

MWL

ENTERED



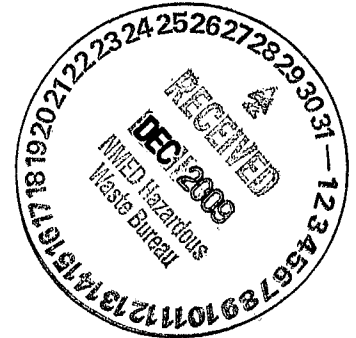
National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400



DEC 23 2009

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Road East, Bldg. 1
Santa Fe, NM 87505



Dear Mr. Bearzi:

On behalf of the U. S. Department of Energy/National Nuclear Security Administration (DOE/NNSA), and Sandia Corporation (Sandia), DOE/NNSA is submitting the DOE/Sandia Responses to New Mexico Environment Department's "Notice of Disapproval: Mixed Waste Landfill Groundwater Monitoring Report, Calendar Year 2008."

Should you have any questions regarding this response, please contact me at (505) 845-6036, or John Gould of my staff at (505) 845-6089.

Sincerely,

Katelyn A. Davis
for
Patty Wagner
Manager

Enclosure (1)

cc w/enclosure:

W. Moats, NMED (Via Certified Mail)
L. King, EPA, Region 6 (Via Certified Mail)
T. Skibitski, NMED-OB, MS-1396
B. Birch, NMED-OB, MS-1396
Records Center, SNL/NM, Org. 6765, MS-0718
Zimmerman Library, UNM

cc w/o enclosure

A. Blumberg, SNL/NM, MS-0141
M. Walck, SNL/NM, MS-0701
D. Miller, SNL/NM, MS-0718

DEC 23 2009

James Bearzi

-2-


J. Cochran, SNL/NM, MS-0719
B. Langkopf, SNL/NM, MS-0718
C. Daniel, SNL/NM, MS-0718
J. Estrada, SSO, MS-0184
J. Gould, SSO, MS-0184

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: DOE/Sandia Responses to NMED's "Notice of Disapproval: Mixed Waste Landfill Groundwater Monitoring Report, Calendar Year 2008."

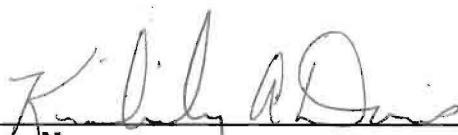
Document author: Kathy Turnham, Department 06765

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 ensure 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 or imprisonment for knowing violations.

Signature: 
Marianne Walck, Director
Nuclear Energy & Global Security Technologies
Center 6700
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185
Operator

12/14/09
Date

and

Signature:  for
Patty Wagner, Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

12/23/09
Date

January 2010

DOE/Sandia Responses to the NMED

“NOTICE OF DISAPPROVAL: MIXED WASTE LANDFILL GROUNDWATER MONITORING REPORT CALENDAR YEAR 2008, MAY 2009 SANDIA NATIONAL LABORATORIES EPA ID# NM5890110518 HWB-SNL-09-012”

INTRODUCTION

This document responds to the comments received in a Notice of Disapproval (NOD) letter from the New Mexico Environment Department (NMED) to the U.S. Department of Energy (DOE) and Sandia Corporation (Sandia) on October 29, 2009 regarding the Mixed Waste Landfill Groundwater Monitoring Report for Calendar Year 2008. The letter is entitled: “NOTICE OF DISAPPROVAL: THE MIXED WASTE LANDFILL GROUNDWATER MONITORING REPORT CALENDAR YEAR 2008, MAY 2009 SANDIA NATIONAL LABORATORIES, EPA ID# NM5890110518 HWB” (NMED August 2009).

This document lists each NMED comment in boldface, followed by the DOE/Sandia response written in normal font under “Response”. Where applicable, revised change pages are included in Attachment A at the end of the comment/response section.

COMMENTS:

Comment #1

Page 1-1, last paragraph, the sentence states " ...and five downgradient or cross-gradient wells (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9) (Figure 1-2)" --Indicate which wells the Permittees consider to be cross-gradient.

Response:

All wells listed in this segment of the sentence (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9) are downgradient of some portion of the Mixed Waste Landfill (MWL). However, not all wells listed are downgradient of all parts of the MWL. For example, as seen in Figure 4.1-2 (page 4-5) MWL-MW5 is not downgradient of the northern portion of the MWL, but instead would be considered cross gradient to this portion of the landfill.

Comment #2

Page 4-1, 2nd paragraph in Section 4.1, second to last sentence -- Explain what is meant by "more variation in the flow field" in the localized flow pattern.

Response:

This is a relative term used to describe the differences in flow direction in the study area as seen on the regional potentiometric surface map (Figure 4.1-1) compared to the flow directions seen on the localized potentiometric surface (Figure 4.1-2). Flow direction is perpendicular to the groundwater elevation contours shown on the potentiometric surface map. In the study area, the regional flow direction (Figure 4.1-1) is slightly north of due west; whereas the localized flow direction (Figure 4.1-2) shows more variability from west-southwest to north-northwest.

Comment #3

Figure 4.1-1, page 4-3 -- The groundwater elevation values shown for MWL-MW7, MWL-MW9, and MWL-BW2 are not the same as those listed in Table A-1, Appendix A, page A-1. Indicate which values are correct. Indicate also whether the other groundwater elevation values shown on Figure 4.1-1 are correct.

Response:

The groundwater elevations listed in Table A-1 for the wells MWL-MW7, MWL-MW9, and MWL-BW2 differ from those used to generate the potentiometric surface maps in Figures 4.1-1 and 4.1-2. Groundwater sampling at the MWL for the ER Project during the first quarter of FY09 occurred October 1 through October 8, 2008 at MWL-MW7, MWL-MW8, MWL-MW9, and MWL-BW2. Water level measurements are taken before sample collection occurs at each well per SNL/NM FOP 05-01 (SNL 2007a). The water elevation measurements in Table A-1 are those measurements taken at the time of water sampling.

Sandia has a groundwater protection program (GWPP), and under SNL/NM FOP 03-02 (SNL 2007b), the program is responsible for collecting groundwater elevations at many groundwater wells. When the

potentiometric maps for Figure 4.1-1, and Figure 4.1-2 were generated, the most current GWPP groundwater elevation data was used (October 20, 2008). The difference in the values of the reported water level measurements between the table and the potentiometric surface maps would not change the contours; therefore we do not feel it would be pertinent to change the figures. In future reports, a footnote will be added to the figures to indicate the source of the water level measurement data.

Comment #4

Section 5.1, page 5-1, and in Table A-3, Appendix A, page A-5 -- There is no test method listed for semi-volatile organic compounds (SVOCs) in Section 5.1. Also there is no Target Quantitation Limit for SVOCs on Table A-3. Indicate the method used and the Target Quantitation Limit for SVOCs.

Response:

Section 5.1 page 5-1, and Table A-3, Appendix A, page A-5, has been revised to include the test method for SVOCs (SW-846 Method 8270). In addition, the Target Quantitation Limit range of 0.200 µg/L to 12 µg/L has been added to Table A-3, Appendix A, page A-5. Change pages are included as Attachment A to this response to NOD.

Comment #5

Section 6.5 --The last paragraph on page 6-2 seems to indicate the highest uncorrected gross activity level was 17.8 +/-10.5 pCi/L in the April MWL-MW6 sample. Table A-10 indicates a gross alpha activity of 20.7 +/-5.07 in the April MWL-MW5 sample. Indicate which number should be considered the highest level and explain your rationale for selecting the highest value.

Response:

The groundwater samples are screened for Gross Alpha/ Beta activity using EPA method 900.0 (EPA 2000). Reporting of the screening results include the calculated value (first number) along with the total uncertainty associated with that value, reported as plus or minus the uncertainty. To interpret the result, therefore, a range has to be calculated to take into account the uncertainty. To determine which MWL sample had the highest result reported in 2008, the ranges of values were calculated. Using the calculated value at MWL-MW6 of 17.8 pCi/L, then adding and subtracting the uncertainty associated with that sample (+/-10.5 pCi/L), the calculated value range is 7.3 to 28.3 pCi/L. For MWL-MW5, the reported value of 20.7 +/- 5.07 pCi/L would result in a range of 15.0 to 26.4 pCi/L. Examining the highest possible values between the two results, MWL-MW6 (taken in April 2008) has the highest value of 28.3pCi/L.

Comment #6

Section 6.5 and Table A-11 -Uranium is being subtracted from the gross alpha activity levels reported in Table A-10 (these values are referred to as "corrected gross alpha activity"). A footnote at the end of Table A-11 states "The MCL for gross alpha activity is 15 pCi/L; however, total uranium is not intended in the standard and can be subtracted as needed". Given that the Mixed Waste Landfill (MWL) contains considerable depleted uranium waste, provide an explanation as to why uranium should be subtracted from the gross alpha data for the MWL when the purpose of acquiring the data is to monitor the groundwater for contaminant releases.

Response:

Depleted uranium is not a contaminant of concern at the MWL. Tritium, organics and metals have been identified as contaminants of concern at the MWL. The gross alpha/beta determination is used to screen for radionuclides, not to specifically determine which ones are present. Tritium concentrations are analyzed for using EPA 906.0, and uranium by EPA SW846 6020 (see Table A-3, Appendix A, page A-5). The groundwater beneath the MWL is being monitored for potential contaminant release using the recommended GW quality parameters listed in 40 CFR 265 subpart F.

EPA states that the gross alpha particle activity MCL of 15 pCi/L, which is exclusive of radon and uranium, provides an effective screening level for the most likely alpha emitters in drinking water (EPA 2000). One of the main intentions of the 15 pCi/L MCL for gross alpha particle activity was to limit the concentrations of other naturally-occurring and man-made alpha emitters relative to radium²²⁶ (EPA 2000, pg. III-7).

Two standard methods for subtracting uranium from gross alpha and gross beta activity calculations are listed in the footnote in Table A-10.

Comment #7

In Table A-1, Appendix A, page A-1, the 6th Column seems to be elevation of bottom of sump, not "Total Well Depth". Clarify whether "Total Well Depth" is correct for the column heading. If "Total Well Depth" is incorrect as the column heading, submit a revised Table A-1 with the correct heading.

Response:

To better clarify the measurement reference point, the 6th column now reads "Elevation of Bottom of Well (FAMSL)" (where FAMSL= feet above mean sea level) and the footnote "b" has been removed. A change page is included as Attachment A in this response to NOD.

Comment #8

Tables A-5, A-6, and A-10, Appendix A, pages A-10 through A-41 and A-48 through A-52 - The Permittees are not required to revise the tables mentioned in this comment for the subject report. However, in future monitoring reports for the MWL, include in each similar table a column listing for each constituent their approved background concentrations. This applies to metals, radionuclides, and other inorganic substances which occur naturally in the environment or are found worldwide as a result of fallout from nuclear testing.

Response:

Background concentrations identified in the 1998 NMED Approved SNL Background Study (NMED 1998) will be included in the appropriate tables of the Calendar Year 2009 MWL AGWMMR.

Comment #9

Page 6-1, Section 6.2, first paragraph and page 6-2, Section 6.5, first paragraph - In future reports, when discussing analytes and comparing them to MCLs or other water quality standards, state also if the analytes exceed background levels.

Response:

Background concentrations identified in the 1998 NMED Approved SNL Background Study (NMED 1998) will be included in the appropriate tables of the Calendar Year 2009 MWL AGWMR.

REFERENCES

- NMED 1998 New Mexico Environment Department, November 1998. Approval, SNL Background Study: Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force base Installation Restoration Program, November 1998.
- SNL 2007a Sandia National Laboratories/New Mexico (SNL/NM), August 2007a. "Long-Term Environmental Stewardship (LTES) Groundwater Monitoring Well Sampling and Field Analytical Measurements," *FOP 05-01, Revision 02*, Sandia National Laboratories, Albuquerque, New Mexico.
- SNL 2007b Sandia National Laboratories/New Mexico (SNL/NM), November 2007. Environmental Programs and Assurance Department, Field Operating Procedure, *FOP 03-02, Revision 02*. Sandia National Laboratories, Albuquerque, New Mexico.
- EPA 2000 U.S. Environmental Protection Agency (EPA), March 2000. *Radionuclides Notice of Data Availability Technical Support Document*. Targeting and Analysis Branch Standards and Risk Management Division; Office of Ground Water and Drinking Water U.S. Environmental Protection Agency, Washington, D.C.

Attachment A

Change Pages, A-1, 5-1, and A-5 to the
Mixed Waste Landfill Groundwater Monitoring Report Calendar Year 2008

5.0 ANALYTICAL METHODS

Table A-3 (Appendix A) specifies parameters, appropriate test methods, and target analyte quantitation limits for analytical parameters. The analytical methods are discussed in the following sections.

5.1 Chemical Analytical Methods

All chemical analyses were performed in accordance with the U.S. Environmental Protection Agency (EPA) test methods (EPA 1979, 1986, 1988, and 1999). Environmental samples were submitted to the following laboratories for the analyses listed:

- GEL:
 - VOCs by EPA Method 8260B
 - SVOCs by EPA Method 8270
 - TAL metals by EPA Methods 6020 and 7470A (including total and isotopic uranium by EPA Method 6020)
 - Nitrate plus nitrite by EPA Method 353.2
 - Bromide, fluoride, chloride, and sulfate by EPA Method 9056
 - Total organic carbon by EPA Method 9060
 - Carbon dioxide by Laboratory-Specific Method SM 4500 CO₂ D
 - Total alkalinity as calcium carbonate by EPA Method 310.1
 - Total dissolved solids by EPA Method 160.1
 - Perchlorate by EPA Method 314.0
- Hall Analytical:
 - Ferrous iron by Laboratory-Specific Method 3500M Fe²⁺
 - Biochemical oxygen demand by EPA Method 405.1
- Metro-Ohm Peak:
 - Manganese II by Laboratory-Specific Method C2-100 Mn²⁺

5.2 Radiochemical Analytical Methods

Radiochemical parameters and methods included gamma-emitting radionuclides by EPA Method 901.1, gross alpha/beta radioactivity by EPA Method 900.0, and tritium by EPA Method 906.0.

Table A-1
 Groundwater Elevations, Pump Setting Depths, and Monitoring Well Completion Information
 Mixed Waste Landfill, Sandia National Laboratories/New Mexico
 Groundwater Monitoring, 2008

Calendar Year 2008

Well Number	Date of Measurement	Measurement Point Elevation (FAMSL ^a)	Depth to Water (FBTOC)	Groundwater Elevation (FAMSL ^a)	Elevation of Bottom of Well (FAMSL)	Static Water Height (feet)	Pump Setting Depth (FBTOC)
MWL-MW4	04-07-08	5383.46	494.44	4891.73 ^b	4878.59 ^b	13.14 ^b	503 ^c
MWL-MW5	04-07-08	5379.89	492.66	4887.23	4856.15	31.08	517
MWL-MW6	04-07-08	5372.64	486.53	4886.11	4839.46	46.65	527
MWL-MW7	07-16-08	5380.63	488.88	4891.75	4878.96	12.79	493
	10-06-08		488.82	4891.81		12.85	
MWL-MW8	07-14-08	5381.99	490.55	4891.44	4880.07	11.37	496.5
	10-07-08		490.71	4891.28		11.21	
MWL-MW9	07-15-08	5379.24	492.07	4887.17	4876.63	10.54	497
	10-08-08		491.23	4888.01		11.38	
MWL-BW2	04-07-08	5388.35	477.18	4911.17	4884.00	27.17	499
	07-17-08		477.47	4910.88		26.88	
	10-01-08		477.62	4910.73		26.73	

^aMeasurement point is the top of well casing.

^bElevation, well depth, and pump depth reflects well MWL-MW4 orientation of 6 degrees from vertical.

^cDepth to the bottom of the dedicated pump is 503.01 feet below ground surface.

BW = Background well.

FAMSL = Feet above mean sea level.

FBTOC = Feet below top of casing.

MW = Monitoring well.

MWL = Mixed Waste Landfill.

Table A-3
Analytical Parameters, Test Methods, and Target Quantitation Limits
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Analytical Parameter	Test Method ^a	Target Quantitation Limit ^b
Total Metals TAL and Uranium	SW846-6020 SW846-7470A	0.00007–2.5 mg/L
Volatile Organic Compounds	SW846-8260B	1.0–5.0 µg/L
Semi-Volatile Organic Compounds	SW-846- 8270	0.200 ug/L to 12 ug/L
Nitrate plus Nitrite (as nitrogen)	EPA 353.2	0.50 mg/L
Major Anions Bromide, Fluoride, Chloride, and Sulfate	SW846-9056	0.100–4.0 mg/L
Total Organic Carbon	SW846-9060	1.0 mg/L
Carbon Dioxide	SM 4500 CO2 D ^c	1.0 mg/L
Total Alkalinity as Calcium Carbonate	EPA 310.1	1.0–2.0 mg/L
Total Dissolved Solids	EPA 160.1	10 mg/L
Ferrous Iron	3500M Fe2+ ^c	0.01–0.10 mg/L
Biochemical Oxygen Demand	EPA 405.1	2.0–4.0 mg/L
Manganese II	C2-100 Mn2+ ^c	0.320 mg/L
Radionuclides		
Gamma-Emitting Radionuclides	EPA 901.1 ^d	MDA is isotope-specific
Gross Alpha Activity	EPA 900.0 ^d	1.06–2.33 pCi/L
Gross Beta Activity	EPA 900.0 ^d	1.26–1.75 pCi/L
Tritium	EPA 906.0 ^d	159–198 pCi/L

^aAnalytical methods used are referenced to either U.S. Environmental Protection Agency, 1979. "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, U.S. Environmental Protection Agency, Cincinnati, Ohio, or U.S. Environmental Protection Agency, 1986. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

^bFor target compounds only. Reporting limits may be elevated if an interfering component is present or if sample dilution is required.

^cLaboratory-specific analytical methods.

^dU.S. Environmental Protection Agency, 1980. "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio.

EPA = U.S. Environmental Protection Agency.

MDA= Minimum detectable activity.

µg/L = Microgram(s) per liter.

mg/L = Milligram(s) per liter.

pCi/L = Picocurie(s) per liter.

TAL = Target analyte list.

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