DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

ENTERED

MAR 2011

A. David Budak
Deputy Base Civil Engineer
550 Tabosa Avenue
Holloman AFB NM 88330-5840

New Mexico Environment Department
Attn: Mr. James Bearzi
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe NM 87105-6303

Dear New Mexico Environment Department

Holloman Air Force Base is pleased to submit for your review the Response to Comments, Part 1 to your 28 October 2010 Notice of Disapproval.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Mr. David Scruggs, 49th Civil Engineer Squadron, Asset Management Flight at (575) 572-5395.

Sincerely

28 Mar 2011

A. DAVID BUDAK
Deputy Base Civil Engineer

Attachment:
Response to Comments

cc:
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7009 0820 0001 1128 0793

Response to Comments
Part 1
Notice of Disapproval 28 October 2010
Basewide Background Study Report December 7, 2009 Revision
HOLLOMAN AIR FORCE BASE, NEW MEXICO
EPA ID# NM6572124422 HWB-HAFB-09-004

Comment No.	Section	Page	Comment	Response
Author: NMED			Date of Comments: October 28 2010	Date of Response: March 2011
General Response				During the meeting of 4 January 2011, the Permittee requested concurrence from the NMED on the Response to Comments on the NOD dated May 4, 2009 that formulated the submittal of Basewide Background Study Report dated December 7, 2009. With the exception of Part 1 Comment 2 below, there is no overlap between the NODs dated May 2, 2009 and the current NOD dated October 28, 2010. During the 4 January 2011 meeting, NMED indicated that if the current NOD did not include any previous NOD comment, the Permittee should assume that the RTC and revised document were sufficient and had been accepted by NMED.
Part 1, Comment 1			Section 5.5 of the subject Report states, in part. "While nitrate and nitrogen are a part of the natural ecosystem at HAFB, the present quantities, distributions, and historical conditions at HAFB are not natural." Additionally, background levels and statistical descriptors for nitrate, nitrite, and ammonia are proposed in Tables 5-5, 5-15, and 5-18. NMED does not approve the proposed background levels in the Report for nitrate, nitrite, or ammonia because some of the groundwater samples acquired as part of the background study are contaminated by one or more of these compounds, and thus are not representative of natural conditions. The Permittee is therefore required to conduct an investigation of nitrate and the other nitrogen-bearing compounds in groundwater to establish true and reliable background conditions for them, and to determine the source, extent, and rate of migration of these compounds where they are known or suspected to be a	Concur. The Permittee will remove nitrate, nitrite, or ammonia from the Basewide Background report. The Permittee will reference that the background values for nitrate, nitrite, or ammonia and the source area investigation will be accomplished under separate covers. The Permittee will conduct an investigation of nitrate and other nitrogen bearing compounds in groundwater to establish true and reliable background conditions for them, and to determine the source, extent, and rate of migration of these compounds where they are known or suspected to be a contaminant of anthropogenic origin. The Permittee will submit to the NMED for its review and approval a plan to investigate background conditions and known or suspected sites of contamination with respect to nitrate, nitrite, and ammonia upon the availability of funding. The plan will comprise the following:

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			contaminant of anthropogenic origin. The Permittee must submit to the NMED for its review and approval a plan to investigate background conditions and known or suspected sites of contamination with respect to nitrate, nitrite, and ammonia by the deadline indicated in the compliance schedule at the end of this letter. This investigation of nitrate, nitrite, and ammonia will be considered by the NMED as a separate action from the subject background study because of the pressing need to establish background levels for other naturally occurring constituents. The investigation plan shall include the sampling requirements and statistical methods to be employed for the purpose of establishing background conditions for nitrate, nitrite, and ammonia. The plan shall also provide construction details and the locations and anticipated depths of groundwater monitoring levels to be installed to determine background conditions and the nature and extent of contamination, geology, hydrology, groundwater flow direction and velocity at each site where contamination of the groundwater by nitrate, nitrite, or ammonia is known or suspected to occur. The plan shall also present details on field procedures, sampling and analysis of the groundwater and related quality control, and discuss the historical use of sites that have groundwater contamination to the extent that such use is known. The plan shall also contain a summary of the results to be reported after the investigation phase is completed, and a schedule for implementation of the work, including monitoring.	• Install and sample 50 soil borings and monitoring wells. 30 in the first round and 20 in a follow up round to further delineate nitrate contamination. • Sample 25 existing wells at ERP sites for nitrogen compounds (Nitrate, nitrite and ammonia). • Collect 40 caliche samples from outcrops in excavations and the drainage pattern across HAFB. • Analyze up to 276 soil samples (including QA/QC) for nitrogen compounds. • Analyze up to 90 soil samples (including QA/QC) for nitrogen compounds. • Perform a statistical analysis to separate nitrogen compounds-contaminated areas from background values • Submit the initial statistical evaluation separating background values from suspected sites with nitrogen compounds contamination • Respond to NOD regarding initial statistical evaluation report • Perform a second round of data collection (up to 20 soil borings and monitoring wells) to delineate areas of suspected nitrogen compounds contamination. • Prepare a final background report for nitrogen compounds. • Prepare a draft final report for nitrogen compounds assessment at potentially contaminated sites • Respond to the NOD for the draft final report for nitrogen compounds assessment report • Prepare the FINAL Nitrogen Compounds Assessment Report. The Permittee deleted the following sentences and

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				paragraphs from Section 5.5: • Figure 5-116a illustrates the distribution of the ammonia and nitrate and would suggest the nitrate (white) is developing downgradient of the ammonia concentrations in green. • Figure 5-116a illustrates that the elevated ammonia detections are immediately upgradient of the elevated nitrate detections which may indicate a possible connection to the conversion of ammonia to nitrate via the nitrogen cycle in well oxygenated soil systems. • The source of ammonia is most likely anthropogenic, particularly since its distribution at present appears to correspond to areas of both nearly 70 years of ongoing human habitation and livestock operations such as SWMU 136 which, according to the historical information, was originally a stock tank pond. While nitrate and nitrogen are a part of the natural ecosystem at HAFB, the present quantities, distributions, and historical conditions at HAFB are not natural. • All tables, Figures, Histograms, Box Plots, Probability Plots for Nitrate, Nitrite and Ammonia have been deleted across the document. The Permittee added the following paragraph to Section

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				5.5: *"Another possible explanation for nitrate in the groundwater is from geogenic sources. Nitrate in groundwater from geogenic sources include those that are desert-derived such as caliche and playa lake evaporate deposits, and desert vadose zone soils. Recent research at the New Mexico Institute of Mining and Technology at the University of Nevada and U.S. Geological Survey has shown that nitrate in desert soils occurred at much greater quantities than previously reported, with subsoil nitrate ranging from 2,000 to 10,000 kilograms per hectare (kg/ha). Farmers typically only apply nitrogen fertilizers in amounts ranging from 25 to 250 kg/ha per year. The researchers concluded that this naturally-occurring vadose zone nitrogen reservoir had the potential to become mobilized thereby leaching large amounts of nitrate to groundwater (Motzer, 2006)."* The Permittee adjusted the last sentence of Section 5.5 to read: *"Therefore, since the sources of nitrogen observed at the base are unclear at this time, HAFB is requesting that the nitrate and ammonia data be pulled from the background study and resolved when the aforementioned investigation results are available."* All of these changes to the text, tables and figures will be submitted after Part 2 of the NOD is resolved.
Part 1, Comment	5.6.3		The sixth paragraph of Section 5.6.3 reads: "As required by comment No.5 in NMED correspondence dated May 4, 2009	In the comment the NMED states "The use of data greater than the MDL, but less than the Practical

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2			(provided in attachment 2 of this report), if 100% of the measurements in the data set are non-detects, then the UTL value was arbitrarily set at the lowest DL in the data set. This Practice is not in agreement with current USEPA guidance but was determined to be non-negotiable after significant discussion with NMED. See note below." According to Tables 5-13 through 5-16 and 5-18, some background levels were set by the Permittee at two times the Method Detection Limit (MDL) (MDL is referred to in the quote from the Report as DL). The referenced comment (No.5) does not require that an Upper Tolerance Limit (UTL) be set at the lowest MDL in all cases where 100% of the data are non-detect values, as the Permittee was given the opportunity to justify setting background levels to twice the MDL in such cases. Contrary to the Permittee's assertion, NMED has not rejected setting background levels to twice the MDL where it can be justified. But, as noted previously in the May 4, 2009 NOD, for some constituents all or nearly all samples (more than 100) were found to be less than the MDL. However, NMED continues to believe that it would be difficult to justify setting a background level to two times the MDL when 100% of a large sample population was found to be less than one times the MDL. The use of data greater than the MDL, but less than the Practical Quantitation Limit (PQL), is acceptable for use in a background study. The purpose of the background study is to provide an	Quantitation Limit (PQL), is acceptable for use in a background study". This statement is in agreement with the guidance provided in the STATISTICAL ANALYSIS OF GROUNDWATER MONITORING DATA AT RCRA FACILITIES UNIFIED GUIDANCE, March 2009 (EPA 530/R-09-007) as evidenced by the following excerpts from the guidance document: Page 6-37: *"Even if a data set contains only a small proportion of non-detects, care should be taken when choosing between the method detection limit [MDL], the quantification limit [QL], and the RL in characterizing 'non-detect' concentrations... As a general rule, non-detect concentrations should not be assumed to be bounded above by the MDL. The MDL is usually estimated on the basis of ideal laboratory conditions with physical analyte samples that may or may not account for matrix or other interferences encountered when analyzing specific field samples". The RL should typically be taken as a more reasonable upper bound for non-detects when imputing estimated concentration values to these measurements."* Page 17-19: *"If all the sample data are non-detect, an RL (e.g., the lowest achievable quantitation limit [QL]) may serve as an approximate upper tolerance limit."* Page 18-18: *"It is possible to create an approximate non-parametric limit with background data containing all non-detects, by using the RL (often a quantitation*

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			estimate of background conditions for soil and groundwater at the Facility. Data for any given constituents that are greater than the MDL but less than the PQL indicate that the analyte is present at a high level of confidence but with respect to accuracy are considered to be estimated values only. However, NMED notes that its data in many cases closely matches facility data, suggesting that the accuracy of these estimated values are likely within an acceptable range. Statistical analyses applied to data sets for establishing background conditions help eliminate bias from exceptionally inaccurate data, provided such data do not make up a considerable majority of the data in a data set. A PQL is typically five times greater than the MDL. Data at or exceeding the PQL are considered accurate at a high level of confidence. Setting a background level for a data set that consists of all non-detects to twice the MDL, instead of at the MDL, will still result in establishing a background level that is less than the PQL. Another disadvantage of setting a background level to twice the MDL instead of at the MDL is that lower levels of potential contamination could escape recognition. Finally, *setting a background level to no more than 1 times the MDL is conservative with respect to carrying contaminant levels forward into risk assessments.* The NMED will consider any reasoned argument made on a case-by-case: basis that values set at two times the MDL in Tables 5-13 through 5-16 and 5-18 should be appended as representative of background levels for the constituents/media involved. Any such argument should consider the above discussion.	*limit) as the PQL. A quantified value above the PQL would constitute an exceedance."* The Permittee concurs with NMED on following statement, "A PQL is typically five times greater than the MDL. Data at or exceeding the PQL are considered accurate at a high level of confidence. Setting a background level for a data set that consists of all non-detects to twice the MDL, instead of at the MDL, will still result in establishing a background level that is less than the PQL." Therefore, as provided in the 2009 Unified Guidance, "If all the sample data are non-detect, an RL (*e.g.*, the lowest achievable *quantitation limit* [QL]) may serve as an approximate upper tolerance limit" the Permittee proposes that, for data sets that have all non-detects, to use the *practical quantitation limit* [PQL]) as an approximate upper tolerance limit. The rationale for adopting this approach is based on the fact that the MDL is a hypothetical number and is estimated on the basis of ideal laboratory conditions with ideal analyte samples and does not account for matrix or other interferences encountered when analyzing specific, actual field samples. The USEPA only recognizes those values at or above the PQL are defensible, reproducible and quantifiable. Values between the MDL and the PQL should be viewed with skepticism.

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				The arguments presented above are supported by the current industry practices, USAF statisticians, USGS statisticians and EPA regulatory guidance, therefore the Permittee believes this course of action is reasonable. The Permittee contends that setting the UTL at the PQL, will significantly reduce the overall facility-wide false positive rate during future sampling events and not allow "potential contamination to escape recognition". Finally, as stated by the NMED, the goal is to ultimate carry forward contaminant values into the risk assessment process and the Permittee contends that carrying forward values between the MDL and the PQL (hypothetical numbers that are estimates on the basis of ideal laboratory conditions at the time of the analysis) is inaccurate and would compound the error in the risk assessment. The Permittee does not wish to enter into a case-by-case analysis of individual analytes with NMED since this individual inspect would not be consistent in between analytes resulting in a bias that would invalidate the approach and processes set forth in the basewide background study. The Permittee deleted the following text from Section 5.6.3: As required by comment No. 5 in NMED correspondence dated May 4, 2009 (provided in Attachment 2 of this report), if 100% of the measurements in the data set are non-detects, then the UTL value was arbitrarily set at the

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				lowest DL in the data set. This practice is not in agreement with current USEPA guidance but was determined to be non-negotiable after significant discussion with NMED. See note below. Note: The UTL represents a value that 95% of the population will fall below with 95% confidence. The UTL is typically higher than the highest value in the background data set that was used to calculate the UTL. With the UTL set higher than the largest value in the data set it will compensate for site variations across the installation. Typically, once the UTL is established, a single data point from the site that exceeds the background UTL has a high probability that indicates contamination is present. Therefore, the use of the term "UTL" is inappropriate to describe a value that was arbitrarily set at the DL. Furthermore, setting the UTL at the DL, the overall facility-wide false positive rate during future sampling events may be unacceptably high. Furthermore, the USEPA 1992 *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities - Addendum to Interim Final Guidance*, states that, "the MDL is estimated on the basis of ideal laboratory conditions with ideal analyte samples and does not account for matrix or other interferences encountered when analyzing specific, actual field samples. For this reason, the PQL should be taken as the most reasonable upper bound for non-detect concentrations". The above statement is consistent with a methodology used in a document developed for USEPA Region 10, titled, *Statistical Approach for Discrimination of Background*

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				and Impacted Areas for Midnite Mine RI/FS. In summary, the arbitrary setting of a UTL to the lowest DL in the data set for 100% non-detect data sets is being performed to comply with NMED comments provided in Attachment 2 of this report. The Permittee added the following text to Section 5.6.3: If 100% of the measurements in the data set are non-detects, statistical analysis is not possible and the UTL value was set the lowest achievable *quantitation limit (QL).* In Part 1, comment No. 2 in NMED correspondence dated October 28th, 2010 (provided in Attachment 2 of this report) states "The use of data greater than the MDL, but less than the Practical Quantitation Limit (PQL), is acceptable for use in a background study". This statement is in agreement with the guidance provided in the STATISTICAL ANALYSIS OF GROUNDWATER MONITORING DATA AT RCRA FACILITIES UNIFIED GUIDANCE, March 2009 (EPA 530/R-09-007) as evidenced by the following excerpts from the guidance document: • Page 6-37: "Even if a data set contains only a small proportion of non-detects, care should be taken when choosing between the method detection limit [MDL], the quantification limit [QL], and the RL in characterizing 'non-detect' concentrations... As a general rule, non-detect concentrations should not be assumed to be

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				bounded above by the MDL. The MDL is usually estimated on the basis of ideal laboratory conditions with physical analyte samples that may or may not account for matrix or other interferences encountered when analyzing specific field samples". The RL should typically be taken as a more reasonable upper bound for non-detects when imputing estimated concentration values to these measurements." • Page 17-19: "If all the sample data are non-detect, an RL (e.g., the lowest achievable quantitation limit [QL]) may serve as an approximate upper tolerance limit." • Page 18-18: "It is possible to create an approximate non-parametric limit with background data containing all non-detects, by using the RL (often a quantitation limit) as the PQL. A quantified value above the PQL would constitute an exceedance." The Permittee concurs with NMED on following statement, "A PQL is typically five times greater than the MDL. Data at or exceeding the PQL are considered

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				accurate at a high level of confidence. Setting a background level for a data set that consists of all non-detects to twice the MDL, instead of at the MDL, will still result in establishing a background level that is less than the PQL." Therefore, as provided in the 2009 Unified Guidance, "If all the sample data are non-detect, an RL (*e.g.*, the lowest achievable *quantitation limit* [QL]) may serve as an approximate upper tolerance limit". HAFB proposes that, for data sets that have all non-detects, to use an RL (*e.g.*, the lowest achievable *quantitation limit* [QL]) as an approximate upper tolerance limit. Table 5-12 to 5-17 column indicating MDL/MDC were changed to RL/MDC. Table 5-18 has been attached to the RTC and data sets of 100% none-detects were adjusted to the lowest RL in the data set as provided in the STATISTICAL ANALYSIS OF GROUNDWATER MONITORING DATA AT RCRA FACILITIES UNIFIED GUIDANCE, March 2009 (EPA 530/R-09-007). Table 5-18 was also adjusted to remove Nitrate, Nitrite and Ammonia. Finally, the Permittee has provided all requested information to both NMED and their support contractor to resolve the RTC questions regarding radiochemical concentration determination and statistical analysis. At the time of this RTC, no response or communication has been received from either NMED or their support contractor. Therefore, the Permittee is including the radiochemical on Table 5-18 as an indication to NMED that no action has been taken.

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				The requested page changes will be transmitted to NMED as part of the final deliverable following concurrence and acceptance of the RTCs.
Part 1, Comment 3	5.6.3		The note below the sixth paragraph of Section 5.6.3, the subject Report states: "Therefore, the use of the term "UTL" is inappropriate to describe a value arbitrarily set at the DL." While the NMED agrees with this statement, it used the term "UTL" in the May 4, 2009, NOD, to remain consistent with the terminology used in the original version of the Report. Both versions of the Report list and refer to background levels as "UTLs" whether or not they are true UTLs or some other statistic chosen as representative of background levels. Because the proposed background levels are sometimes UTLs and sometimes other statistical descriptors, the NMED prefers to denote them simply as "background levels." Background levels are the values that will be used for simple comparisons to environmental samples to screen for potential contamination. Ideally, background levels would be UTLs based on a 95% coverage and a 95% confidence level. However, UTLs cannot always be calculated for some constituents, especially those with censored data sets. Although background levels are important as a screening tool, the other statistical descriptors (e.g., mean, standard deviation, ranges) have value. For example, such descriptors may be considered when making a determination that low level contamination is present, but is not obvious, or in comparing verification samples to background conditions after a site remediation is completed. Re-label the columns in Tables 5-12 to 5-18, as appropriate, to	Concur. Columns in tables 5-12 to 5-18 were re-labeled as appropriate, to read "background levels" instead of UTLs. The Permittee will also state in both the text and tables that the NMED requires and directs the Permittee to re-label as appropriate, to read "background levels" instead of UTLs in the October 28th, 2010, NOD. The requested page changes will be transmitted to NMED as part of the final deliverable following concurrence and acceptance of the RTCs for Part 1 and 2 of the NOD.

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			read "background levels" instead of UTLs.	
Part 1, Comment 4	Appendix D		The User's Guide for ProUCL was provided in Appendix D. However, it does not appear that any of the input/out files from use of ProUCL were provided in the Report. The Permittee must submit all the input/output files for review.	Concur. The Permittee added the input/output files to Appendix D used to generate the current set of background values. The requested page changes will be transmitted to NMED as part of the final deliverable following concurrence and acceptance of the RTCs.
Part 1, Comment 5	Data Validation Reports		Data Validation Reports: (DVRs) -Several problematic issues were identified in the review of the DVRs. The samples, analyses, and resulting data were the subject of 25 separate nonconformance reports by the laboratory. These primarily document a number of matrix effects. Some of the nonconformance reports are redundant, some were resolved, and some were not resolved. The samples seemed to present significant difficulty for the laboratory; this both complicates the DVRs as well as impacts data quality. A general finding of NMED's review is that the matrix effects and their impact on data usability were not properly identified in the DVR and conveyed to the data users. The DVRs should discuss what steps, such as contacting the laboratory to obtain clarification of the many issues, were applied to obtain resolution of these issues. Also, the DVRs provide an assessment section which includes the statement: "Overall, the data is suitable for the intended data usage." Typically this type of statement is reserved for a data quality assessment and no t included in a DVR. If a DVR is going to include such conclusions, the intended use must be fully described (including data quality objectives (DQOs) and measurement quality objectives (MQOs)), and the data reconciled against those criteria.	Matrix effect, in the form of MS/MSD recoveries, was either documented and/or addressed in the DVR's in comparison with other QC parameters. MS/MSD data only applies to the sample spiked; therefore the value of MS/MSD samples is far less superior to the value of surrogate recoveries (which are added to every sample for organic analysis) and LCS results. LCS/LCSD results and surrogate recoveries are therefore a better measure of accuracy and precision and a better measure of matrix effect for individual samples. In particular for metals analysis, the digestion procedure practically destroys the matrix so that other metals in high concentrations can cause interference. Contacting the laboratory due to matrix issues is not necessary unless the lab failed to document said issues in the narrative and/or perform the requisite re-extraction/re-analysis, where required. Therefore, the impact on data quality, regarding matrix interference, was determined to either not warrant further qualification based on several QC components or require a validation flag which qualified the result in question as an estimated (J) value. DVR Assessment statement: "Overall, the data is suitable for the intended data usage." This is the final

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			Furthermore, on future DVRs, a column titled "Reason for Qualifier" should be added to all the tables currently titled "Summary of Qualified Data." This column should be used to describe why the particular data validation qualifier is being assigned (e.g., due to method blank contamination, LCS recoveries outside acceptable limits). As the DVRs arc currently written, it is difficult to tell exactly why a validation qualifier was applied without looking at the raw data package Quality Control forms. Adding this "Reason for Qualifier" column will greatly enhance the clarity of the validation qualifiers for any reviewer or reader, and will significantly reduce the time spent on any technica1 review of DVRs. Because of these issues, as well as the more specific data validation issues identified in Part 2 of this letter, the Permittee must submit to the NMED the Permittee's data validation plan for the HAFB Facility. NMED intends to review the plan with the goal of determining if the plan should be revised and improved for future application to assess and validate environmental data.	DVR statement relaying that the analytical data has no outstanding issues. The data has been 100% reviewed and qualified, where necessary, based on the National Functional Guidelines and is ready for reporting purposes and regulatory comparisons. This completes one step of many in the process of site investigation, remedial action, site closure or whatever the final goal may be. The addition of a "Reason for Qualifier" column can be added to the Summary of Qualified Data table at the end of the DVR. If this would make the review of the DVRs easier for the reader, instead of having to go back through the report to determine why a flag was applied; so be it. The Permittee does not currently have a "data validation plan" as all analytical data collected and analyzed at Holloman AFB is currently managed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP/QAPP) as required under OSWER Directive 9272.0-17. All data validation was performed in accordance with the National Functional Guidelines or the Evaluation of Radiochemical Data Usability. Both of these guidance documents are intended to be applied using professional judgment.
Part 1, Comment 6	?		Method Blanks were positive for a number of analytes and samples. A statistical evaluation of significance in accordance with the *Evaluation of Radiochemical Data Usability* (U. S. Department of Energy, April 1997) (ERDU)) to determine flagging status was	The validating chemist reviews 100% of the data. If method blank contamination was determined to warrant qualification of the data, per the normalized absolute difference calculation (Evaluation of

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			applied. This procedure is appropriate and adequate. However, it was not possible to determine if the procedure was applied properly from the data supplied as nearly all positive results were already qualified for being below the reporting limit, and no data qualifier reason codes were provided. Provide clarification of this issue.	Radiochemical Data Usability p.32-34) it was documented in the DVRs. If the normalized absolute difference was greater than 2.58, no qualification was necessary and no further explanation was acknowledged in the report which specifically documents QC deficiencies. The confusion may lie in the fact that the lab provides is own validation flags, which differ from the chemists in the regard that all compound results below the RL will be flagged (by the lab) as estimated "J". The chemist may provide an additional "J" flag for the same compound based on QC deficiencies otherwise it can be inferred that all qualifiers are lab produced if no explanation is communicated in the DVRs.
Part 1, Comment 7	6		Section 6 -The Permittee must clarify for each constituent/medium what final distribution was assigned to the data set for the constituent/medium, and if the data set was censored, if Cohen's or some other method was applied to the data set. When ProUCL was used for censored data sets, indicate what specific method under ProUCL was used to calculate the statistical descriptors (such as mean and standard deviation) listed in the Report for each of these data sets.	Concur. The Permittee added a flow diagram to Section 5.8 of the report illustrating how data analysis occurs between Table 5-1 thru 5-18. The requested page changes will be transmitted to NMED as part of the final deliverable following concurrence and acceptance of the RTCs.

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Comment No.	**Section**	**Page**	**Comment**	**Response**
Part 1, Comment 8	Data Validation Reports		A quality control (QC) review was conducted to verify the accuracy of the data validator's comments and qualifiers documented in the DVRs. For SDG 081060136, Method 60 10B, Sample BWBG-SB03-30, the results noted on the DVR for total copper and total magnesium do not match the results given in the data package. Clarify and/or correct as needed.	For SDG D8I060136, Method 6010B, and Sample BWBG-SB03-30: Total copper was not validated and the result for total magnesium does match the laboratory report. After additional discussion with NMED's contractor (AQS) it was determined that AQS did not have a copy of the final DV report for SDG 081060136 that they referenced. A final copy was sent to them which concluded that there was no discrepancy between the lab package and the DVR for qualified metals. Therefore, the accuracy of the data validator's comments and qualifiers documented in the DVR were no longer in question.
Part 1, Comment 9	Table 5-18		Table 5-18 -The April 2009 NMED Soil Screening Levels (SSLs) were applied in the data tables. The SSLs were updated in December 2009. A review against the December 2009 SSLs was conducted. The only difference is the SSL for arsenic, which' snow 3.9 milligrams per kilogram (mg/kg). Revise Table 5-18 accordingly.	Concur. The Permittee revised table 5-18 to reflect the December 2009 values and is attached to the RTC.
Part 1, Comment 10	Table 5-18		Table 5-18 -The SSL for hexavalent chromium was applied for comparison purposes. However, the analytical results are representative of total chromium. Revise Table 5-18 accordingly.	Concur. The Permittee revised table 5-18 to reflect the total chromium value and is attached to the RTC.
Part 1, Comment 11	Tables 5-12 through 5-17		Tables 5-12 through 5-17 -These tables contain transformed data. Revise the tables to list the data in their original form. For example, if the transformed data are the natural logs of the original data, revise and report the data in the tables as the anti-natural logs of the transformed data. Revise the titles in the tables to reflect the changes in data form.	Concur. The Permittee adjusted tables 5-12 thru 5-17 accordingly. Table 5-12 thru 5-17 will be provided when guidance is received from NMED and their support contractor on how the radiochemical concentration truncation issue (Part 2 of the NOD) should be resolved so that the necessary modification can be incorporated into the data tables.

Response to Comments Part 1 Notice of Disapproval 28 October 2010 Basewide Background Study Report December 7, 2009 Revision HOLLOMAN AIR FORCE BASE, NEW MEXICO EPA ID# NM6572124422 HWB-HAFB-09-004				
Comment No.	**Section**	**Page**	**Comment**	**Response**
				The requested page changes will be transmitted to NMED as part of the final deliverable following concurrence and acceptance of the RTCs.

Table 5-18
Response to Comments
Notice of Disapproval 28 October 2010
Basewide Background Study Report December 7, 2009 Revision
HOLLOMAN AIR FORCE BASE, NEW MEXICO
EPA ID# NM6572124422 HWB-HAFB-09-004

				95% UTL (Background Level) with 95% Coverage										
Variable	NMED Soil Screening Levels[a]	Groundwater USEPA MCL[b]	Groundwater New Mexico Administrative Code (NMAC)	Surface Soil Background Level [e]	Subsurface Soil Background Level [e]	Saturated Subsurface Soil Backgroupd Level [e]	Total Groundwater Background Level [e]	Dissolved Metals in Groundwater Background Level [e]	Combined Soil Background Level [e]	Total Groundwater UTL Above USEPA MCL?	Total Groundwater UTL Above NMAC?	Dissolved Metals in Groundwater UTL Above USEPA MCL?	Dissolved Metals in Groundwater UTL Above NMAC?	Combined Soil UTL Above NMED Soil Screening Levels?
Aluminum	78,100	50[d]	NE	22,026.37	25,679.71	8,977.51	1,042.43	[redacted]	13,722.27	Yes	N/A	Yes	N/A	No
Antimony	31.3	6	NE	[redacted]						Yes	N/A	Yes	N/A	No
Arsenic	3.9	10	100	3.58	4.75	2.51	25.93	28.53	3.66	Yes	No	Yes	No	No
Barium	15,600	2,000	1,000	151.17	175.57	148.86	38.00	30.13	169.25	No	No	No	No	No
Beryllium	156	4	NE	1.95	2.39	0.78	[redacted]		1.53	Yes	N/A	No	N/A	No
Cadmium	77.9	5	10	0.30	0.20	0.11	8.80	2.41	0.28	Yes	No	No	No	No
Calcium	NE	NE	NE	278,818.79	361,517.59	265,856.37	1,136,663.50	1,151,301.20	317,331.59	N/A	N/A	N/A	N/A	N/A
Chromium	18,000	100	50	25.62	9.69	19.07	12.00	2.50	24.95	No	No	No	No	No
Cobalt	23[c]	NE	50	7.49	8.38	8.21	36.00	2.80	7.70	N/A	No	N/A	No	No
Copper	3,130	1,300	1,000	15.80	15.45	8.90	9.80	57.46	12.96	No	No	No	No	No
Iron	54,800	NE	1,000	28,058.74	28,460.29	15,675.41	1,306.82	65.56	23,049.48	N/A	Yes	N/A	No	No
Lead	400	15	50	9.67	14.27	10.36	[redacted]		10.87	No	No	No	No	No
Magnesium	NE	NE	NE	21,159.18	14,324.84	6,249.50	3,692,781.50	3,630,926.70	16,990.65	N/A	N/A	N/A	N/A	N/A
Manganese	10,700	50[d]	200	451.49	380.77	322.78	745.38	118.65	393.47	Yes	Yes	Yes	No	No
Mercury	7.710	2	2	15.38	9.33	9.49	0.44	[redacted]	10.76	No	No	No	No	No
Nickel	1,560	NE	200	16.95	22.22	15.21	21.97	15.89	17.34	N/A	No	N/A	No	No
Potassium	NE	NE	NE	3,887.99	5,992.12	1,970.82	212,143.56	120,479.98	5,077.12	N/A	N/A	N/A	N/A	N/A
Selenium	391	50	50	[redacted]			129.52	25.26	[redacted]	Yes	Yes	No	No	No
Silver	391	100[d]	50	[redacted]						No	No	No	No	No
Sodium	NE	NE	NE	679.32	5,253.51	2,216.37	20,989,585.00	19,972,499.00	5,195.97	N/A	N/A	N/A	N/A	N/A
Thallium	5.16	2	NE	[redacted]						Yes	N/A	Yes	N/A	No
Tin	47,000[c]	NE	NE	1.79	2.23	2.19	[redacted]		2.10	N/A	N/A	N/A	N/A	No
Vanadium	391	NE	NE	33.76	43.34	33.77	90.02	73.73	42.53	N/A	N/A	N/A	N/A	No
Zinc	23,500	NE	10,000	68.54	71.70	40.95	16.95	56.28	54.53	N/A	No	N/A	No	No
Carbon 14	NE	NE	NE	[redacted]				N/A	[redacted]	N/A	N/A	N/A	N/A	N/A
Ra-226 - Total	NE	5	30	1.82	1.11	1.01	2.62	N/A	1.35	Yes	No	N/A	N/A	N/A
Ra-228 - Total	NE			1.27	1.57	0.68	3.99	N/A	0.95			N/A	N/A	N/A
Lead 210	NE	NE	NE	1.34	3.18	3.38	[redacted]	N/A	1.04	N/A	N/A	N/A	N/A	N/A
Thorium 228	NE	NE	NE	1.81	1.07	1.19	0.99	N/A	1.35	N/A	N/A	N/A	N/A	N/A
Thorium 230	NE	NE	NE	2.64	1.23	1.50	0.37	N/A	1.55	N/A	N/A	N/A	N/A	N/A
Thorium 232	NE	NE	NE	1.46	1.41	1.33	[redacted]	N/A	1.33	N/A	N/A	N/A	N/A	N/A
Uranium 234	NE	NE	NE	2.60	0.88	1.13	175.95	N/A	1.43	N/A	N/A	N/A	N/A	N/A
Uranium 235/236	NE	NE	NE	0.12	0.12	0.19	4.79	N/A	0.08	N/A	N/A	N/A	N/A	N/A
Uranium 238	NE	NE	NE	1.75	0.70	1.06	98.07	N/A	0.75	N/A	N/A	N/A	N/A	N/A
Total Uranium	NE	30	30	4.09	2.91	2.68	294.23	N/A	2.43	Yes	Yes	N/A	N/A	N/A
Alkalinity (as $CaCO_3$)	N/A	NE	NE	N/A	N/A	N/A	386.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloride	N/A	250[d]	250	N/A	N/A	N/A	35,039.73	N/A	N/A	Yes	Yes	N/A	N/A	N/A
Sulfate	N/A	250[d]	600	N/A	N/A	N/A	17,418.99	N/A	N/A	Yes	Yes	N/A	N/A	N/A
Sulfide	N/A	NE	NE	N/A	N/A	N/A	[redacted]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	N/A	500[d]	1,000	N/A	N/A	N/A	65,956.58	N/A	N/A	Yes	Yes	N/A	N/A	N/A

Notes:

NE - Not established
N/A - Not applicable
mg/kg - Milligrams per kilogram
µg/L - Micrograms per liter
mg/L - Milligrams per liter
µg/kg - Micrograms per kilogram
pCi/g - PicoCuries per gram
pCi/L - PicoCuries per liter
µg/g - Micrograms per gram

[a] New Mexico Environment Department (NMED) Soil Screening Levels, December 2009
[b] U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs), May 2009
[c] USEPA Regional Screening Level, April 2009
[d] USEPA Secondary Drinking Water Standard (May 2009)
[e] NMED (NOD dated October 2009) required the use of the term "background level" instead of UTLs. Therefore, the "background level" were calculated by determining the 95 % UTL with 95% Coverage of the results

[redacted] Value set at the Reporting Limit. No statistics were used, therefore it is not a true UTL.
Value set at 2 times the Maximum Detected Concentration in the Data Set
Total Chromium value set at the EPA Region 6 RSL, Protection of Ground Water SSLs