

WSMR 07



DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON WHITE SANDS
100 Headquarters Avenue
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000
August 9, 2007

REPLY TO
ATTENTION OF

Directorate of Public Works

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



Subject: 2007 Ground Water Monitoring at Launch Complex 38 Diesel Spill (CCWS-09; SWMU 198)

Dear Mr. Bearzi:

Enclosed you will find one hard copy of the following report:

Calendar Year 2007 Ground Water Monitoring at the LC-38 Diesel Spill, May 2007

This letter report discusses recent monitoring activities at LC-38 including analytical results for volatile organic compounds and RCRA metals. The enclosed report fully responds to comments expressed by your office in correspondence dated October 13, 2006 (*RE: Response to the SWMU Assessment Report for the LC-38 Diesel Spill on White Sands Missile Range*).

Based on the reported sampling activities, there is no indication that the diesel contamination has reached the local ground water, and all issues raised in your letter are resolved. No additional sampling activities are planned at SWMU 198 for this calendar year. The next annual monitoring event will be during calendar year 2008.


The following certification is provided as required by our permit and according to NMAC 20.4.1.900, incorporating 40 CFR 270.11:

"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."

Copies furnished, with enclosure (1 print copy), to Ms. Cheryl Frischkorn, NMED-HWB; Mr. Chuck Hendrickson, Region VI EPA; Mr. Bill Davis, U.S. Army Environmental Center; and, without enclosure, to Mr. John Kieling, NMED-HWB and White Sands Technical Services, LLC.

Should you have any questions regarding this matter, please contact Mr. Jose Gallegos of our Environmental Compliance office at (505) 678-1007.

Sincerely,


THOMAS A. LADD
Director, Public Works

Enclosure

LETTER REPORT

The following letter report was prepared under Contract W9124Q-04-D-0012, TO No. 0045.

1. TITLE

Calendar Year 2007 Ground Water Monitoring at the LC-38 Diesel Spill

2. DATE

May 2007

3. INTRODUCTION

In the summer of 2000, White Sands Missile Range (WSMR) discovered that approximately 31,000 gallons of diesel fuel leaked from an above-ground storage tank (AST) located at Launch Complex 38 (LC-38). A SWMU Assessment was performed which determined diesel contamination to 75 ft below ground surface (bgs). However, based on current and foreseeable land uses at LC-38, no exposure pathways were considered complete. The report proposed that WSMR would monitor the wells at the site on an annual basis for 10 years using an interface probe for determination if fuel is present on the water table. The SWMU Assessment was detailed in the report "*Final SWMU Assessment Report for the LC-38 Diesel Spill*, dated September 2004 (BAE Systems, 2004).

In the letter dated 13 October 2006 (NMED, 2006), based on its review of the SWMU Assessment Report, the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) determined that this site is not yet eligible for a Corrective Action Complete determination. The NMED HWB stated that WSMR must address the following comments:

- Dibromochloromethane was detected in monitoring well MW-002 and, as stated by the Permittee, a New Mexico Water Quality Control Commission (WQCC) standard has not been established for this constituent. The Permittee must apply the Region 6 Human Health Medium Specific New Mexico Soil Screening Levels 2006 (tap water screening levels (Table A-1, June 2006)) for this constituent, and any other constituents which do not have an established standard.
- Cadmium was detected in monitoring well MW-002. The Permittee has stated that "since these analytes were only detected in MW-002, it is reasonable to assume they are associated with the potable water used during development of the well." The Permittee must resample monitoring well MW-002 for all VOCs, as well as RCRA metals. The results of this sampling must be included in the response.
- The Permittee proposes a 10-year annual monitoring plan at the site. NMED agrees that annual ground water monitoring should occur; however, it is a premature to limit monitoring to a 10 year period. Therefore, annual ground water monitoring must continue until NMED determines otherwise.

Following receipt of this 13 October 2006 letter from NMED, WSMR completed response to comments and delivered to NMED. In response to the NMED comments, WSMR planned a chemical sampling event for RCRA metals and Volatile Organic Compounds (VOCs) from MW-002 in addition to the interface probe monitoring. WSMR conducted the MW-002 resampling to allow for a re-evaluation of the contaminants of concern and supply additional information for NMED consideration. Results of the resampling effort are included in this report.

4. BACKGROUND

A strategic reserve of diesel fuel was stored for the Defense Fuels Agency in a 150,000-gallon AST at LC-38 on White Sands Missile Range (WSMR). During an annual evaporative loss measurement conducted in the summer of 2000, WSMR personnel could not account for missing fuel estimated in the amount of 31,000 gallons. Following a preliminary investigation at the site conducted in February 2001, the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) took the regulatory

lead for this investigation and required a Resource Conservation and Recovery Act (RCRA) Solid Waste Management Unit (SWMU) Assessment be performed. This site is listed as SWMU 198. WSMR RCRA activities are governed by Hazardous Waste Permit NM2750211235, issued 24 October 1989, and amended 17 August 1992. The investigative efforts are pursuant to Module VIII, Section S, Task III of this permit. These efforts focus on source characterization and defining contaminant characteristics as stated under Task III.

The SWMU Assessment was performed by WSMR to further characterize the geology and hydrology of the diesel spill site, the extent of contamination in soils and ground water, and determine future actions for the site based on a Risk Based Decision Making Analysis. Results of the SWMU Assessment indicated that a significant amount of diesel fuel leaked into the subsurface at LC-38. Contamination resulting from this release had reached a maximum depth of approximately 75 ft bgs. The contaminant plume is supported by the thick, laterally continuous clay layer, approximately 20 ft thick. The thick, continuous clay layer has prevented further downward migration of the diesel fuel. Ground water monitoring wells installed and sampled during the SWMU Assessment show that depth to regional ground water is greater than 230 ft bgs. Analytical results from ground water samples indicated that, at the time of the report, contamination had not reached the regional water table.

The SWMU Assessment Report stated that, based on current land use, no exposure pathways are considered complete. No residential areas will be built for the foreseeable future and no construction activities are planned for this site. Based on these findings, the site is currently protective of human health and ecological exposure.

WSMR proposed No Further Remedial Action for the site and stated that the WSMR Real Property Planning Board will zone this site as off limits for future commercial/residential use. The report also proposed that WSMR would monitor the wells at the site on an annual basis for 10 years using an interface probe for determination if fuel is present on the water table. During calendar year 2005, the diesel fuel tank was removed from the site.

5. DISCUSSION AND CONCLUSIONS

On 29 March 2007, petroleum/water interface probe data were collected from the LC-38 monitoring wells MW-001 through MW-004. Ground water was determined to be at 232.71 ft bgs, 237.12 ft bgs, 236.82 ft bgs, and 236.56 ft bgs, respectively, in monitoring wells MW-001, MW-002, MW-003, and MW-004. No petroleum product was found in any wells on site. This indicates that diesel fuel contamination has not reached ground water.

On 2 April 2007, MW-002 was sampled using low-flow sampling techniques. The ground water samples were sent to Trace Analysis Inc. in Lubbock, TX for analysis of the eight RCRA metals and VOCs. One primary and one duplicate sample were collected from MW-002. No VOCs, including the trihalomethanes detected during the SWMU Assessment, were detected from the 2 April 2007 primary or duplicate samples. Laboratory analytical results are appended to this report. Of the total RCRA 8 metals analysis, only total barium and total chromium were detected. Total barium (WQCC Standard = 1.0 mg/l) and total chromium (WQCC Standard = 0.05 mg/l) were detected at concentrations of 0.012 mg/l and 0.07 mg/l, respectively. A comparison of concentrations of contaminants of concern from the 13 October 2006 NMED letter (results reported from the January 2004 samples from the SWMU Assessment) is shown in Table 1 along with detections from the April 2007 sampling event.

Results of the April 2007 sampling event indicate that the analytes of concern originally detected during the SWMU Assessment sampling event (January 2004) were either not detected or significantly reduced. Neither cadmium nor the trihalomethanes, dibromochloromethane and bromodichloromethane, were detected during the recent April 2007 sampling event. Total chromium was the only recent detection exceeding an NMED standard. Total chromium, detected at 0.07 mg/l, exceeded the WQCC standard for dissolved chromium of 0.05 mg/l. Total chromium was detected in all four monitoring wells at the site during the SWMU Assessment sampling event, with concentrations ranging from 0.011 mg/l (in MW-001) to 1.76 mg/l (in MW-002). All detections from the April 2007 event are below the EPA MCL for drinking water.

TABLE 1. COMPARISON OF SAMPLE RESULTS FOR MW-002.

Analyte	Units	WQCC Standard for Dissolved Fraction	Tap Water Standard Table A-1 NMED SSLs	EPA Maximum Contaminant Level	January 2004 SWMU Assessment Result	April 2007 Sample Collection Result
Dibromochloromethane	µg/l	NE	1.32	80 [^]	1.57	<1.00
Bromodichloromethane	µg/l	NE	1.78	80 [^]	1.16	<1.00
Total Barium	mg/l	1.0	7.3	2	0.134	0.012
Total Chromium	mg/l	0.05	0.110 [*]	0.1	1.76	0.07
Total Cadmium	mg/l	0.01	0.0183	0.005	0.59	<0.001
Dissolved Cadmium	mg/l	0.01	0.0183	0.005	0.338	<0.001 ^{**}
Bold	Analytes of concern from the 13 October 2006 NMED HWB letter.			[*] Standard for Hexavalent Chromium.		
NE	Not Established.			^{**} Expected to be Non-Detect based on total result.		

The SWMU Assessment report surmised that the detections in MW-002 (not reflected in the other wells) may have been the result of potable water used during the development and installation of the well. Results of the April 2007 event for MW-002 more closely reflect analytical results from the MW-001, MW-003, and MW-004 wells detected during the SWMU Assessment indicating that ground water may have equilibrated to natural ground water conditions at the site. The detected metals from this investigation are not generally associated with diesel fuel which leads us to conclude that they are likely naturally occurring.

The April 2007 sampling event and this letter report constitute a full response to the NMED concerns (NMED, 2006).

6. RECOMMENDATIONS

Continue annual petroleum/water interface probe monitoring at the LC-38 monitoring wells. WSMR will consult with NMED prior to discontinuing the monitoring program.

7. WTS TASK MANAGER AND TASK COORDINATOR / PHONE NO.:

The Task Manager and Task Coordinator for TO #45 are Fred Bourger, 678-3426, and Brad Davis, 678-3397, respectively.

REFERENCES

BAE Systems, 2004. *Final SWMU Assessment Report for the LC-38 Diesel Spill*. September 2004. WS-ES-EC-0431.

EPA, 2003. *National Primary Drinking Water Regulations Maximum Contaminant Levels*. EPA 816-F-03-016.

NMED, June 2006. *Technical Background Document for Development of Soil Screening Levels*. Rev. 4.0. June 2006.

NMED, October 2006. *Response to the SWMU Assessment Report for the LC-38 Diesel Spill on White Sands Missile Range*: White Sands Missile Range EPA 1D NO. NM2750211235 WSMR-06-008 & WSMR-06-004: October 13, 2006.