusses proposed changes to the previous monitoring and sampling plan, it lacks detail and the discussion is not sufficient. The Permittee must present all proposed changes to the previous plan and provide the basis for each proposed change requested by the Permittee or required by NMED. Relevant correspondence must be referenced for all proposed changes required by NMED. Comment 32 of the NMED's July 27, 2020, Disapproval also states, "Table 5-2, Northern Area Groundwater Sampling Matrix, and the text of the Plan lack an explanation for the changes made to the Plan (e.g., inclusion or exclusion of new or existing wells and analytical suite). The revised Plan must include a section that summarizes all changes made to the previous sampling matrix. If the change was directed by NMED, provide a reference to the direction. If the change is proposed by the Permittee, provide a basis for the proposed change." This direction was not adequately followed." Disapproval Comment 1 applies to the 2024 Plan. Specific directions for the changes to the Plan were provided by previous NMED letters; however, the directions were not adequately followed or acknowledged. Address all of the comments contained in the NMED's July 19, 2022, Disapproval, where applicable, in the revised Plan.

Permittee Response: Concur. See the response to Comment No. 1 above and the attached letter with responses to all comments from NMED's July 19, 2022, letter.

The 2024 GWMP was not changed as a result of this comment.

35. Section 7.0, Sampling Changes from Previous Plan, lines 22-24, page 66

Permittee Statement: "BGMW11, BGMW12, BGMW13D, BGMW13S: Remove analyses for pesticides, PCBs, and herbicides based on no detections above screening levels for four or more sampling events."

NMED Comment: Comment 2b of the NMED's July 19, 2022 Disapproval states, "[t]he Permittee recommended conducting additional groundwater sampling and analysis of herbicides for wells MW36S, BGMW13D, and BGMW07 in the May 6, 2022 letter. However, herbicide analysis was not proposed for wells MW36S and BGMW13D in the Plan. Propose to conduct herbicide analysis for these wells in the revised Plan." It is unclear whether this comment was already addressed. Address the comment in the revised Plan, as applicable, and state if the comment was addressed in the response letter.

Permittee Response: Concur. See the response to Comment No. 1 above and the responses to all comments from NMED's July 19, 2022 letter. The analysis of herbicides is not proposed for MW36S, BGMW13D, and BGMW07 due to the lack of detections described in Section 7.0.

In addition, see response to Comment No. 25 above regarding herbicide analyses in wells MW36S, BGMW13D, and BGMW07.

36. Section 7.0, Sampling Changes from Previous Plan, lines 16-17 and 33-34, page 66 and lines 1-2, page 67

Permittee Statement: "Wells with detections of explosives or TPH-DRO are proposed to be analyzed for SVOCs in the subsequent sampling event." and, "MW20: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events." and, "MW22D: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: The TPH-DRO concentrations in the groundwater samples collected from wells MW20 and MW22D exceeded the applicable screening level in 2021/2022 according to the November 2023 Report. Therefore, the statements contradict one another by proposing to remove SVOCs from the analytical suite. Resolve the discrepancy in the revised Plan. In addition, the 2023 Plan states, "[t]he points of release for the SVOCs in the Northern Area include SWMU 6 (Building 11, former Locomotive Shop) and SWMU 45 (Building 6 Gas Station). There are no groundwater SVOC plumes identified at FWDA; however, wells MW20, MW22D, TMW33, and TMW46 are designated to monitor suspected releases of petroleum fuels at SWMU 6 and known releases of fuels at SWMU 45 (Figure 3-8)." Thus, SVOC analysis must be included for the analytical suite of MW20 and MW22D. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOCs analysis for wells MW20 and MW22D.

37. Section 7.0, Sampling Changes from Previous Plan, lines 9-10, page 67

Permittee Statement: "SMW01: Remove analyses for explosives, major anions, perchlorate, and SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: The chloride and sulfate concentrations in the groundwater samples collected from well SMW01 exceeded the applicable screening levels in 2021 and 2022 according to the November 2023 Report. Resolve the discrepancy in the revised Plan. In addition, major anions analysis must be included for the analytical suite of SMW01 due to the exceedances in the revised Plan.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain major anions analysis for well SMW01.

38. Section 7.0, Sampling Changes from Previous Plan, lines 11-12, page 67

Permittee Statement: "TMW01: Remove analysis for explosives based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW01 is located upgradient of the RDX plume and defines the southern boundary of the plume. In addition, the 2023 Plan states, "[t]o monitor suspected [explosive compounds] releases from SWMU 27 (Building 528 Complex), wells TMW01, TMW31S, and TMW41 are designated for explosives analysis even though they are hydraulically upgradient of SWMU 1." Therefore, explosive compound analysis must be included for the analytical suite of TMW01. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW01.

39. Section 7.0, Sampling Changes from Previous Plan, lines 13-14, page 67

Permittee Statement: "TMW03, TMW04, TMW06: Remove analysis for SVOCs based on [sic] based on no detections above screening levels for four or more sampling events."

NMED Comment: Wells TMW03 and TMW04 are closely located north of the TNT Leaching Bed. It is possible to detect degradation products of explosive compounds (i.e., SVOCs) in the groundwater samples collected from wells TMW03 and TMW04. Well TMW06 is located within the Administration Area where the TPH-DRO plume has been present. It is possible to detect the constituents of petroleum hydrocarbons (i.e., SVOCs) in the groundwater samples collected from well TMW06. Therefore, SVOC analysis must be included for the analytical suite of TMW03, TMW04, and TMW06. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOCs analysis for wells TMW03, TMW04, and TMW06.

40. Section 7 .0, Sampling Changes from Previous Plan, lines 22-23, page 67

Permittee Statement: "TMW15: Remove analyses for explosives, perchlorate, and SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW15 is located near the perchlorate plume and defines the boundary of the plume. Therefore, perchlorate analysis must be included for the analytical suite of TMW15. However, the proposed removal of explosive compounds and SVOC analyses from the analytical suite of TMW15 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain perchlorate analysis for well TMW15.

41. Section 7.0, Sampling Changes from Previous Plan, lines 24-25, page 67

Permittee Statement: "TMW21: Remove analysis for explosives based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW21 is located near the western boundary of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW21. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW21.

42. Section 7.0, Sampling Changes from Previous Plan, lines 26-27, page 67

Permittee Statement: "TMW22: Remove analyses for explosives, perchlorate, and SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW22 is located near the eastern boundary of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW22. However, the proposed removal of perchlorate and SVOCs analyses from the analytical suite of TMW22 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW22.

43. Section 7 .0, Sampling Changes from Previous Plan, lines 5-6, page 68

Permittee Statement: "TMW29: Remove analysis for explosives based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW29 is located near the western boundary of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW29. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW29.

44. Section 7.0, Sampling Changes from Previous Plan, lines 7-8, page 68

Permittee Statement: "TMW31S: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW31S is located near the TNT Leaching Bed, which is the source area of the RDX plume and defines the boundary of the plume. In addition, the 2023 Plan states, "[t]o monitor suspected [explosive compounds] releases from SWMU 27 (Building 528 Complex), wells TMW01, TMW31S, and TMW41 are designated for explosives analysis even though they are hydraulically upgradient of SWMU 1." Therefore, explosive compound analysis must be included for the analytical suite of TMW31S. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW31S.

45. Section 7.0, Sampling Changes from Previous Plan, lines 9-10, page 68

Permittee Statement: "TMW33: Remove analysis for SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW33 is located within the Administration Area where the TPH-DRO plume has been present. The TPH-DRO concentrations in the groundwater samples collected from well TMW33 exceeded the applicable screening level in 2021 and 2022. It is possible to detect the constituents of petroleum hydrocarbons (i.e., SVOCs) in the groundwater samples collected from well TMW33. In addition, the 2023 Plan states, "[t]he points of release for the SVOCs in the Northern Area include SWMU 6 (Building 11, former Locomotive Shop) and SWMU 45 (Building 6 Gas Station). There are no groundwater SVOC plumes identified at FWDA; however, wells MW20, MW22D, TMW33, and TMW46

are designated to monitor suspected releases of petroleum fuels at SWMU 6 and known releases of fuels at SWMU 45 (Figure 3-8)." Therefore, SVOC analysis must be included for the analytical suite of TMW33. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOC analysis for well TMW33.

46. Section 7.0, Sampling Changes from Previous Plan, lines 11-12, page 68

Permittee Statement: "TMW35: Remove analyses for SVOCs and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW35 is located within the Administration Area where the TPH-DRO plume has been present. It is possible to detect the constituents of petroleum hydrocarbons (i.e., SVOCs) in the groundwater samples collected from well TMW35. Therefore, SVOC analysis must be included for the analytical suite of TMW35. However, the proposed removal of pesticides analysis from the analytical suite of TMW35 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOC analysis for well TMW35.

47. Section 7.0, Sampling Changes from Previous Plan, lines 13-14, page 68

Permittee Statement: "TMW39S: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW39S is located near the TNT Leaching Bed, which is the source area of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW39S. SVOC analysis must also be continued for TMW39S because it is possible to detect degradation products of explosive compounds. However, the proposed removal of pesticides analysis from the analytical suite of TMW39S is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives and SOVC analyses for well TMW39S.

48. Section 7.0, Sampling Changes from Previous Plan, lines 21-22, page 68

Permittee Statement: "TMW44: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW44 is located near the eastern boundary of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW44. SVOC analysis must also be continued for TMW44 because it is possible to detect degradation products of explosive compounds. The proposed removal of pesticides analysis from the analytical suite of TMW44 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives and SVOC analyses for well TMW44.

49. Section 7.0, Sampling Changes from Previous Plan, lines 23-24, page 68

Permittee Statement: "TMW45: Remove analyses for explosives, perchlorate, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW45 is located near the northeastern boundary of the RDX plume and defines the boundary of the plume. Therefore, explosive compound analysis must be included for the analytical suite of TMW45. SVOC analysis must also be continued for TMW45 because it is possible to detect degradation products of explosive compounds. However, the proposed removal of perchlorate and pesticides analyses from the analytical suite of TMW45 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives and SVOC analyses for well TMW45.

50. Section 7.0, Sampling Changes from Previous Plan, lines 25-26, page 68

Permittee Statement: "TMW46: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW46 is located downgradient of the TPH-DRO and TPH-GRO plumes and defines the boundary of the plumes. It is possible to detect the constituents of petroleum hydrocarbons (i.e., SVOCs) in the groundwater samples collected from well TMW46. In addition, the 2023 Plan states, "[t]he points of release for the SVOCs in the Northern Area include SWMU 6 (Building 11, former Locomotive Shop) and SWMU 45 (Building 6 Gas Station). There are no groundwater SVOC plumes identified at FWDA; however, wells MW20, MW22D, TMW33, and TMW46 are designated to monitor suspected releases of petroleum fuels at SWMU 6 and known releases of fuels at SWMU 45 (Figure 3-8)." Therefore, SVOC analysis must be included for the analytical suite of TMW46. However, the proposed removal of explosive compounds and pesticides analyses from the analytical suite of TMW46 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOC analysis for well TMW46.

51. Section 7.0, Sampling Changes from Previous Plan, lines 27-28, page 68

Permittee Statement: "TMW47: Remove analyses for perchlorate and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW47 is located downgradient of the perchlorate plume and defines the boundary of the plume. Therefore, perchlorate analysis must be included for the analytical suite of TMW47. However, the proposed removal of pesticides analyses from the analytical suite of TMW47 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain perchlorate analysis for well TMW47.

52. Section 7.0, Sampling Changes from Previous Plan, lines 32-34, page 68

Permittee Statement: "BGMW07: Remove analyses for explosives, major anions, perchlorate, SVOCs, pesticides, and PCBs based on no detections above screening levels for four or more sampling events."

NMED Comment: Well BGMW07 is the background well that can be used to assess the naturally occurring levels of anions and perchlorate. Therefore, major anions and perchlorate analyses must be included for the analytical suite of BGMW07. In addition, in order to demonstrate that the groundwater samples collected from well BGMW07 are representative of background conditions, it is recommended to continue analyses of explosive compounds, SVOCs, pesticides, and PCBs. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain VOCs, SVOCs, anions, explosives, perchlorate, pesticides, and PCB analyses for well BGMW07. As described in Section 7.0 of the 2024 GWMP, the Army proposes to remove analyses for herbicides in well BGMW07 based on no detections above screening levels for four or more sampling events.

53. Section 7 .0, Sampling Changes from Previous Plan, lines 1-3, page 69

Permittee Statement: "BGMW08, BGMW09, BGMW10: Remove analyses for explosives, perchlorate, SVOCs, pesticides, and PCBs based on no detections above screening levels for four or more sampling events."

NMED Comment: Wells BGMW08, BGMW09, and BGMW10 are the background wells that can be used to assess the naturally occurring levels of perchlorate. Therefore, perchlorate analysis must be included for the analytical suite of BGMW08, BGMW09, and BGMW10. In addition, in order to demonstrate that the groundwater samples collected from wells BGMW08, BGMW09, and BGMW10 are representative of background conditions, it is recommended to continue analyses of explosive compounds, SVOCs, pesticides, and PCBs. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain all analyses for wells BGMW09 and BGMW10.

Sampling is temporarily deferred at BGMW08 per Comment No. 6 above.

54. Section 7.0, Sampling Changes from Previous Plan, lines 4-5, page 69

Permittee Statement: "TMW14A: Remove analyses for explosives, major anions, and SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: The proposed removal of explosive compounds, and anions analyses from the analytical suite of TMW14A is hereby approved. However, the 2023 Plan states, "[s]uspected [SVOCs] releases will be monitored by wells TMW14A and TMW16 located downgradient in the western portion of the Workshop Area (Figure 3-13)." Therefore, SVOC analysis must be retained for the analytical suite of TMW14A. In addition, well TMW14A is located near the perchlorate plume and may define the boundary of the plume more accurately. Although perchlorate analysis is not included for the analytical suite of

TMW14A, propose to conduct perchlorate analysis for TMW14A. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOC analysis and to add perchlorate analysis for well TMW14A.

55. Section 7.0, Sampling Changes from Previous Plan, lines 6-7, page 69

Permittee Statement: "TMW16: Remove analyses for explosives, perchlorate, and SVOCs based on no detections above screening levels for four or more sampling events."

NMED Comment: The proposed removal of explosive compounds, and perchlorate analyses from the analytical suite of TMW16 is hereby approved. However, the 2023 Plan states, "[s]uspected [SVOCs] releases will be monitored by wells TMW14A and TMW16 located downgradient in the western portion of the Workshop Area (Figure 3-13)." Therefore, SVOC analysis must be retained for the analytical suite of TMW16. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain SVOC analysis for well TMW16.

56. Section 7.0, Sampling Changes from Previous Plan, lines 8-9, page 69

Permittee Statement: "TMW17: Remove analyses for major anions based on no detections above screening levels for four or more sampling events."

NMED Comment: Although nitrate and nitrite have been monitored for four or more sampling events for well TMW17, other anions (i.e., bromide, chloride, fluoride, phosphate, and sulfate} have not been monitored for four or more sampling events. In addition, although the concentrations of chloride, fluoride, and sulfate have not exceeded the applicable screening levels in the past, the concentrations were very close to the screening levels and may potentially exceed the screening levels in the future. Therefore, major anions analysis must be continued for TMW17. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain major anions analyses for well TMW17.

57. Section 7.0, Sampling Changes from Previous Plan, lines 16-17, page 69

Permittee Statement: "TMW31D, TMW32: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Wells TMW31D and TMW32 are located near the TNT Leaching Bed and may be useful to evaluate potential vertical migration of explosive compounds. Therefore, explosive compound analysis must be included for the analytical suite for TMW31D and TMW32. However, the proposed removal of SVOC and pesticides analyses from the analytical suite of TMW31D and TMW32 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analyses for wells TMW31D and TMW32.

58. Section 7 .0, Sampling Changes from Previous Plan, lines 18-19, page 69

Permittee Statement: "TMW36: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW36 is located near the TNT Leaching Bed and may be useful to evaluate potential vertical migration of explosive compounds. The well vertically defines the boundary of the alluvial plume. Therefore, explosive compound analysis must be included for the analytical suite for TMW36. However, the proposed removal of SVOC and pesticides analyses from the analytical suite of TMW36 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain explosives analysis for well TMW36.

59. Section 7.0, Sampling Changes from Previous Plan, lines 20-21, page 69

Permittee Statement: "TMW37: Remove analyses for explosives, perchlorate, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Well TMW37 is located on the eastern boundary of the perchlorate plume and defines the boundary of the plume. Therefore, perchlorate analysis must be included for the analytical suite for TMW37. However, the proposed removal of explosive compound, SVOC, and pesticides analyses from the analytical suite of TMW37 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2 to retain perchlorate analysis for well TMW37.

60. Section 7.0, Sampling Changes from Previous Plan, lines 24-25, page 69

Permittee Statement: "TMW39D, TWM40D, TMW48: Remove analyses for explosives, SVOCs, and pesticides based on no detections above screening levels for four or more sampling events."

NMED Comment: Wells TMW39D, TWM40D, and TMW48 are located near the TNT Leaching Bed and may be useful to evaluate potential vertical migration of explosive compounds. Therefore, explosive compound analysis must be continued for TMW39D, TWM40D, and TMW48. However, the proposed removal of SVOC and pesticides analyses from the analytical suite of TMW39D, TWM40D, and TMW48 is hereby approved. Revise the Plan accordingly.

Permittee Response: Concur. The 2024 GWMP was revised, specifically in Section 7.0 and Table 5-2, to retain explosives analyses for wells TMW39D, TMW40D, and TMW48.

61. Figures 3-3 through 3-10, Groundwater Monitoring Alluvial Wells

NMED Comment: New alluvial wells depicted in Figure 2-4, *Northern Area Site Wells*, are not included in Figures 3-3 through 3-10. Include the new alluvial wells in the revised Figures 3-3 through 3-10 and provide a discussion for groundwater monitoring design in Section 5.2.1 with an inclusion of new alluvial wells in the revised Plan.

Permittee Response: Concur. Since the "new" wells were installed in 2019 and are no longer new, the designation of new alluvial wells (installed in 2019) was removed from Figures 2-3 and 2-4.

In addition, Section 5.2.1 was revised to include these new wells in the discussion of monitoring design.

62. Figures 3-11 through 3-13, Groundwater Monitoring Bedrock Wells

NMED Comment: New bedrock wells depicted in Figure 2-4, *Northern Area Site Wells*, are not included in Figures 3-11 through 3-13. Include the new bedrock wells in the revised Figures 3-11 through 3-13 and provide a discussion for groundwater monitoring design in Section 5.2.2 with an inclusion of new bedrock wells in the revised Plan.

Permittee Response: Concur. Since the "new" wells were installed in 2019 and are no longer new, the designation of new bedrock wells (installed in 2019) was removed from Figures 2-3 and 2-4.

In addition, Section 5.2.2 was revised to include these new wells in the discussion of monitoring design.

63. Table 5-1, Groundwater Screening Levels, Detection Limits, and Control Limits

NMED Comment: Table 5-1 provides the screening level for each analyte; however, it does not provide the detection limit, and control limit for each analyte. Include the relevant information in the revised Table 5-1 or provide a separate table that presents the detection limit, and control limit for each analyte.

Permittee Response: Comment acknowledged. Comment No. 16 in NMED's Disapproval Letter dated May 23, 2023, for the January through June 2021 and July through December 2021 Periodic Monitoring Reports states: "LOQs and LODs are specific to each individual sample analysis; therefore, it is inappropriate and inaccurate to include these values in a table meant to provide information for all analyses."

Based on this comment, the Army has not been including detection limit and control limit data in this applicable table, since it will likely change for each sample analysis. The LODs and LOQs will be reported with actual results when the reports are submitted for review.

The 2024 GWMP was not changed as a result of this comment.

If you have questions or require further information, please contact me at George.h.cushman.civ@army.mil, 703-455-3234 (Temporary Home Office, preferred) or 703-608-2245 (Mobile) or Cheryl.a.frischkorn.civ@army.mil, 703-624-6429 (Mobile).

Sincerely,

George H. Cushman IV

George H. Cushman IV
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Enclosures

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Attachment 1
Response to Disapproval, 2023 Interim Northern Area Groundwater Monitoring Plan

The Army submitted Response to Disapproval, 2023 Interim Northern Area Groundwater Monitoring Plan (2023 GWMP), in a letter dated August 31, 2022. Subsequently, the Army submitted the withdrawal request for the Final 2023 Interim Northern Area Groundwater Monitoring Plan, Revision 1, on November 10, 2023, and NMED approved the withdrawal request in a letter dated November 27, 2023. Since the withdrawal request was submitted and approved, the Response was no longer subject to NMED's review. The comments contained in the July 19, 2022, Disapproval of the 2023 Interim Northern Area Groundwater Monitoring Plan (Disapproval) were re-directed to the 2024 Interim Northern Area Groundwater Monitoring Plan (2024 GWMP), where applicable. As required in Comment No. 1 in NMED's Disapproval Letter on the 2024 GWMP, dated March 19, 2024, the Army is submitting the following responses to the comments contained in the July 19, 2022, NMED Disapproval letter.

Comments:

1. Objectives of the Plan

NMED Comment: Section 1.3 (Purpose), page 3 of 71, provides the objectives of the interim groundwater monitoring; however, it does not state the objectives of the plan itself, as described in Permit Section V.A.4. As a result, the Plan lacks the necessary details (e.g., proposed changes to the previous plans) required by the Permit; rather, it provides trivial details that appear to be irrelevant to the objectives of the Plan. For example, Section 2.2 (Previous Investigations) and its subsections (Section 2.2.1 through Section 2.2.27) provide approximately 20 pages of the description regarding previous investigations conducted at each SWMU and AOC. More than 30 percent of the text of the Plan discusses details regarding previous investigations. Such details are unnecessary for the purpose of the plan. Although Section 7.0 (Sampling Changes from Previous Plan) briefly discusses proposed changes to the previous monitoring and sampling plan, it lacks details, and the discussion is not sufficient. The Permittee must present all proposed changes to the previous plan and provide the basis for each proposed change requested by the Permittee or required by NMED. Relevant correspondence must be referenced for all proposed changes required by NMED. Comment 32 of the NMED's July 27, 2020, Disapproval also states, "Table 5-2, Northern Area Groundwater Sampling Matrix, and the text of the Plan lack an explanation for the changes made to the Plan (e.g., inclusion or exclusion of new or existing wells and analytical suite). The revised Plan must include a section that summarizes all changes made to the previous sampling matrix. If the change was directed by NMED, provide a reference to the direction. If the change is proposed by the Permittee, provide a basis or the proposed change." This direction was not adequately followed. Revise the Plan to include more detail for the proposed changes from the previous plans and remove unnecessary information.

Permittee Response: Significant changes have been made per the comment in Revision 1 to the 2024 GWMP. Specifically, Section 2.2 (and its subsections) has been significantly reduced to remove unnecessary details. In addition, Section 7.0 was expanded to include discussion of proposed analytical changes for each well, including the basis for each proposed change. See red-line strike-out.

2. Proposed Changes to the Plan

NMED Comment: The following issues regarding the proposed changes were identified in the Plan. Resolve the issues in the revised Plan.

a) The nitrite concentrations in groundwater samples collected from wells MW27, MW35, and MW59 may have been reported inaccurately. Propose to split the nitrite samples collected from the wells and use two different analytical laboratories to conduct nitrite analysis in the revised Plan, as appropriate.

Permittee Response: Concur. Split samples from wells MW27, MW35, and TMW59 were collected during the April 2023 sampling event and will be discussed in the January through June 2023 Periodic Monitoring Report (PMR).

b) The Permittee recommended conducting additional groundwater sampling and analysis of herbicides for wells MW36S, BGMW13D, and BGMW07 in the May 6, 2022, letter. However, herbicide analysis was not proposed for wells MW36S and BGMW13D in the Plan. Propose to conduct herbicide analysis for these wells in the revised Plan.

Permittee Response: Analyses for herbicides in wells MW36S and BGMW13D have been conducted since 2021. Analyses for herbicides in well BGMW07 have been conducted since 2018. As described in Section 7.0 of the GWMP, the Army proposes to remove analyses for herbicides in wells MW36S, BGMW13D, and BGMW07 based on no detections above screening levels for four or more sampling events. See Response to NMED Comment No. 25a of the March 19, 2024, Notice of Disapproval (NOD) of the 2024 GWMP.

c) Propose to conduct pesticides analysis for the groundwater samples collected from wells TMW40S and TMW52, as required by Comment 53 of the NMED's January 25, 2022, Disapproval.

Permittee Response: Analyses for pesticides in well TMW52 have been conducted since 2021. Analyses for pesticides in well TMW40S have been conducted since 2017. As such, and as described in Section 7.0 of the GWMP, the Army proposes to remove analyses for pesticides in wells TMW52 and TMW40S based on no detections above screening levels for four or more sampling events. See Response to NMED Comment No. 25b of the March 19, 2024, NOD of the 2024 GWMP.

d) Comment 38 of the NMED's January 25, 2022, Disapproval states, "propose to conduct TPH-DRO and TPH-GRO analyses for the groundwater samples collected from all new wells." Although it appears that this comment was addressed, the discussion was not included in the Plan. Indicate where this comment was addressed in the revised Plan.

Permittee Response: Concur. All “new” wells installed in 2019 have been analyzed for TPH-DRO and TPH-GRO since the 2020 sampling events. Changes to TPH analyses are discussed on a well-specific basis in Section 7.0 of the 2024 GWMP.

e) Comment 49 of the NMED's January 25, 2022, Disapproval states, "propose to conduct SVOC analysis for the groundwater samples collected from all wells where TPH-DRO was detected." Propose to conduct semi-volatile organic compounds (SVOCs) analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.

Permittee Response: Concur. In Section 7 and Table 5-2 of the 2024 GWMP, the Army proposes SVOC analysis for wells where TPH-DRO is detected in the preceding sampling event.

f) Comment 54 of the NMED's January 25, 2022, Disapproval states, "propose to conduct chloride/sulfate analysis for the groundwater samples collected from all pertinent wells where such evaluation is relevant and potentially feasible." Propose to conduct the analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.

Permittee Response: Concur. The requested revision was incorporated into the Version 11 (2022) GWMP and was carried forward into the 2024 GWMP without change. Section 5.2.1 (in 2022 and 2024 GWMPs) states: “Starting in 2021, all wells sampled for nitrate and nitrite will also be sampled for additional major anions, to include chloride, fluoride, sulfate, phosphate, and bromide.”

g) Comment 17 of the NMED's July 1, 2020, Disapproval states, "propose to collect groundwater samples from wells TMW06, TMW07, TMW10, TMW21 and TMW46 for TPH-DRO analysis." Although it appears that this comment was addressed, the discussion was not included in the Plan. Indicate where this comment was or is addressed in the revised Plan.

Permittee Response: Concur. The requested revision was incorporated into the Version 11 (2022) GWMP and was carried forward into the 2024 GWMP. Specifically, wells TMW06, TMW07, TMW10, TMW21, and TMW46 were proposed for TPH-DRO analysis in the 2022 GWMP and remain unchanged for this 2024 GWMP. Any changes to TPH analyses are discussed on a well-specific basis in Section 7.0 of the 2024 GWMP.

h) Comment 27 of the NMED's July 1, 2020, Disapproval states, "propose to collect groundwater samples from wells TMW06, TMW07, and TMW21 for TPH-GRO analysis." Although it appears that this comment was addressed, the discussion was not included in the Plan. Indicate where this comment was or is addressed in the revised Plan.

Permittee Response: Concur. The requested revision was incorporated into the Version 11 (2022) GWMP and was carried forward into the 2024 GWMP. Specifically, wells TMW06, TMW07, and TMW21 were proposed for TPH-GRO analysis in the 2022 GWMP and remain unchanged for this 2024 GWMP. Any changes to TPH analyses are discussed on a well-specific basis in Section 7.0 of the 2024 GWMP.

i) Well MW27 appears to be the only well where 1,4-dioxane analysis was proposed in 2023. Provide a justification for the proposed change to the 1,4-dioxane analysis in the revised Plan.

Permittee Response: No wells were proposed for analysis for 1,4-dioxane in the 2022 GWMP, which remains unchanged in the 2024 GWMP.

j) Comment 1 of the NMED's August 3, 2021, letter states, "[p]ropose to conduct PFAS analysis for the groundwater samples collected from the pertinent wells." Since this comment was not addressed, propose to conduct the analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.

Permittee Response: The Army respectfully refers to the Response to NMED Comment No. 13 of March 19, 2024, NOD of the 2024 GWMP.

3. Section 1.5, Document Organization, lines 23-24, page 6 of 71

Permittee Statement: "Section 2 presents the available site history and general description of FWDA and summarizes previous groundwater investigations."

NMED Comment: Section 2.2 and its subsections present a summary of previous soil and groundwater investigations conducted in each SWMU and AOC in a chronological manner with the Permittee's recommendations made after the investigations and NMED's responses. Although Section 2.2 and its subsections were reviewed, the accuracy of the statements was not verified with actual references because the details were not relevant to the Plan. The pertinent sections must provide a general description of site history and previous groundwater investigations; however, the comprehensive description of site history and previous investigations discussed in the Plan is unnecessary. Remove irrelevant details from the revised Plan.

Permittee Response: Section 2.2 was greatly reduced in the 2024 GWMP and will be further simplified in subsequent Interim GWMP submittals in accordance with NMED's Comment No. 2 of March 19, 2024, NOD of the 2024 GWMP.

4. Section 2.1, General Facility Description, lines 35-37, page 7 of 71

Permittee Statements: "Figure 2-2 shows the locations of various buildings and SWMUs and AOCs throughout the Northern Area of the installation."

NMED Comment: Figure 2-2 was not included in the Plan. Include Figure 2-2 in the revised Plan.

Permittee Response: Concur. The figure is included in the 2024 GWMP.

5. Section 2.3, Semi-annual RCRA Groundwater Monitoring Reports and Updated Groundwater Monitoring Plans - Ongoing, lines 15-17, page 28 of 71

Permittee Statement: "Detected concentrations of other anions (fluoride, sulfate, chloride, and phosphate) are associated with hard water and brackish groundwater conditions observed at FWDA."

NMED Comment: Since the evaluation of background groundwater conditions has not been approved, it is not appropriate to conclude that the detection of anions is a result of natural conditions. Remove the unsupported statement from the revised Plan.

Permittee Response: Concur. References to anions being a result of natural conditions were removed from the 2024 GWMP.

6. Section 2.3, Semiannual RCRA Groundwater Monitoring Reports and Updated Groundwater Monitoring Plans – Ongoing, lines 29-31, page 28 of 71

Permittee Statement: "Toluene had two cleanup level exceedances, and benzene has had one exceedance. Toluene and benzene may have been associated with previous fuel releases and are now detected at concentrations less than cleanup levels."

NMED Comment: 1,2-dichloroethane, carbon disulfide, 1,4-dioxane, toluene, and vinyl chloride are listed as volatile organic compounds (VOC) whose concentrations exceeded the applicable screening levels in the same section, lines 36-37, page 27 of 71. Since the statement indicates that benzene also exceeded the applicable screening level, resolve the discrepancy in the revised Plan.

Permittee Response: Concur. Benzene was added to the list of VOCs historically detected above screening levels in Section 2.3 of the 2024 GWMP.

7. Section 3.4.4, Northern Area Alluvial Groundwater System, lines 28-31, page 35 of 71

Permittee Statement: "A video survey of Well 69 was performed in June 2019 to provide a visual observation of the interior of the well casing to assess possible deterioration and leaking. The video survey showed thick mineral deposits along the well casing, which made it difficult to assess the condition of the well casing."

NMED Comment: The Permittee submitted the June 15, 2022, Final Work Plan to Abandon and Plug Artesian Wells #68 and #69. The referenced work plan must be approved by the New Mexico Office of the State Engineer. The well abandonment plan must be approved by the New Mexico Office of the State Engineer. The well abandonment report must be submitted to NMED within ninety (90) calendar days of completion of the field activities. No revision is required to the Plan.

Permittee Response: Concur. The Permittee submitted the Final Field Summary Report, Abandon and Plug, Wells 68 and 69, Fort Wingate Depot Activity, to NMED on February 9, 2024.

8. Section 3.4.5, Northern Area Bedrock Groundwater System, lines 10-14, page 36 of 71

Permittee Statements: "The upper sandstone unit is evaluated by monitoring well TMW40D. The remaining bedrock monitoring wells are completed in the lower sandstone unit, which is separated from the upper by a thick sequence of shale. A third water-bearing sandstone unit is assumed since groundwater from well BGMW08 was measured at 100 feet lower than those of other bedrock wells."

NMED Comment: The Permittee's May 6, 2022, Final Northern Area Groundwater RCRA Facility Investigation Report, Army's Response to the New Mexico Environment Department Letter of Disapproval dated January 25, 2022, states, "[f]or consistency, the terminology 'Bedrock 1/upper bedrock aquifer was changed to the Bedrock Aquifer 1 (BR1), thru-out [and] BR1 is defined by thickness and laterally discontinuous water bearing zone without sustainable water production." The designation of the sandstone units must be consistent. Well, TMW40D was screened in the BR2 that are equivalent to the lower sandstone unit according to the referenced report. Revise the statement for consistency and accuracy.

Permittee Response: Concur. Section 3.4.5 in the 2024 GWMP now reads as follows:

"*The upper sandstone unit, designated as Bedrock Aquifer 1 (BR1), is evaluated by monitoring wells TMW38, TMW51, TMW52, TMW53, and TMW64.*"

9. Section 3.5, Nature and Extent of Groundwater Contamination, lines 1-2, page 37 of 71

Permittee Statements: "Figure 3-1 and Figure 3-2 present the alluvial and bedrock groundwater elevations generated from the October 2019 water level measurement event."

NMED Comment: Since the Plan proposes groundwater monitoring and sampling plans for year 2023, it is necessary to use the most recent data that were approved by NMED. The July through December 2020 groundwater monitoring report was approved by NMED on April 5, 2022; therefore, the data included in the 2020 report must be used. If the October 2019 data is sufficient for the purpose of this discussion, provide a justification for using the older data in the response letter.

Permittee Response: NMED Comment No. 10 of the March 19, 2024, NOD of the 2024 GWMP noted the GWMP should utilize data "*collected from the most recent monitoring event that is available to the Permittee at the time the Plan is prepared.*" The Army interprets this to mean that data collected and validated from 2023 should be used for planning purposes for the 2024 GWMP and beyond.

10. Section 3.6, Fate & Transport of Contamination in Groundwater, lines 14-18, page 39 of 71

Permittee Statement: "Alluvial groundwater in the northern Administration Area and Workshop Area is present in a depression formed by the downward dip of largely impermeable claystone bedrock. Southeast of the Workshop Area, communication between the bedrock and alluvial aquifers create a direct pathway between both units. In the Northern Area, alluvium overlies claystone aquitards."

NMED Comment: Although NMED agrees with the presence of claystone between the alluvial and bedrock aquifers at the site, the claystone layer is not impermeable. The site contaminants (e.g., nitrate) have migrated vertically from the alluvial to the bedrock aquifer. Revise the statement for accuracy.

Permittee Response: Concur. The Army removed the referenced text, and Section 3.6 of the 2024 GWMP no longer contains the referenced text concerning impermeable claystone.

11. Section 3.7, Exposure Pathways for Human and Ecological Receptor, lines 34 through 38, page 39 of 71 and lines 1 through 10, page 40 of 71

NMED Comment: Although the title of Section 3.7 indicates that discussion regarding exposure pathways for ecological receptor was provided, they were not provided in the text of Section 3.7. Include the discussion in the revised Plan or revise the title of Section 3.7.

Permittee Response: The term "Ecological" was removed from the heading for Section 3.7 of the 2024 GWMP.

12. Section 4.2, Groundwater Sampling, lines 3-5, page 42 of 71

Permittee Statement: Low-flow purging and sampling is the preferred method at FWDA, in accordance with the NMED guidance document on low-flow sampling titled, "Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring

(NMED-HWB, 2001)."

NMED Comment: According to Table 4-1 (Northern Area Groundwater Purge Method), many wells are not purged using the low-flow method even though it is the preferred method. Presumably, the wells do not produce enough water to use the low-flow method; however, the wells that are purged with high-volume capacity pumps (MW23, MW24, TMW16, TMW18, TMW19, TMW36, and TMW37) may be appropriate for the low-flow purge method. (a) Evaluate the potential for use of the low-flow method for the wells where high-volume capacity pumps are currently used and (b) provide a discussion in the revised Plan.

Permittee Response: Concur. In the 2024 GWMP, the Army proposes an evaluation of flow rates and drawdown from wells that may be suitable for low-flow purging. Specifically, Section 4.1 of the 2024 GWMP describes that: "*Current wells not sampled via low-flow method will be evaluated to determine suitability for low-flow method and proposed for future low-flow sampling as appropriate.*"

13. Section 4.2.2.1, Traditional Low-Flow and ZIST Low-Flow Dedicated Pumps, lines 28-29, page 46 of 71, and Section 4.2.4, Alternative Groundwater Purging and Sampling Procedures, line 40, page 47 of 71

Permittee Statement: "All measurements will be obtained using a field-parameter monitoring instrument with a transparent flow-through cell that prevents air bubble entrapment in the cell." and,
"Prior to purging, an additional DO measurement with a downhole probe will be collected on all wells without a dedicated pump."

NMED Comment: The data for water quality parameters other than dissolved oxygen (DO) appear to be collected by a flow-through cell rather than a downhole probe. Comment 2 of the NMED's July 6, 2021; letter states, "NMED agrees that in-situ DO measurement using downhole probes is more effective and accurate. Propose to use downhole probes for water quality measurements, where applicable, in future groundwater monitoring plan update." Propose to use downhole probes for the measurement of all water quality parameters, where applicable, or explain why DO is the only water quality parameter measured using a downhole probe in the revised Plan.

Permittee Response: Concur. Please see Section 4.2.4 of the 2024 GWMP for the current proposed methods for the measurement of water quality parameters.

14. Section 4.2.4.1, Disposable Bailers, lines 30-32, page 48 of 71

Permittee Statement: "To filter groundwater samples for dissolved metals and/or perchlorates analysis, use a hand pump filter or run water through a peristaltic pump with dedicated tubing and in-line filter or use a clean disposable syringe and filter."

NMED Comment: Three different filtering methods are proposed for collection of dissolved metals and/or perchlorate analysis. Explain the criteria/conditions dictating which particular filtering method is selected in the revised Plan. In addition, explain which method is used for each well in the revised Plan.

Permittee Response: Concur. The sample filtration language has been modified in the

applicable paragraph in Section 4.2.4.1 of the 2024 GWMP reads as follows:

"*To filter groundwater samples for dissolved metals and/or perchlorates analysis, use a clean disposable syringe and filter. An intermediary container may be used to collect the groundwater sample prior to filtering. Sample filtering and preservation will be performed in accordance with laboratory and method requirements as listed in Table 4-3.*"

15. Section 5.1, Interim Groundwater Monitoring Analytical Program, lines 30-32, page 56 of 71

Permittee Statement: "USACE is currently evaluating options to achieve lower LOQs for the remaining few compounds using enhanced analytical procedures as documented in a NMED approval letter dated May 21, 2019 (NMED, 2019b)."

NMED Comment: The April 13, 2022, e-mail from Mr. Ben Wear of NMED to Mr. George Cushman of FWDA states, "submit a formal report, which details the data you have collected and includes all information provided by the analytical laboratories, to NMED for review no later than July 29, 2022." Although this information is not required to be included in the Plan, the Permittee must submit the required document no later than July 29, 2022. This comment serves as a reminder.

Permittee Response: Concur. The Army submitted the document in three phases, with the final Phase 3 Study submitted on April 24, 2023.

16. Section 5.2, Monitoring Location and Frequency, lines 13-15, page 58 of 71

Permittee Statement: "Once additional bedrock aquifer background monitoring wells are installed; interim monitoring will be conducted to collect additional data to support background evaluations."

NMED Comment: It is not clear whether the Permittee will propose to install more bedrock background monitoring wells for the purpose of collecting additional data to support background evaluations. Provide a clarification in the response letter. If additional background monitoring wells are necessary to support background evaluations, propose to submit a work plan to install these wells in the revised Plan.

Permittee Response: Concur. Background metals and anion concentrations are being addressed as part of the Northern Area Groundwater Phase 2 Supplemental RFI Work Plan (submitted to NMED on March 15, 2024).

17. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Explosives Plume, lines 35-36, page 58 of 71, and lines 1-2, page 59 of 71

Permittee Statements: "To monitor suspected [explosive compounds] releases from SWMU 27 (Building 528 Complex), wells TMW01, TMW31S, and TMW41 are designated for explosives analysis even though they are hydraulically upgradient of SWMU 1."

NMED Comment: According to Table 5-2 (Northern Area Groundwater Sampling Matrix), explosive compounds analysis was not proposed for wells TMW01, TMW31S, and TMW41. Revise Table 5-2 to propose explosive compounds analysis for the wells in the revised Plan.

Permittee Response: Concur. Wells TMW01, TMW31S, and TMW41 were retained for explosives analysis due to their proximity to the explosives plume. See Response to NMED Comment No. 38 (for TMW01) and Comment No. 44 (TMW31S) in the of the March 19, 2024, NOD of the 2024 GWMP.

18. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Metals Monitoring, lines 13-15, page 59 of 71

Permittee Statement: “Monitoring wells along the outside edges of the monitoring network are selected to provide data that could be used to monitor potential contaminant migration [for metals].”

NMED Comment: According to Table 5-2, metals analyses are proposed for groundwater samples collected from all monitoring wells. However, the statement indicates that metals analyses are only proposed for wells along the outside edges of the monitoring network. To clarify, metals analyses must be conducted for all wells unless the changes are proposed and approved by NMED. Remove the statement from the revised Plan.

Permittee Response: Concur. All wells are proposed for metals analyses in the 2024 GWMP.

19. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Other Organics Monitoring, lines 21-25, page 59 of 71

Permittee Statement: "The points of release for the SVOCs in the Northern Area include SWMU 6 (Building 11, former Locomotive Shop) and SWMU 45 (Building 6 Gas Station). There are no groundwater SVOC plumes identified at FWDA; however, wells MW20, MW22D, TMW33, and TMW46 are designated to monitor suspected releases of petroleum fuels at SWMU 6 and known releases of fuels at SWMU 45 (Figure 3-8)."

NMED Comment: According to Table 5-2, SVOCs analysis was not proposed for wells MW20, MW22D, TMW33, and TMW46. Revise Table 5-2 to propose SVOCs analysis for the wells or explain the basis for excluding the analysis in the revised Plan. In addition, SVOCs may be detected as degradation products of explosive compounds. Propose to conduct SVOCs analysis for all wells designated for monitoring explosive compounds in the revised Plan.

Permittee Response: Concur. The 2024 GWMP retains SVOCs analysis for wells MW20, MW22D, TMW33, and TMW46. See Response to NMED Comment No. 36 (for MW20 and MW22D), Comment No. 45 (TMW33), and Comment No. 50 (TMW46) of the March 19, 2024, NOD of the 2024 GWMP.

20. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Other Organics Monitoring, lines 29-30, page 59 of 71

Permittee Statement: "The GRO releases are monitored by wells MW01, MW02, MW03, MW18D, MW20, MW22D, and TMW33."

NMED Comment: According to Table 5-2, total petroleum hydrocarbon gasoline range organics (TPH GRO) analysis was not proposed for well MW03. Revise Table 5-2 to propose TPH GRO analysis for well MW03 in the revised Plan.

Permittee Response: Concur. In the 2024 GWMP, the Army proposes TPH-GRO analysis for well MW03.

21. Section 5.2.2, Northern Area Bedrock Groundwater Monitoring Design, Perchlorate Plume, lines 13-14, page 60 of 71

Permittee Statement: "To monitor the [perchlorate] plume boundary wells TMW32, TMW36, TMW38, TMW39D, and TMW40D are designated as downgradient wells."

NMED Comment: According to Table 5-2, perchlorate analysis was not proposed for wells TMW36 and TMW38. Revise Table 5-2 to propose perchlorate analysis for the wells in the revised Plan.

Permittee Response: Concur. In the 2024 GWMP, the Army proposes perchlorate analyses for wells TMW36 and TMW38.

22. Section 5.2.2, Northern Area Bedrock Groundwater Monitoring Design, Other Organic COPCs Monitoring, lines 20-21, page 60 of 71

Permittee Statement: "Suspected [SVOCs] releases will be monitored by wells TMW14A and TMW16 located downgradient in the western portion of the Workshop Area (Figure 3- 13)."

NMED Comment: According to Table 5-2, SVOCs analysis was not proposed for wells TMW14A and TMW16. Revise Table 5-2 to propose SVOCs analysis for the wells in the revised Plan. In addition, SVOCs may be detected as degradation products of explosive compounds. Propose to conduct SVOCs analysis for all bedrock wells designated to monitor explosive compounds in the revised Plan.

Permittee Response: Concur. The 2024 GWMP was revised to propose SVOC analyses for wells TMW14A and TMW16. See Response to NMED Comment No. 54 (for TMW14A) and Comment No. 55 (for TMW16) of the March 19, 2024, NOD of the 2024 GWMP.

23. Section 5.3.2, Analytical Data Quality Requirements, Sensitivity, DL [(Detection Limit)), lines 10-12, page 63 of 71

Permittee Statement: "A DL may be used as the lowest concentration for reliably reporting a detection of a specific analyte in a specific matrix with a specific method with 99% confidence."

NMED Comment: Neither the Instrument Detection Limit (IDL), nor the Method Detection Limit (MDL), can be used as the lowest concentration to report detection/non-detection of an analyte. However, the reporting limit (RL), limit of detection (LOD), practical quantitation limit (PQL), or limit of quantitation (LOQ) may be used as the lowest concentration to report a detection/non-detection. Revise the statement for clarity.

Permittee Response: The referenced definitions in the Permittee statement above are directly cited from the DOD Quality Systems Manual (QSM). As described in the 2024 GWMP, the LOD is used for reporting purposes when non-detect results are obtained.

24. Section 7.0, Sampling Changes from Previous Plan, lines 7-10, page 66 of 71

Permittee Statement: "Starting in 2023, these wells [installed in 2019 and 2020] will only be sampled for analytes based upon neighboring wells and proximity towards known contaminant plumes and if they had any detections of other analytes during the initial four sampling events. The revised analytical program is listed in Table 5-2 with highlights pertaining to the changes for 2023."

NMED Comment: Since the data that supports the absence of analytes in the wells where analyses are proposed to be removed is not provided or discussed, the appropriateness of the proposed removal has not been demonstrated. The Permittee must evaluate the analytical data for each well where removal of the analyses is proposed and discuss its basis in the revised Plan (see Comment 1). For example, herbicides, PCB, and pesticides analyses conducted in wells BGMW11 and BGMW12 in 2022 are proposed to be removed according to Table 5-2 of the Plan. However, the basis for the proposed changes is not discussed in the Plan. The discussion must include (1) the detection/non-detection of analytes, (2) the exceedance of the screening levels, if any, (3) the presence of data quality exceptions, if any, and (4) the number of the sampling events used for the evaluation of proposed changes. The basis for all proposed changes must clearly be stated in the revised Plan. Note that the proposed changes are subject to NMED's approval and must not be implemented without an approval of the Plan.

Permittee Response: Concur. Section 7.0 of the 2024 GWMP was expanded to include text discussion of proposed analytical changes for each well, including the basis for each proposed change. The Army again appreciates NMED’s timely review of the Army’s Response No 1 to the 2024 GWMP NOD and the approval of changes in analytes for various wells in the 2024 sampling.

25. Section 7.0, Sampling Changes from Previous Plan, lines 11-14, page 66 of 71

Permittee Statement: "Wells which have been non-detect for a given analyte group in four or more of the most recent sampling events (except for VOCs) are proposed for removal of that analytical group from the well, unless the well is in proximity to an existing plume for that analyte group. No changes are proposed for VOCs or metals analyses."

NMED Comment: The basis for the proposed changes in analytical suite in each well must be discussed in detail. For example, TPH diesel range organics (DRO) analysis was proposed to be removed from the analytical suite for well MW03 according to Table 5-2; however, all reported non-detect concentrations exceeded the applicable screening level in well MW03; therefore, the data is considered as a data quality exception, and the absence of TPH DRO in the samples collected from well MW03 has not been demonstrated. As such, TPH DRO analysis for MW03 must be continued in 2023. The proposed changes for each well must be discussed for NMED's evaluation and approval in the revised Plan.

Permittee Response: Concur. Please see response to Comment 24 above. In addition, TPH-DRO analysis for MW03 has been retained in the 2024 GWMP.

26. Table 5-2, Northern Area Groundwater Sampling Matrix, pages TS-3; 1 through 7

NMED Comment: Some issues are identified in Table 5-2. Resolve the following issues in the revised Plan.

a) Section 5.2.1 (Northern Area Alluvial Groundwater Monitoring Design, Nitrate and Nitrite Plume) states that all wells sampled for nitrate and nitrite will also be sampled for additional major anions to include chloride, fluoride, sulfate, phosphate, and bromide starting in 2021. Although Table 5-2 includes major anions as one of the analytical parameters, each analyte included in major anions is not identified in the table. Identify all analytes included in major anions (e.g., nitrate, nitrite, chloride, fluoride, sulfate, phosphate, and bromide) in the footnote of the revised Table 5-2.

b) Although the revised 2022 Plan included pesticides analysis for multiple wells, Table 5-2 does not propose pesticides analysis for any well. Provide an explanation for the removal of pesticide analysis in 2023 in the revised Plan.

Permittee Response:

a) Concur. Table 5-2 in the 2024 GWMP contains a footnote listing specific analytes for major anions.

b) Concur. This comment was addressed in NMED's approval of the Army's Response No. 1 to the 2024 GWMP NOD. Based on review of subsequent analytical results, NMED approved removal of pesticide analyses for multiple wells.