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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

September 26, 2012

Colonel David C. Piech
27th Special Operations Mission Support Group
110 E. Sextant Avenue, Building 600, Suite 1098
Cannon Air Force Base, New Mexico 88103

**RE: DISAPPROVAL
ANNUAL GROUND WATER MONITORING REPORT
DECEMBER 2011
MELROSE AIR FORCE RANGE
EPA ID # NM7572124454
HWB-MELR-12-001**

Dear Col. Piech:

The New Mexico Environment Department (NMED) has received the Melrose Air Force Range (MELR) *Annual Ground Water Monitoring Report, December 2011* (2011 GWMR) dated February 24, 2012. NMED has reviewed the GWMR and hereby issues this Disapproval with the following comments.

GENERAL COMMENTS

Comment 1

On October 27, 2009 NMED issued a letter outlining requirements for future ground water monitoring reports at MELR. NMED subsequently issued two Notices of Disapproval (NODs) dated March 11, 2011 and August 19, 2011, respectively, for the *2010 Annual Groundwater Monitoring Report* dated December 2010. These three letters described necessary changes to the presentation of data, historical data tables, well construction details table, sampling analytical

suite for metals and the required sampling schedule for metals for MELR ground water monitoring and reports. Several of the requirements included in those letters were not met in either the revised 2010 GWMR or the 2011 GWMR. Incorporate comments from previous written communications in the revised 2011 Report as well as all future ground water monitoring reports and work plans. Use the NMED Position Paper *General Reporting Requirements for Routine Groundwater Monitoring Activities at RCRA Sites*, February 14, 2003 as a guideline for all future ground water monitoring reports. A copy of this paper can be found on NMED's website at this link:

http://www.nmenv.state.nm.us/HWB/data/General_Reporting_Requirements_for%20Routine_GW_Monitoring.pdf

Comment 2

Appendix D Analytical Data; the laboratory reports included in the report total approximately 3,000 pages, this makes finding specific information difficult. Many of these laboratory reports are submitted in the form of Level 4 data packages. NMED does not require Level 4 data packages, Level 2 data packages from laboratory are preferred by NMED for inclusion in the reports. The Level 4 package must be stored either at the facility or contract laboratory for future reference.

Comment 3

The Report contains several instances regarding the acceptability of laboratory results (see Comments 26, 27, 28). MELR is advised that re-sampling of the site may be required if data quality issues persist in future sampling events

Comment 4

Tables included in the report are difficult to read due to small font size. All tables must be legible in the revised Report and all future reports (e.g., by reducing margins, increasing font size, adjusting column widths, and adding additional pages per table).

Comment 5

The Report does not contain a data table summarizing historical analytical results. NMED issued two NOD's to the Permittee for the 2010 GWMR (see Comment 1). Comment 5 of the first NOD letter dated March 11, 2011 instructed the Permittee to "[r]evise the Report to present the data in tables that allow for comparison of the results spatially through time." Comment 8 of the second NOD letter dated August 19, 2011 also instructed MELR to include data from previous sampling events. MELR's response to comments for the August 19, 2011 NOD letter states "TRINITY has pulled all available historical data into one location so that we can build on this data in the future." A table including historical analytical results is not included in the 2011 ground water monitoring Report.

Include a table summarizing historic analytical results in the revised Report and all future reports. The historic data table for analytical results must include a minimum of eight ground water sampling events (four years). NMED understands that at Melrose Air force Range, the

2009 baseline ground water monitoring event may be the earliest reliable data for the starting point for the historical tables. This is acceptable.

Comment 6

Individual Solid Waste Management Units (SWMUs) are not labeled on **Figure 5 (Median Ground Water Flow Direction, 2002 to 2003 (USGS))**, **Figure 7 (Annual Ground Water Monitoring Well Network Locations)**, **Figure 8 (Ground Water Flow Map 5-3-2011 to 5-16-2011)**, or **Figure 9 (Ground Water Flow Map 9-26-2011 to October 2, 2011)** of the Report. Label all SWMUs on **Figures 5, 7, 8 and 9** in the revised Report and on all relevant figures included in future work plans and reports.

Comment 7

Table 3 (Summary of Analytical Results (5/3/2011 – 5/18/2011)) and **Table 4 (Summary of Analytical Results (9/27/2011 – 10/3/2011))** does not indicate if the table presents results from the annual or semi-annual sampling event. To avoid confusion, in the revised Report and all future reports, the tables must also be labeled as either the annual or semi-annual event for clarity.

Comment 8

Appendix C (Parameter Summary and Trends); On the analyte summary graphs only one well and one analyte is represented on each 1.5 inch by 3 inch graph. This makes comparison of changes in analyte concentrations vs time between wells difficult. In the revised Report, and all future ground water monitoring reports, include one additional graph per analyte, which shows all monitoring wells on the same analyte graph for comparison purposes. This graph must be of a large enough size to be readable (e.g., 11 x 17" paper).

SPECIFIC COMMENTS

Comment 9

Section 7.1.1, Background Water Quality, page 7-5, last paragraph states “[b]ased on major ion chemistry, temperature, specific conductance, and TDS, etc. it appears that the water quality associated with MWQ-23 is similar to ground water associated with the local flow system in the Impact Area...MWQ-23 would therefore appear to be a viable option as a background well for the collection of ground water samples.” According to the table **General Background Water Quality-MWQ-23 on page 7-6**, ground water quality indicators such as dissolved oxygen, conductivity and sodium concentration differ by orders of magnitude between the Impact Area (MWQ8) and MWQ-23. Resolve this discrepancy in the revised Report.

Comment 10

According to **Table 1 (Well Construction Details)** MWQ-23 is not-accessible. The “Notes” column of **Table 1** indicates MWQ-23 is the new background well and according to **Table 2 (Summary of Analytical Results – 2011)** MWQ-23 was sampled on 5/3/11 and 9/29/11, and therefore accessible. Correct this discrepancy in the revised Report. Also, static depth to water measurements were not included on the field sampling forms for MWQ-23 for these sampling events. In the revised Report explain why depth to water (DTW) measurements were not

collected at MWQ-23.

Comment 11

According to **Table 1 (Well Construction Details)** MWQ-2 is screened within the Chinle Group. On **Figure 8 (Ground Water Flow Map 5-3-2011 to 5-16-2011)** and **Figure 9 (Ground Water Flow Map 9-26-2011 to October 3, 201[1])** MWQ-2 is being mapped with wells in the Ogallala aquifer to calculate ground water flow direction. Wells from different aquifers cannot be accurately combined on a single ground water flow map. Modify **Figures 8 and 9** in the revised Report and all future reports accordingly.

Comment 12

In **Section 4.2, Hydrogeology, page 4-5, second paragraph**, MELR states “[w]ater level contours for the unconfined Southern High Plains Aquifer indicate ground water flows predominantly to the northeast from the Mesa to the Portales Valley...[t]he flow direction changes in the Portales Valley, indicating two flow systems are present, one local, and one regional...[i]t appears that the direction of ground water flow reflects the contact between the Ogallala and Chinle formations...” **Section 4.2 Hydrogeology, page 4-6, second paragraph** states “[r]esults of water quality analysis for samples collected...indicate three areas or sources of different water types at Melrose AFR: (1) local flow system near the Mesa and ephemeral channels, (2) local flow system in the impact area, and (3) regional flow in the Portales Valley.” **Section 7.1.1 Background Water Quality** further states “[t]he difference in water quality is likely attributable to the upward potential/migration of ground water from the Chinle Formation.” **Section 7.1.4 Annual Ground water Quality Network, Page 7-19, 2nd paragraph** “...where mixing with ground water from the Chinle Formation may be occurring...” and “The high variability of water quality, with respect to chloride, manganese, sulfate, and TDS appears to be attributable to variable degrees of “mixing” with ground water from the underlying Chinle Formation”

According to the data presented in **Table 1 (Well Construction Details)** the well screen intervals in wells being used for groundwater monitoring are unknown and therefore, the aquifers that the well screens intersect is also unknown. It is possible that the mixing could be occurring within wells screened across both the Chinle and Ogallala Formation, rather than upward migration of ground water from the Chinle into the overlying Ogallala.

Information such as the well screened intervals and well boring stratigraphy is crucial to a valid site conceptual model. Determine the screened intervals in each well and current total well depths for all wells being used for ground water monitoring to justify the current site conceptual model (see Comment 13).

FIELD RELATED

Comment 13

As discussed in Comment 12, well screened interval and total well depth is not known for several wells. MELR’s response to Comment 3 from the March 11, 2011 NOD states “[d]uring the [2011] spring Semiannual and Annual sampling event TRINITY will have more time on-site

and will continue to refine/correct any discrepancies...to confirm the well construction details.” This information was not provided. Include this information in the 2012 GWMR. **Section 6.4, Monitoring Network Well Inspection/Maintenance, page 6-9** states “[w]ell inspections sought to verify...total well depth, well type completion...etc. Well conditions...are summarized in Table 1...” According to **Table 1 (Well Construction Details)** it appears that information regarding total well depth and well screen intervals of wells has not been further refined during the 2011 sampling events and a discussion was not provided in the 2011 GWMR regarding this matter.

Information such as depth to groundwater, total well depth, depth to top of well screen, depth to bottom of screen, screen length, and the most recent depth to ground water measurement (as opposed to ground water elevation) for all gauged wells must be included in **Table 1** in the revised Report and all future ground water monitoring reports. Depth to water measurements must be collected in all accessible wells during each sampling event and included in all future ground water monitoring reports. A clear explanation must be provided in all future reports if this information is not obtained for specific wells. If this information or an explanation for omission of the data is not provided, the reports will be rejected with a requirement to submit a complete report included with the rejection. See Comment 12.

The revised Report must provide documentation of which old stock-wells are screened & which are open hole and provide documentation of well screen intervals for all wells being used for ground water monitoring (e.g., copies of field documents, boring logs, well construction records, reports). If this information remains unavailable after a thorough records search, propose field methods to identify well construction details (e.g., video log) in the revised Report.

Comment 14

Section 7.1.3.1, SWMU 114, page 7-14, bottom of page states “[g]round water quality in the immediate vicinity of SWMU 114...comparison to the background ground water quality at MWQ-23 is most representative.” According to **Table 1 (Well Construction Details)** the well screen information and total depth of the well is currently unknown. To determine whether MWQ-23 is representative of the hydrogeologic conditions at SWMU 114 the total depth of the well and well screen intervals must be determined (see Comments 12 and 13). This information must be determined in order to continue using MWQ-23 as a background well. Include this information in the 2012 groundwater monitoring report. Revise this statement accordingly in the revised Report.

Comment 15

In **Section 6.3, Ground Water Elevation Measurements, page 6-9** no detail is given on how ground water elevation measurements were obtained from wells containing dedicated pumps. Include a description of water elevation measurement methods for wells with dedicated pumps and identify the wells that contain dedicated pumps. **Table 5 (Ground Water Levels)** contains several blank cells, it is not clear if this indicates that a ground water measurement was not obtained or why no measurement was taken. Depth to water measurements must be collected in all accessible wells during each sampling event and included in all future ground water

monitoring reports. A clear explanation must be provided in all future reports if this information is not obtained for specific wells. If this is not included in the reports, the reports will be rejected (see Comment 13). Revise **Table 5** to indicate the meaning of blank cells and explain why ground water measurements were not obtained for these wells in the footnotes. Additionally, MWQ-23 is not included on **Table 5 Ground Water Levels**, revise Table 5 to include MWQ-23.

Comment 16

Table 1 (Well Construction Details) includes an incomplete explanation (key). Include the entire key with **Table 1**. **Table 2 (Summary of Analytical results – 2011)** has no key. Revise **Table 2** to include a key. The key on **Table 5 (Ground Water Levels)** does not indicate what units the measurements are in or what the blank cells indicate. Revise **Table 5** to define units and the significance of blank cells. Include the revised tables in the revised Report.

Comment 17

Section 6.3, Ground Water Elevation Measurements, page 6-9, first paragraph states “[t]he probes were decontaminated before use, between wells, and at the conclusion of measurement activities.” The Report does not indicate whether the water level indicator tape was decontaminated in the same manner. Include this information in the revised Report.

Comment 18

Section 6.1.1, 2011 Semiannual Spring-Ground Water Quality Network, page 6-4, first paragraph following the table and Section 6.1.3 2011 Semiannual Fall-Ground Water Quality Network, page 6-7, first paragraph after the table state “[a]ll monitoring wells were sampled within the screened interval.” This statement is unsupported. According to **Table 1 (Well Construction Details)** the well screen information is currently unknown. Resolve this discrepancy in the revised Report. See Comment 13.

Comment 19

Section 8.0, Conclusions/recommendations, page 8-4, third bullet states “[l]ow-flow sampling techniques were previously proposed for several wells within the Annual Ground Water Quality Network that are used for cattle stock water supply and are installed within subsurface vaults...it is not possible to adjust the flow rate at the well head...it was necessary to sample these wells first by evacuating a well volume and then collecting well stabilization parameters.” Identify which wells were sampled in this manner in the revised Report.

Comment 20

The last sentence of **Section 7.3, Well Condition Inspection/Maintenance, page 7-22, second paragraph, last sentence** states “[a]dditional wells previously identified as open were also properly secured.” Explain specifically which wells were found open in the revised Report.

Comment 21

Section 8.0, Conclusions/recommendations, bottom of page 8-1, third bullet, MELR states “[s]everal wells are currently being utilized for the collection of water levels but have not been surveyed; these wells include MWL-11, MWQ-11, MWL-12, MWQ-12, and MWQ-13. The addition of these wells to ground water flow determinations would be beneficial.” NMED concurs. The Permittee must prepare a work plan to survey the locations and well casing elevations for these wells plus a minimum of five selected other wells (currently included in potentiometric surface mapping) to verify that the previous survey data is valid for the wells used for potentiometric surface mapping. The work plan must be submitted to NMED no later than December 3, 2012.

Comment 22

In Section 6.1.1, 2011 Semiannual Spring- Ground Water Quality Network, Page 6-4, last paragraph and Section 6.1.2, 2011 Annual Spring – Ground Water Quality Network, page 6-7, last paragraph, MELR has apparently inserted the section of the approved work plan detailing field procedures to be performed rather than describing the field activities that were actually performed. For example: future tense is used rather than past tense on both **pages 6-4 & 6-7** stating “...the spigot closest to the pump will be opened...[s]tabilization parameters will then be collected...” Also when describing purging and sampling activities for MWQ-23 in both sections on the same pages the Permittee states “[i]ncorporating maximum expected well and tank parameters purge volume of approximately 100 gallons.” According to the Ground Water Sampling Logs provided in Appendix A(Field Data) 84.00 gallons were purged from MWQ-23 during the May 2011 sampling event and 49.22 gallons were purged from MWQ-23 during the September 2011 sampling event. In the revised Report and all future report the Permittee must describe what actually took place during field activities.

Comment 23

In Section 7.1.4, Annual Ground Water Quality Network, page 7-20, third paragraph, perchlorate results for the annual (spring) sampling event are discussed; however, the results are not included on the associated **table on page 7-19**. In the revised Report include the perchlorate results in this table.

Comment 24

In Section 6.2, Investigative Derived Waste, page 6-8, last paragraph states “TRINITY has submitted copies of the laboratory data to NMED...” This is not correct; TRINITY submitted laboratory results to CAFB, who in turn submitted them to NMED via email correspondence on March 28, 2012. Correct this section in the revised Report.

Comment 25

In Section 7.0, Monitoring Results, page 7-2, 3rd and 4th paragraphs , top of page 7-3 through 2nd paragraph, MELR discusses the rationale for collecting samples for both dissolved and total metals analyses. RCRA regulations require the determination of total metal concentrations. Comment 5 from the February 11, 2010 Final Work Plan NOD requires the

Permittee to “analyze both total and dissolved RCRA metals [and include] total and dissolved (TAL) metals [in] the year 2010 and every sixth year thereafter (i.e., 2016, 2022 and so on).” This was reiterated in Comment 4 from the August 19, 2011 Second NOD. Because total and dissolved metals were collected as required in 2010 and collected again in 2011, the Permittee is not required to collect samples for dissolved metals until 2016. Analyses for total metals must continue to be collected each year.

Comment 26

Section 7.1.2.1, Holding Times, page 7-7, bullet number 1 (Annual Spring (SDG 2112050426)) states “MWQ-4, MWQ-5, MWQ-5-DUP, MWQ-6, and MWQ-7 were received within the 24-hour holding time but were not processed through receiving prior to expiration of the holding time. Accordingly the sample results were estimated “J” or estimated non-detect “UJ”.” No explanation is given for the 24- hour holding time, which doesn’t correlate with normal holding times for metals, or what methods/analyses were affected. In the revised Report provide an explanation which includes specific information (e.g., were samples preserved or unpreserved, were containers glass or plastic, what analyses were being performed) as well as a discussion on the implications the qualified results has on the conclusions of the Report. See Comment 3.

Comment 27

In **Section 7.1.2.1, Holding Times, page 7-8, bullet number 2 (Annual Fall (SDG 2110928048))** MELR states “[r]ecover of the surrogate analyte in samples MWQ-23, MA01-MW002, MW114MW002 and MW114MW003 exceeded lower acceptance criteria.” This statement is also repeated in **Section 7.1.2.3, Surrogate Compounds, page 7-12, third bullet (2011 Annual Fall (SDG 2110928048))**. MELR does not state which analysis this statement references. Specify which methods and surrogate analyte(s) did not meet acceptance criteria and discuss the implications this has on the quality of data presented in the revised Report. See Comment 3.

Comment 28

Section 7.1.4, Annual Ground Water Quality Network, Page 7-19, third paragraph, MELR states “[a]luminum (total) has been detected in two of the 14 wells sampled during the 2011 Annual sampling event at concentrations above the screening criteria.” According to the analytical results presented in **Table 3 (Summary of Analytical Results (5/3/2011 – 5/18/2011))** 24 wells were sampled in the Spring (Annual) sampling event and ten wells were sampled in the Fall (Semi-Annual) sampling event; aluminum (total) was detected at concentrations above screening criteria in samples collected from three of the 24 wells during the spring (Annual) sampling event and in two of the ten wells during the fall (Semi-Annual) sampling event. Correct this error in the revised report. See Comment 3.

Comment 29

According to **Section 7.1.2, Suitability of the Data, pages 7-7 through top of page 7-14**, laboratory data was qualified for various reasons (see Comments 27 & 28, above). Identification of these data quality qualifications does not appear on analytical results tables in

the report. In the text of the revised Report include a description of sample collection and analytical methods. MELR must also revise the analytical results table(s) to include footnotes which indicate which data are qualified and the type of data qualification. Include the modified tables in the revised Report.

Comment 30

Section 7.1.4, Annual Ground Water Quality Network, bottom of page 7-19 and top of page 7-20, MELR states “[t]he only exceedance for antimony is in MWQ-20, which as previously discussed has been excluded from this discussion based on its installation in the Chinle formation.” This is incorrect, antimony also was detected at concentrations above screening criteria in the sample collected from MA01MW002 during the annual sampling event. Correct this error in the revised report.

Comment 31

In **Section 8.0, Conclusions/recommendations, page 8-4, first bullet** the Permittee states “[d]uring the Fall 2011 sampling event thallium was analyzed using a MDL slightly higher than the screening guideline. Future testing will attempt to utilize a lower MDL.” MELR must utilize MDLs that are lower than the associated screening levels for all analytes in all future monitoring events.

Comment 32

Table 3 (Summary of Analytical results (5/3/2011-5/18/2011)) and Table 4 (Summary of Analytical results (9/27/2011-10/3/2011)) are redundant, the data is already concisely presented in **Table 2 (Summary of Analytical results-2011)**. Remove Tables 3 and 4 from the revised Report.

Comment 33

On **Table 2 (Summary of Analytical Results – 2011)** the columns listing sampling dates for M114MW002 are reversed. Correct this error in the revised Report.

Comment 34

The **table (Summary of Water Quality Test Events)** on **page 5-3** does not have an explanation for the symbols “x” and “---”, which are used in the table. Include a definition for these symbols in the footnotes for this table in the revised Report.

Comment 35

MWQ-23 is not included in the **table (Summary of Water Quality Test Events)** on **page 5-3**. MWQ-23 was gauged and sampled during the annual and semiannual 2011 sampling events; therefore, MWQ-23 must be added to this table in the revised Report.

Comment 36

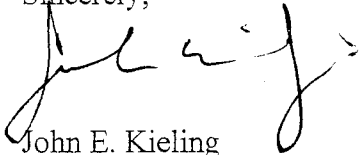
On **Figure 10 (Generalized Cross Sections)**, the key identifies the Blackwater Draw Formation with dashed lines; however, the labels on the cross sections identify the Blackwater Draw Formation with a stippled pattern. Correct this discrepancy in the revised Report.

Col. Piech
September 26, 2012
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The Permittee must address all comments contained in this Disapproval and submit a revised Report no later than January 25, 2013. The Permittee must also incorporate the applicable required changes contained in this Disapproval in all future report submittals. The revised Report must include a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. In addition, an electronic version of the revised Report must be submitted that identifies where all changes have been made in red-line strikeout format.

If you have any questions regarding this letter, please contact Lane Andress of my staff at (505) 476-6059.

Sincerely,



John E. Kieling
Bureau Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
N. Dhawan, NMED HWB
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M. Higginbotham, CAFB
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